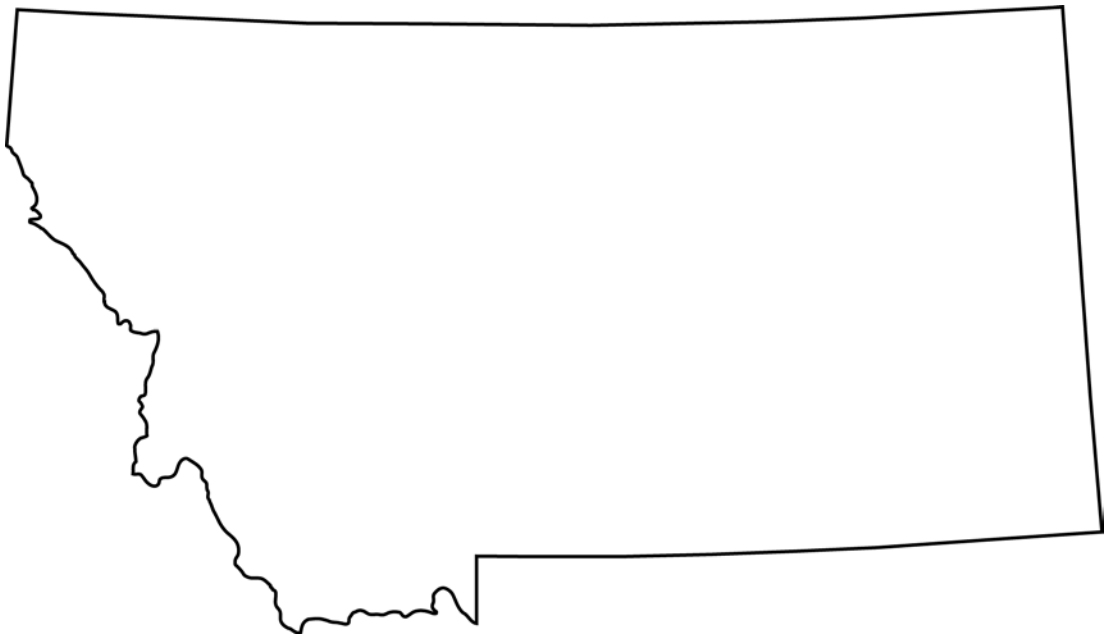
U.S. Department of the Interior
U.S. Geological Survey

Water Resources Data
Montana
Water Year 2002

By W.R. Berkas, M.K. White, P.B. Ladd, F.A. Bailey, and K.A. Dodge

Water-Data Report MT-02-1



Prepared in cooperation with the State of Montana
and with other agencies

CALENDAR FOR WATER YEAR 2002

2001

OCTOBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
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2002

JANUARY

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MARCH

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JUNE

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SEPTEMBER

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22	23	24	25	26	27	28
29	30					

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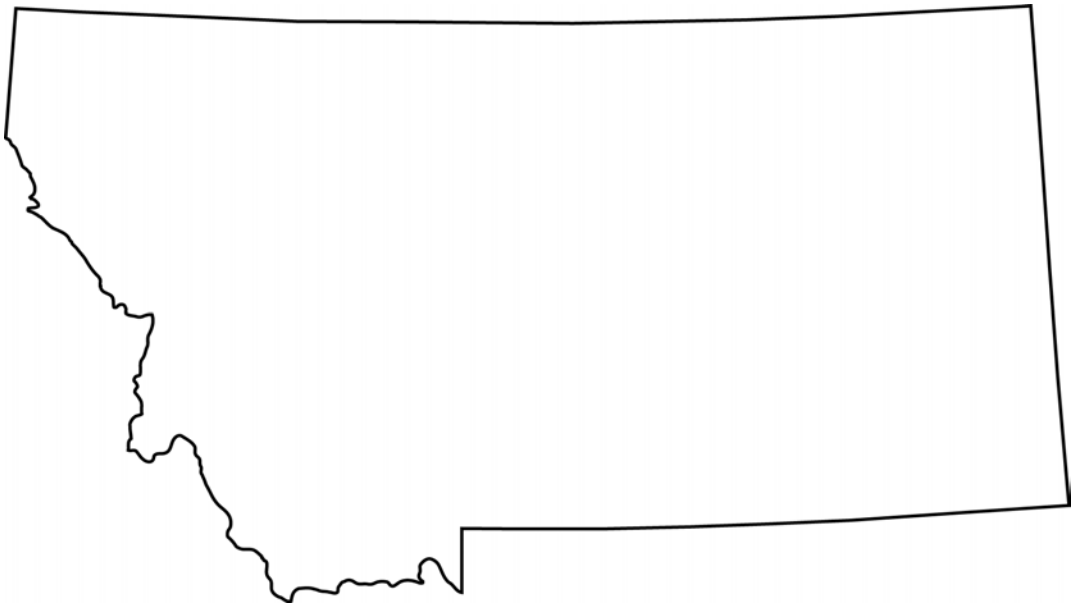

Prepared in cooperation with the State of Montana
and with other agencies

U.S. DEPARTMENT OF THE INTERIOR

GALE A. NORTON, Secretary

U.S. GEOLOGICAL SURVEY

Charles G. Groat, Director

For information on the water program in Montana write to
District Chief, Water Resources Division
U.S. Geological Survey
3162 Bozeman Avenue
Helena, Montana 59601

2003

PREFACE

In the act that established the U.S. Geological Survey more than a century ago, the agency was charged by Congress with the responsibility for "...classification of the public lands, and examination of the geologic structure, mineral resources, and products of the national domain." This charge was simple recognition of the principle that factual information is essential to sound development and management decisions involving natural resources. In keeping with this principle, the Water Resources Division of the Survey publishes annually, by district, hydrologic records for water resources thought to be of particular usefulness to the public and to the scientific community.

This 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 typed, edited, and assembled the report. 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 is one of a series issued State by State under the general direction of R.M. Hirsch, Associate Director for Water. This report was prepared by the U.S. Geological Survey in cooperation with the State of Montana and with other agencies, under the supervision of R.E. Davis, District Chief, and W.J. Carswell, Jr., Regional Hydrologist, Central Region.

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Water resources data for Montana for the 2002 water year consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels in wells. This report contains discharge records for 244 streamflow-gaging stations; stage or content records for 9 lakes and large reservoirs and content for 31 smaller reservoirs; water-quality records for 142 streamflow stations (42 ungaged), 9 ground-water wells, and 3 lakes; precipitation records for 2 atmospheric-deposition stations; and water-level records for 53 observation wells. Additional water year 2002 data collected at crest-stage gage and miscellaneous-measurement sites were collected but are not published in this report. These data are stored within the District office files in Helena and available on request. These data represent part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Montana.

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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

[Letter after station name designates types of data: (d) discharge, (c) chemical, (b) biological, (m) microbiological, (t) water temperature, (s) sediment, (e) elevations or contents]

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Lodge Creek below McRae Creek, at international boundary (d)	06145500	349
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Gaff Ditch near Merryflat, Saskatchewan (d)	06147950	351
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Cypress Lake west outflow canal near West Plains, Saskatchewan (d)	06149000	354
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Battle Creek at international boundary (d)	06149500	359
Battle Creek near Chinook (d)	06151500	360
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Belanger Creek diversion canal near Vidora, Saskatchewan (d)	06156500	369
Cypress Lake:		
Cypress Lake east outflow canal near Vidora, Saskatchewan (d)	06157500	370
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Lake Creek near Dagmar (d)	06183750	405
Cottonwood Creek near Dagmar (d)	06183800	406
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Yellowstone River at lake outlet, Yellowstone National Park (d)	06186500	414
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Soda Butte Creek at Park Boundary, at Silver Gate (d)	06187915	415
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Yellowstone River at Corwin Springs (dt)	06191500	419
Yellowstone River near Livingston (dcts)	06192500	422
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Boulder River at Big Timber (dcts)	06200000	430
East Rosebud Creek (head of Rosebud Creek):		
West Rosebud Creek near Roscoe (d)	06204050	433
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Red Lodge Creek above Cooney Reservoir, near Boyd (d)	06211000	446
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Columbia River:		
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Clark Fork near Galen (dcts)	12323800	569
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Middle Fork Rock Creek near Philipsburg (d)	12332000	592
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Clark Fork at Turah Bridge, near Bonner (dcs)	12334550	597
Blackfoot River:		
Blackfoot River above Nevada Creek, near Helmville (dcs)	12335100	601
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North Fork Blackfoot River above Dry Gulch, near Ovando (dt)	12338300	608
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Hungry Horse Reservoir near Hungry Horse (e)	12362000	653
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Stillwater River near Whitefish (d)	12365000	661
Whitefish River near Kalispell (dcs)	12366000	663
Flathead Lake:		
Swan River near Bigfork (dcts)	12370000	666
Flathead Lake at Polson (e)	12371550	670
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Mill Creek above Bassoo Creek, near Niarada (d)	12374250	672
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South Crow Creek near Ronan (d)	12375900	673
Mission Creek above reservoir, near St. Ignatius (d)	12377150	674
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South Fork Jocko River near Arlee (d)	12381400	675
Big Knife Creek near Arlee (d)	12383500	676
Valley Creek near Arlee (d)	12387450	677
Jocko River at Dixon (d)	12388200	678
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INTRODUCTION

The U.S. Geological Survey (USGS), in cooperation with other Federal, State, and local agencies and Tribal governments, collects a large amount of data pertaining to the water resources of Montana each water year. These data, accumulated over many 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 USGS, the data are published annually, by water year, in this report series entitled, "Water Resources Data, Montana."

This report includes records on both surface and ground water from stations within the State and selected stations near the Montana border in adjacent states and Canada. Specifically, it contains (1) discharge records for 244 streamflow-gaging stations; (2) stage or content records for 9 lakes and large reservoirs and content records for 31 smaller reservoirs; (3) water-quality records for 142 stream sites (42 ungaged), 9 ground-water wells, and 3 lake sites; (4) precipitation records for 2 atmospheric-deposition stations; and (5) water-level records for 53 observation wells. Additional data for water year 2002 were collected at crest-stage gage and miscellaneous-measurement sites but are not published in this report. These data are stored within files in the USGS office in Helena and are available on request. The locations of streamflow-gaging stations are shown later in the report in figure 6, locations of water-quality stations are shown in figure 7, and locations of observation wells are shown in figure 8.

Records of discharge or stage of streams and contents or stage of lakes and reservoirs were first published in a series of USGS Water-Supply Papers entitled "Surface Water Supply of the United States." These Water-Supply Papers were published in an annual series for water years 1899-1960 and then in a 5-year series for water years 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of Water-Supply Papers entitled "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of Water-Supply Papers entitled "Ground-Water Levels in the United States." Water-Supply Papers may be consulted in the libraries of the principal cities of the United States or may be purchased from USGS, Branch of Information Services, Box 25286, Denver, Colorado 80225.

For water years 1961 through 1970, streamflow data were released by the USGS in annual reports for each State. Water-quality records for water years 1964 through 1970 were similarly released either in separate reports or in conjunction with streamflow records.

Beginning with the 1971 water year, data for streamflow, water quality, and ground water are published as a single or multi-volume USGS annual water-data reports for each State. These reports carry 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 volume is identified as "U.S. Geological Survey Water-Data Report MT-02-1." These water-data reports are for sale, in paper copy or on microfiche, by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, telephone 1-800-553-6847.

Water-resources information for Montana and the rest of the Nation are available through the World Wide Web as part of the USGS National Water-Information System (NWIS) at:

http://water.usgs.gov/nwis

For Montana, this information includes surface-water, water-quality, and ground-water data. Surface-water information available from the USGS includes provisional realtime streamflow data for stations with satellite telemetry, provisional daily data for the previous 18 months, and daily data for the period of record at each site. Daily, monthly, and annual streamflow statistics also are available as well as annual peak streamflow data. In addition, flood-frequency and basin-characteristics information for selected sites in Montana is available at:

http://montana.usgs.gov/freq

Water-quality information available from the USGS includes provisional realtime specific-conductance and temperature data for selected sites with satellite telemetry and historical water-quality data for many surface- and ground-water sites in Montana. Ground-water information available from the USGS includes descriptive information for wells, springs, and test holes such as location (latitude and longitude), well depth, site use, water levels, and aquifer.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephone at (406) 457-5900 or 1-888-ASK-USGS.

COOPERATION

The USGS has had cooperative agreements with other agencies and organizations for the systematic collection of streamflow records since 1906, for water-quality records since 1946, and for ground-water levels since 1964. In water year 2002, agencies and organizations that supported data collection through cooperative agreements with the USGS are:

Federal Agencies
- Bonneville Power Administration
- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Department of State, International Joint Commission
- National Park Service
- U.S. Army Corps of Engineers
- U.S.D.A. Forest Service
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Geological Survey

Tribal Governments
- Blackfeet Nation
- Chippewa Cree Tribe
- Confederated Salish and Kootenai Tribes of the Flathead Reservation
- Fort Peck Tribes
- Northern Cheyenne Tribe

State Agencies
- Montana Bureau of Mines and Geology
- Montana Department of Environmental Quality
- Montana Fish, Wildlife and Parks
- Montana Department of Natural Resources and Conservation
- Montana Department of Transportation
- Wyoming Department of Environmental Quality
- Wyoming State Engineer

Federal Energy Regulatory Commission Licensees
- Avista Corporation
- Pacific Power and Light

Local Agencies
- Cascade County Conservation District
- City of Bozeman
- East Bench Irrigation District
- Lewis and Clark County Water Quality Protection District
- Northern Powell Conservation District
- Teton County Conservation District

GENERAL HYDROLOGIC SETTING

Montana, with an area of about 147,200 square miles (mi^2), is the fourth largest State in the Union (fig. 1). The major river basins in the State are the Hudson Bay basin (465 mi^2) and the upper Missouri River basin (120,700 mi^2) east of the Continental Divide, and the upper Columbia River basin (26,000 mi^2) west of the divide. The Hudson Bay and upper Missouri River basins drain about 82 percent of the State and provide slightly less than 50 percent of the total streamflow. The upper Columbia River basin drains 18 percent of the State and provides slightly more than 50 percent of the total streamflow.

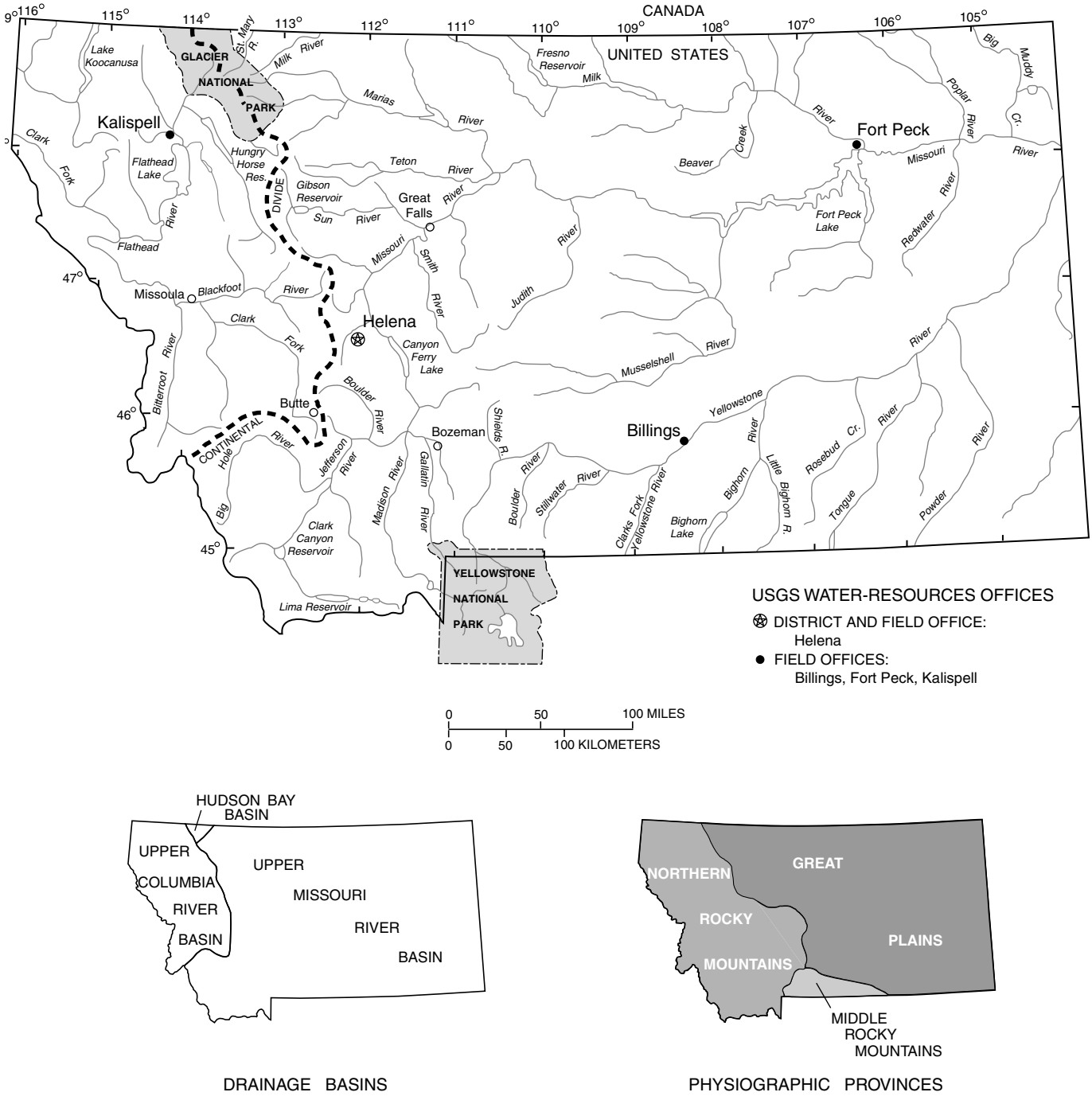
The western and southwestern parts of the State are in the Northern and Middle Rocky Mountains physiographic provinces. The central and eastern parts are in the Great Plains physiographic province. The Northern and Middle Rocky Mountains are characterized by rugged mountains and intermontane valleys, whereas the Great Plains consists of rolling to dissected plains and small mountain ranges. Altitude in Montana ranges from more than 12,000 feet in the mountains northeast of Yellowstone National Park to about 1,850 feet where the Kootenai River flows from the northwestern part of the State.

Climate and hydrologic conditions differ substantially across the State. Annual precipitation varies considerably throughout the basins, from about 100-120 inches along the Continental Divide in Glacier National Park to about 6-12 inches in eastern and south-central Montana and in some of the western intermontane valleys. The diverse precipitation patterns in Montana result from the effects of geographic and topographic features on warm, moist air from either the Gulf of Mexico or the Pacific Ocean. In mountainous areas, much of the annual precipitation falls as snow during the winter. Although much of the annual precipitation on the Great Plains also falls as snow during the winter, intense rainstorms during the summer can add substantial quantities of precipitation to the annual totals in a short time. In areas east of the mountains, generally one-half of the annual precipitation falls from May through July.

Peak runoff from the basins can result from spring snowmelt, snowmelt mixed with rain, or intense rainfall. In addition, backwater from ice jams commonly creates flooding in many rivers throughout the State. The record flood of April 1952 in northeastern Montana is an example of spring snowmelt flooding. The flood in May 1981 in west-central Montana is an example of flooding caused by snowmelt mixed with rain. The floods of June 1964, June 1975, and May 1978 are examples of flooding predominantly caused by intense rainfall. Flash floods, although restricted in areal extent, are at times numerous in the north-central and eastern parts of the State. In many areas, peak runoff is stored in reservoirs to decrease flooding. The stored water is used for irrigation (the predominant consumptive use of water statewide), power generation, and recreation.

Surface water throughout the State generally is suitable for most uses except in parts of eastern Montana where, because of large concentrations of dissolved solids and some individual constituents, recommended standards or criteria for domestic and agricultural uses may be exceeded. The ionic composition of surface water can vary markedly between the western mountains and the eastern plains. In the western mountains, where the rocks generally are older and more resistant to weathering, the streamflow characteristically is a calcium bicarbonate type. The dissolved-solids concentrations in mountain streams seldom exceed 500 milligrams per liter (mg/L), even during base-flow conditions. In the eastern plains, where sedimentary rocks are dominant, streamflow commonly is a sodium sulfate type, with dissolved-solids concentrations ranging from about 100 to 8,000 mg/L. Snowmelt and intense rainstorms sometimes produce large quantities of runoff that can dilute concentrations of dissolved solids and modify chemical composition. Calcium and bicarbonate typically occur in greater proportions in streams in the eastern plains during runoff. An exception to these general characteristics is in the northeastern part of the State, where streamflow typically is a sodium bicarbonate type.

The availability and quality of ground water throughout the State are primarily controlled by the distribution and nature of deposits and rocks. In western Montana, ground water is available in unconsolidated alluvial and glacial deposits in intermontane valleys, and in consolidated rocks near the valley



DRAINAGE BASINS

PHYSIOGRAPHIC PROVINCES

Figure 1. General geographic features of Montana.

margins. In eastern Montana, ground water is available in alluvial deposits along larger rivers and streams. Outside of the alluvial valleys, ground-water availability in sedimentary rock is variable. Throughout Montana, alluvial deposits along streams generally are the most productive aquifers, and yields to wells along the major streams may be several hundred gallons per minute. These deposits are readily recharged by precipitation, by streams during periods of high flow, and by applied irrigation water. The particle size distribution of glacial deposits largely determines their potential for yielding water to wells. Where coarse outwash gravels are present, the potential for developing large-yield wells is good, whereas yields from wells completed in fine glacial till generally are limited to a few gallons per minute. Many consolidated-rock formations yield water but, because of the complexity of the geology, rocks might not yield water in all areas. Yields from wells completed in consolidated rocks generally are only a few gallons per minute. However, several hundred gallons per minute can be obtained from fractured or cavernous formations in some areas. The well depth required to reach a given aquifer varies with location.

HYDROLOGIC-MONITORING ACTIVITY, WATER YEAR 2002

Five streamflow-gaging stations were established during water year 2002 to aid in the assessment of the State's water resources. The new stations were:

06017000, Beaverhead River at Dillon
06040800, Madison River above powerplant, near McAllister
06048700, East Gallatin River below Bridger Creek, near Bozeman
12337800, Nevada Creek at mouth, near Helmville
12354000, St. Regis River at St. Regis

Four surface-water-quality stations were established during water year 2002 to obtain data to characterize the effects of mining, agriculture, and residential development in the lower Tenmile Creek basin. These stations are:

463438112091801, Tenmile Creek below Colorado Gulch, near Helena
06063000, Tenmile Creek near Helena
463747112033801, Sevenmile Creek at mouth, near Helena
06064100, Tenmile Creek at Green Meadow Drive, at Helena

Water-quality sampling began at 17 surface-water sites and 9 ground-water wells in the headwaters of Tenmile Creek and Basin Creek near a repository (Luttrell Pit) where mine wastes and mill tailings from nearby abandoned-mine sites are being placed for long-term storage. The sampling of streams and ground water in the area surrounding the respository is intended to detect any migration of contaminants from the disposal area. These stations are:

462517112173001, 08N06W25AABB01
462507112170601, 08N05W30BBCD01
462503112172302, 08N06W25ADAC02
462503112172301, 08N06W25ADAC01
462500112170701, 08N05W30BCBD01
462458112170001, Grub Creek No. 1 near Rimini
462457112170701, Grub Creek No. 2 near Rimini
462508112173601, Unnamed Tributary of Grub Creek SS 3 near Rimini
462505112173601, Unnamed Tributary of Grub Creek SS 2 near Rimini
462503112173001, Unnamed Tributary of Grub Creek SS 4A near Rimini
462501112173501, Unnamed Tributary of Grub Creek SS 4 near Rimini
462442112174901, Grub Creek near Rimini
462516112171201, 08N05W30BBBB03
462518112171202, 08N05W30BBBB02
462522112172402, 08N06W24DDCD02
462522112172401, 08N06W24DDCD01
462527112175201, Tenmile Creek at Headwaters, near Rimini
462529112173301, Monitor Creek SS 8 near Rimini
462531112172901, Monitor Creek SS MS near Rimini
462535112173601, Monitor Creek SS 11 near Rimini
462537112173301, Monitor Creek SS 10 near Rimini
462541112172001, Monitor Creek Adit near Rimini
462542112173301, Monitor Creek 5-MC near Rimini
462520112165601, Ruby Creek No. 1A above Scott Reservoir, near Rimini
462538112163301, Ruby Creek No. 2 above Scott Reservoir, near Rimini
462549112161401, Ruby Creek No. 3 above Scott Reservoir, near Rimini

Three water-temperature monitoring stations were established at the following gaging stations for water year 2002 to obtain data to characterize daily and seasonal thermal fluctuations that can affect aquatic biota:

06035000, Willow Creek near Harrison
06048700, East Gallatin River below Bridger Creek, near Bozeman
06077200, Smith River below Eagle Creek, near Fort Logan

Two water-quality sampling sites were established in the Blackfoot River basin to collect data to characterize nutrients, trace elements, and suspended sediment:

12335100, Blackfoot River above Nevada Creek, near Helmville
12337800, Nevada Creek at mouth, near Helmville

Five streamflow-gaging stations were discontinued during or at the end of water year 2002:

06025250, Big Hole River at Maiden Rock, near Divide
06035000, Willow Creek near Harrison
06061500, Prickly Pear Creek near Clancy

06062750, Tenmile Creek at Water Treatment Plant, near Rimini
12331500, Flint Creek near Drummond

Three water-quality stations were discontinued:

06289000, Little Bighorn River at State Line, near Wyola
06289500, Little Bighorn River near Wyola
12331500, Flint Creek near Drummond

SUMMARY OF HYDROLOGIC CONDITIONS, WATER YEAR 2002

Temperature and Precipitation

Temperatures throughout Montana were warmer than normal from October through January. Several days had record-breaking high temperatures at Helena, Glasgow, and Great Falls during November. At the end of February, an Arctic cold front moved across Montana. Temperatures fell below normal and remained below normal through June. These below-normal temperatures delayed the snowmelt in the mountains by about 2 weeks. Temperatures in July were warmer than normal, temperatures in August were colder than normal, and temperatures in September were warmer than normal.

Precipitation, departure from normal precipitation, and percentage of normal precipitation for seven climatological divisions of the State are listed in table 1. The precipitation data listed in table 1 are averages of the total monthly precipitation for the National Weather Service (NWS) reporting stations within each of the climatological divisions. No attempt was made to area-weight the division totals. As shown in table 1, total precipitation for water year 2002 varied across the State from 76 percent of normal in southeastern Montana to 115 percent of normal in north-central Montana. For October 2001 through March 2002, precipitation ranged from 59 percent of normal in the southeastern division to 95 percent of normal in the western division. For April 2002 through September 2002, precipitation ranged from 81 percent of normal in the southeastern division to 129 percent of normal in the north-central division. Total average precipitation amounts for water year 2002 ranged from 10.59 inches for the southeastern division to 19.47 inches for the western division.

Most NWS stations in Montana measure precipitation in valley or non-mountainous locations. Data for precipitation falling as snow in the mountainous parts of the State during the winter are published by the U.S. Department of Agriculture, Natural Resources Conservation Service, in the report "Montana Water Supply Outlook." Percentages of normal water content of snowpack, by drainage basin, are listed in table 2.

By March 1, 2002, the percentage-of-normal water content of mountain snowpack ranged from 48 to 106 percent. By April 1, the percentage-of-normal water content increased in most basins from the previous month and ranged from 75 to 118 percent. By May 1, the percentage-of-normal water content ranged from 62 to 134 percent. Overall, the percentage-of-normal water content in snowpack on May 1, 2002, was below normal in the Bighorn (75 percent), Tongue (77 percent) and Powder River (62 percent) basins; above normal in the St. Mary (124 percent), Sun-Teton-Marias (134 percent), and Kootenai (121 percent) basins; and near normal (± 20 percent) in the remaining basins.

Table 1. Precipitation and departure from normal, in inches, and percentage of normal, Montana, water year 2002[1]

Climatological division (number of stations)	October 2001 through March 2002			April through September 2002			Water year 2002		
	Total monthly precipitation	Departure from normal, 1971-2000	Percentage of normal	Total monthly precipitation	Departure from normal, 1971-2000	Percentage of normal	Total average precipitation	Departure from normal, 1971-2000	Percentage of normal
Western (45)	9.86	-0.47	95	9.61	-0.18	99	19.47	-0.65	97
Southwestern (22)	3.71	-1.75	68	9.10	-1.91	87	12.81	-3.66	80
North Central (42)	2.35	-0.96	71	12.93	3.20	129	15.28	2.24	115
Central (35)	2.81	-1.43	66	11.51	0.83	107	14.32	-0.60	95
South Central (26)	3.52	-1.91	65	9.80	-1.32	88	13.32	-3.23	80
Northeastern (27)	1.69	-0.95	64	10.74	0.24	105	12.43	-0.71	97
Southeastern (22)	2.11	-1.44	59	8.48	-1.85	81	10.59	-3.29	76

[1]Data from U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, 2002, Climatological Data, Montana: v. 104, no. 10 through v. 105, no. 9. Normals of precipitation are determined from the base period 1971-2000.

Table 2. Water content of mountain snowpack in Montana, 2002, as percentage of normal[1]

Drainage basin	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1
		Hudson Bay			
St. Mary	82	74	104	118	124
		Missouri			
Upper Missouri	84	82	80	82	85
Sun-Teton-Marias	59	81	87	110	134
Smith-Judith-Musselshell	65	80	84	83	99
Milk	6	25	48	111	84
Upper Yellowstone	80	80	77	81	89
Bighorn	72	72	70	78	75
Tongue	76	71	74	75	77
Powder	73	71	70	75	62
		Upper Columbia			
Kootenai	103	112	106	118	121
Clark Fork	87	95	91	104	110
Flathead	84	96	97	110	119

[1]Data from U.S. Department of Agriculture, Natural Resources Conservation Service (J. L. Ward, written commun., 2003). Normals for snowpack are determined from the base period 1971-2000.

Streamflow

Streamflow data for water year 2002 are compared to long-term data for water years 1971-2000 and maximum and minimum monthly mean discharge for the period of record at seven streamflow-gaging stations (fig. 2). Compared to the mean annual discharge (average of the annual mean discharges) for water years 1971-2000, the annual mean discharge as given on figure 2 during water year 2002 was 115 percent of average at Middle Fork Flathead River near West Glacier (station 12358500); 96 percent of average at Clark Fork at St. Regis (station 12354500); 60 percent of average at Missouri River at Toston (station 06054500); 82 percent of average at Yellowstone River at Corwin Springs (station 06191500); 67 percent of average at Yellowstone River at Billings (station 06214500); 48 percent of average at Rock Creek below Horse Creek, near International Boundary (station 06169500); and 129 percent of average at Marias River near Shelby (station 06099500).

The annual departure from mean annual discharge at two streamflow-gaging stations on unregulated streams is shown in figure 3. At Yellowstone River at Corwin Springs, the annual mean discharge during water year 2002 was less than the long-term average for the period of record, but at Middle Fork Flathead River near West Glacier, annual mean discharge during water year 2002 was greater than the long-term average for the period of record.

Extraordinary flooding did not occur in any major river basins in Montana during water year 2002. However, flash flooding did occur in several small, ungaged drainages during intense storms that moved across the northeastern, central, and southeastern parts of the State in July. Damage from this flash flooding was mainly confined to roads, bridges, and streambanks. A comparison of peak discharges at 24 selected streamflow-gaging stations for water year 2002 to peak discharges for the period of record are presented in table 3. Record peak discharges were not recorded for any of these stations in water year 2002. The recurrence intervals for peaks during water year 2002 were less than 2 years at 12 stations, 2-5 years at 7 stations, 5-10 years at 1 station, and 10-25 years at 2 stations.

A comparison of minimum daily mean discharge for 22 selected long-term streamflow-gaging stations for water year 2002 to minimum instantaneous discharge for the period of record is presented in table 4. Record minimum daily mean discharges were not recorded during water year 2002, although below-normal conditions prevailed through the year in many areas of Montana. Minimum daily discharges had recurrence intervals of less than 2 years at five sites, recurrence intervals of 2-5 years at nine sites, recurrence intervals of 5-10 years at eight sites, and recurrence intervals of 10-20 years at two sites.

The percentage-of-normal (based on water years 1971-2000) storage by month for major reservoirs is listed in table 5. At the end of water year 2002, storage was normal or near normal in four of the six major reservoirs used to supply water primarily for hydroelectric power generation, but much less

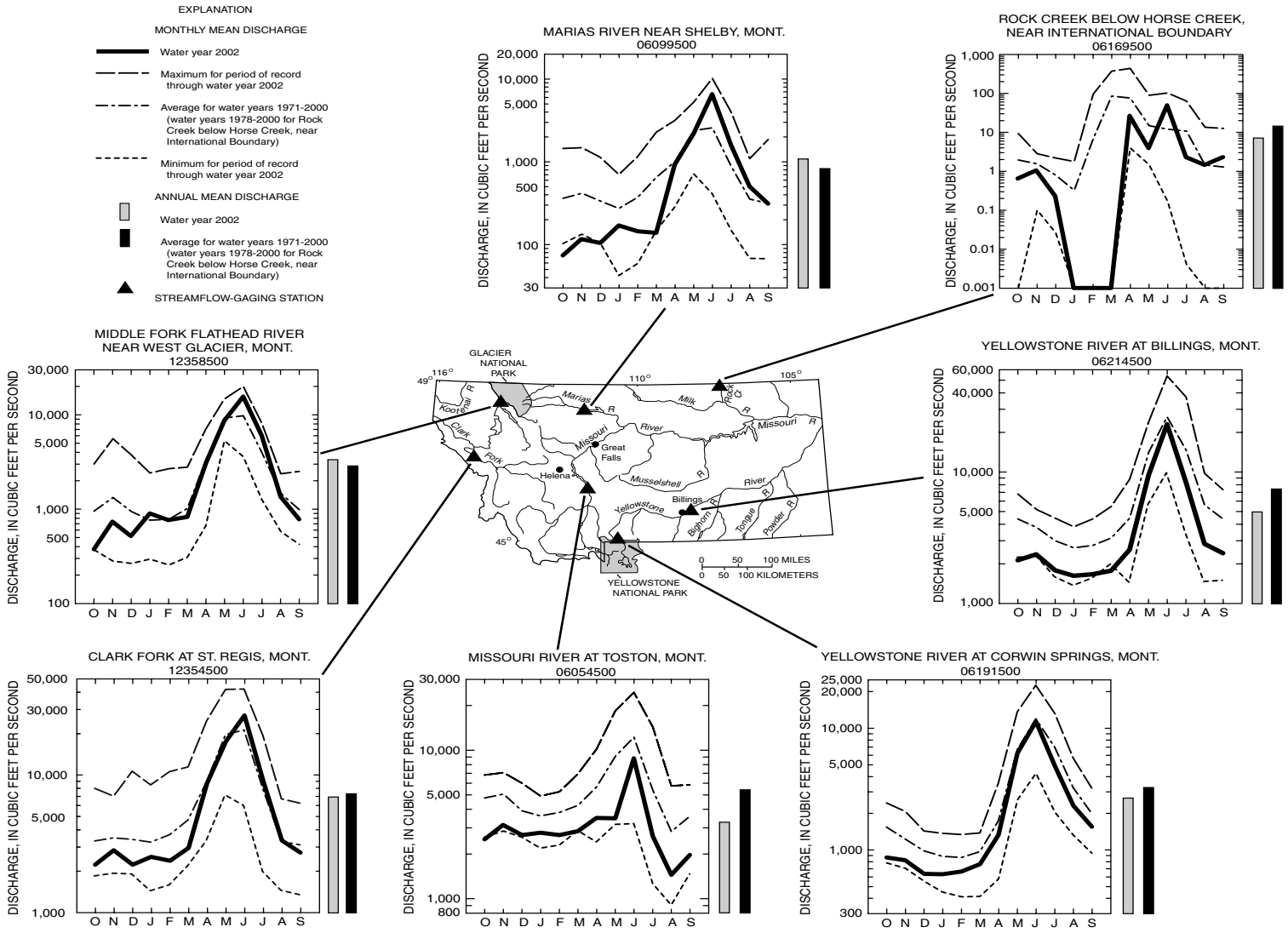


Figure 2. Streamflow data for water year 2002 compared to long-term data at selected streamflow-gaging stations, Montana.

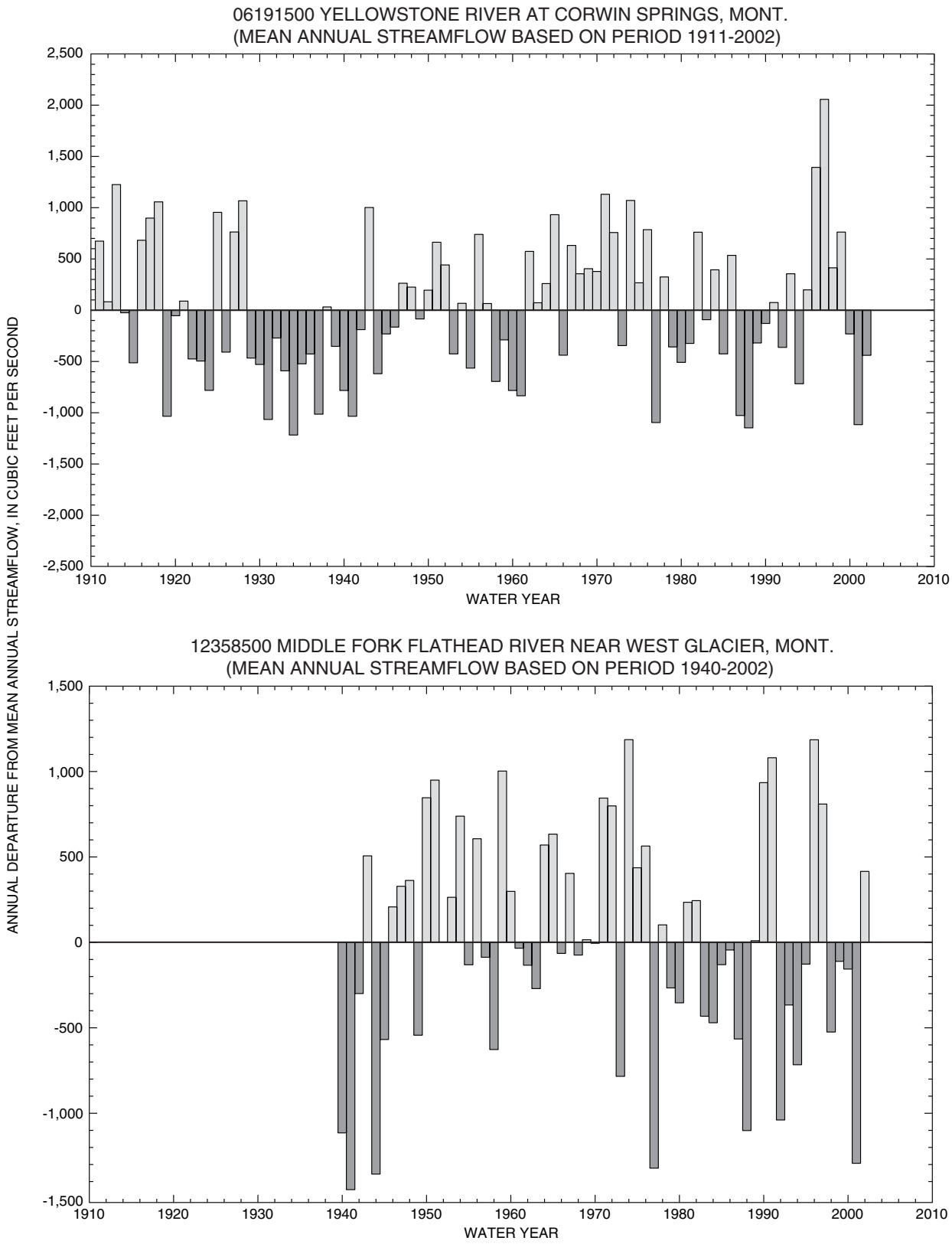


Figure 3. Annual departure from mean annual discharge at two streamflow-gaging stations on unregulated streams in Montana.

Table 3. Comparisons of instantaneous peak discharge for water year 2002 with instantaneous peak discharge for period of record at selected stations in Montana

[Symbols: <, less than; *, outside period of record]

Station number	Station name	Drainage area (square miles)	Peak discharge, water year 2002			Peak discharge, period of record	
			Date	Cubic feet per second	Recur-rence interval (years)	Date	Cubic feet per second
05014500	Swiftcurrent Creek at Many Glacier	30.9	05/30	1,250	2-5	06/08/64	6,700
05017500	St. Mary River near Babb	276	06/30	5,790	5-10	06/09/64	16,500
06025500	Big Hole River near Melrose	2,476	06/03	5,300	<2	06/10/72	14,300
06054500	Missouri River at Toston	14,669	06/03	16,200	<2	06/12/97	34,000
06089000	Sun River near Vaughn	1,854	06/11	5,590	2-5	06/09/64	53,500
06099500	Marias River near Shelby	3,242	06/11	20,700	10-25	06/09/64	241,000
06115200	Missouri River near Landusky	40,987	06/16	18,900	<2	06/03/53	137,000
06120500	Musselshell River at Harlowton	1,125	06/04	398	<2	06/20/75	7,270
06174500	Milk River at Nashua	22,332	08/23	2,840	<2	04/18/52	45,300
06191500	Yellowstone River at Corwin Springs	2,623	06/01	21,400	2-5	06/10/96, 06/06/97	32,200 32,200
06200000	Boulder River at Big Timber	523	06/02	5,130	<2	06/05/97	9,940
06214500	Yellowstone River at Billings	11,795	06/03	42,600	2-5	06/12/97	82,000
06308500	Tongue River at Miles City	5,397	06/25	335	<2	06/15/62	13,300
06329500	Yellowstone River near Sidney	69,103	06/06	43,600	<2	06/21/21	159,000
12301300	Tobacco River near Eureka	440	05/22	1,710	2-5	05/13/91	3,180
12304500	Yaak River near Troy	766	05/22	11,800	10-25	05/17/97, * 05/54	12,600 *13,400
12332000	Middle Fork Rock Creek near Philipsburg	123	06/02	775	<2	06/16/74	1,680
12335500	Nevada Creek above reservoir, near Finn	116	04/10	196	<2	06/02/53	1,800
12340000	Blackfoot River near Bonner	2,290	05/31	8,170	<2	06/10/64	19,200
12354500	Clark Fork at St. Regis	10,709	06/01	38,700	2-5	05/24/48, 05/18/97	68,900 68,900
12358500	Middle Fork Flathead River near West Glacier	1,128	05/31	22,400	2-5	06/09/64	140,000
12370000	Swan River near Bigfork	671	06/03	4,480	<2	06/20/74	8,890

Table 4. Comparisons of minimum daily mean discharge for water year 2002 with minimum instantaneous discharge for period of record at selected stations in Montana

[Abbreviation: e, estimated. Symbol: <, less than]

Station number	Station name	Drainage area (square miles)	Minimum daily mean discharge, water year 2002			Minimum instantaneous discharge, period of record	
			Date	Cubic feet per second	Recurrence interval (years)	Date	Cubic feet per second
05014500	Swiftcurrent Creek at Many Glacier	30.9	01/03	15	<2	11/14,16/76	0
06025500	Big Hole River near Melrose	2,476	08/20	197	<2	08/17/31	49
06054500	Missouri River at Toston	14,669	08/20	1,270	2-5	07/31/89	450
06061500	Prickly Pear Creek near Clancy	192	08/20	e8	5-10	01/26/58	0.5
06089000	Sun River near Vaughn	1,854	05/05	69	5-10	04/24/44	20
06099500	Marias River near Shelby	3,242	10/01	60	5-10	08/20/19	10
06115200	Missouri River near Landusky	40,987	10/01	3,330	2-5	07/08/36	1,120
06120500	Musselshell River at Harlowton	1,125	10/03	3.4	5-10	([1])	0
06174500	Milk River at Nashua	22,332	05/05	13	2-5	([1])	0
06181000	Poplar River near Poplar	3,174	01/24	8.0	<2	([1])	0
06191500	Yellowstone River at Corwin Springs	2,623	12/15	564	2-5	02/02/89	343
06200000	Boulder River at Big Timber	523	10/01	33	5-10	08/26/61	10
06214500	Yellowstone River at Billings	11,795	02/26	850	5-10	12/12/32	430
06289000	Little Bighorn River at State Line, near Wyola	193	03/31	40	<2	02/02/89	18
06308500	Tongue River at Miles City	5,397	07/16	7.3	5-10	07/09/40	0
06329500	Yellowstone River near Sidney	69,103	01/03	2,300	2-5	05/17/61	470
12301300	Tobacco River near Eureka	440	12/28	35	5-10	01/11/63	[2]20
12304500	Yaak River near Troy	766	10/04-06	53	10-20	12/09/72	50
12332000	Middle Fork Rock Creek near Philipsburg	123	02/25	26	<2	02/09/53	5.3
12335500	Nevada Creek above reservoir, near Finn	116	12/26	e3	2-5	([1])	<2.0
12340000	Blackfoot River near Bonner	2,290	02/25	e320	2-5	02/02/89	156
12354500	Clark Fork at St. Regis	10,709	12/28	1,500	2-5	02/03/89	732
12358500	Middle Fork Flathead River near West Glacier	1,128	01/02	284	2-5	11/27/52	<173
12370000	Swan River near Bigfork	671	10/07	250	10-20	01/26-29/30	193

[1]At various times.
[2]Minimum daily mean discharge.

than normal in two of four reservoirs used to supply water primarily for irrigation.

Water Quality

The USGS operates a network of water-quality stations throughout Montana in cooperation with numerous Federal, State, and local agencies and Tribal governments. The network changes from year to year as objectives are achieved or modified, or funding levels change. Some stations are operated for only a few years and commonly are part of a short-term investigation to examine water quality related to a specific condition. Other stations have been in operation for many years and provide a basis for description of long-term water-quality conditions or trends that represent a wide range of hydrologic or land-use variability. Long-term stations typically are located on major streams that represent an important water resource in the area and require data on an ongoing basis for various management concerns. A statewide network of 37 water-quality stations established in 1999 continued in operation through 2002. The network supplements the long-term record of water quality across the State and provides a reference for trends over time. Water-quality sampling started in 2001 at four sites in southeastern Montana (Tongue and Powder River basins) continued in 2002 to assist the States of Montana and Wyoming with assessing the potential effects of discharge from wells used to develop coalbed-methane resources.

Various water-quality measurements are made, either onsite or by laboratory analysis of samples, depending on the objective of the investigation. Several types of water-quality data that describe physical and chemical characteristics are routinely obtained in many sampling programs. Examples of

Table 5. Percentage of normal storage, by month, during water year 2002 for major reservoirs in Montana used to supply water principally for hydroelectric-power generation and irrigation

Reservoir	Usable capacity (acre-feet)	Percentage-of-normal storage based on 1971-2000 period of record											
		2001			2002								
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
Hydroelectric-power generation													
Canyon Ferry Lake	2,043,000	81	81	83	89	92	95	97	89	99	101	101	101
Fort Peck Lake	18,910,000	75	76	77	77	79	80	78	73	73	72	72	73
Bighorn Lake	1,356,000	75	78	80	81	81	82	83	74	69	64	66	64
Lake Koocanusa	5,748,000	98	108	119	128	132	119	116	116	119	104	94	97
Hungry Horse Reservoir	3,451,000	101	102	106	113	118	125	126	108	107	105	104	103
Flathead Lake	1,791,000	94	110	120	122	122	95	88	105	100	99	101	100
Irrigation													
Lima Reservoir	84,050	25	32	36	39	41	41	41	42	11	8.9	12	16
Clark Canyon Reservoir	255,600	33	38	43	49	52	55	55	44	31	15	9.5	14
Gibson Reservoir	99,050	37	47	51	56	58	61	74	94	104	102	73	87
Fresno Reservoir	103,000	27	22	18	14	10	4.3	22	33	84	80	78	86

commonly measured water-quality characteristics are dissolved solids, dissolved oxygen, dissolved nitrite plus nitrate, total phosphorus, and suspended sediment. Guideline concentrations established by the State of Montana[1] serve to illustrate the general range of values protective of human health and aquatic organisms.

The concentration of dissolved solids, which represents the mass (milligrams) of all constituents dissolved in a unit volume (liter) of water, can be determined either from the weight of dry residue that remains after evaporation of a known volume of water that has been filtered to remove particulate material, or estimated from the sum of the individual dissolved major-ion concentrations. An excessive concentration of dissolved solids can render the water unsuitable for certain uses such as human consumption, irrigation of crops, or livestock watering. Water-quality criteria established by the State of Montana[2] indicate that water might not be suitable when dissolved-solids concentrations exceed 500 mg/L if used for human consumption, 1,200 mg/L if used for crop irrigation, and 10,000 mg/L if used for livestock watering.

Dissolved oxygen in surface water is essential for most aquatic organisms and is an indicator of the biochemical condition of the stream or lake. The solubility of oxygen in water is a function of water temperature and barometric pressure; therefore, the oxygen content in surface water is subject to considerable daily and seasonal change. Biological activities such as photosynthesis and decomposition also can cause rapid and large changes in dissolved-oxygen concentration. Dissolved-oxygen concentrations less than 5.0 mg/L for warm-water fish or 8.0 mg/L for cold-water fish may be detrimental if sustained for extended periods of time.[2]

Nitrogen (N) is an essential plant nutrient that occurs in several forms in surface water. Common sources of nitrogen are plant fertilizers, animal waste, and sewage or septic effluent. Nitrite and nitrate are forms of nitrogen that can occur in surface water, although nitrite is seldom present in large amounts in oxygenated water. Dissolved nitrate is a major nutrient for plants; consequently, large concentrations of nitrate in streams and lakes can cause rapid growth of aquatic plants. Nitrate concentrations in excess of 0.3 mg/L as N have the potential to cause nuisance growths of algae and other aquatic plants (Ivalou O'Dell, U.S. Geological Survey, written communication, 1994). In addition, human health can be adversely affected if the nitrate concentration exceeds 10 mg/L as N in drinking water.[3]

Phosphorus (P) is an essential plant nutrient that can stimulate excessive growth of aquatic plants. Total phosphorus includes the inorganic and organic forms of dissolved and suspended phosphorus and is commonly analyzed as an indicator of eutrophication potential. Although

[1]Montana Department of Health and Environmental Sciences, 1986, Montana water quality, 1986: Helena, Montana Department of Health and Environmental Sciences, 1986 Montana 305(b) Report, 198 p.

[2]Montana Department of Environmental Quality, 1999, Montana numeric water quality standards: Helena, Mont., Planning, Prevention and Assistance Division, Standards and Economic Analysis Section Circular WBQ-7, 41 p.

[3]U.S. Environmental Protection Agency, 1991, Maximum Contaminant Levels (section 141.62 of subpart G of part 141, National Revised Primary Drinking Water Regulations): U.S. Code of Federal Regulations Title 40, Parts 100 to 149, revised as of July 1, 1991, p. 673.

phosphorus can originate naturally from igneous and sedimentary rock formations, more common sources include sewage, detergents, fertilizer, and livestock waste. Total phosphorus in streams should not exceed 0.1 mg/L as P to prevent nuisance plant growth according to water-quality criteria established by the State of Montana.[2] Water-quality criteria established by the EPA[4] also indicate that total phosphorus should not exceed 0.05 mg/L as P in streams discharging directly to lakes or 0.025 mg/L as P within lakes.

Suspended sediment is particulate material eroded from the land surface by either wind or water and maintained in suspension in streams by hydraulic energy. The quantity of suspended sediment in streams typically increases during periods of increased runoff, when large amounts of rainfall or snowmelt can rapidly erode soil and the increased streamflow can scour channel sediments. Although large suspended-sediment concentrations can occur naturally in areas underlain by easily erodible geologic materials, land use that disturbs soils also can contribute substantial quantities of sediment to streams and lakes. The quantity of sediment in suspension has important physical and chemical implications for aquatic life. Sediment in suspension during high flow may be deposited in stream channels or lakes where water velocities decrease. In areas of sediment deposition, aquatic insects or fish eggs can be smothered, thereby rendering the bottom habitat unsuitable for their survival. Many chemical constituents such as some metals, phosphorus, and some pesticides tend to sorb strongly to sediment. As a result, chemicals may be readily transported from land sources into river systems where aquatic organisms could be exposed to toxic concentrations.

Statistical summaries of selected water-quality measurements made at eight long-term water-quality stations in Montana are presented in table 6. The range of values for each type of measurement is described by the minimum and maximum values. To compare current and long-term water-quality conditions, the range of values are summarized for both water year 2002 and the period of record through water year 2001. In addition, the central tendency of data collected over the period of record is described by the median (50th percentile).

Ground-Water Levels

Water levels were measured in 53 observation wells during water year 2002. Water levels in most of these wells primarily reflect the response of the ground-water system in the area to natural climatic conditions or human activities. However, several wells are within the zone of influence of human activities, and water levels in these wells can be affected by pumping or infiltration of applied irrigation water. Seventeen of the observation wells are equipped with continuous water-level recorders and have varying lengths of record. Individual data values from the continuous recorders are not presented in this report but are available at the District Office. Hydrographs for the 17 wells equipped with recorders are shown in figure 4, and periodic water-level data for all 53 wells are presented in table 7. Some of the hydrographs show the effects of the below-normal precipitation in many climatological divisions across Montana during water year 2002 (table 1).

[4]U.S. Environmental Protection Agency, 1986, Quality criteria for water, 1986: Washington, D.C., Office of Water Regulations and Standards, EPA 440/5-86-001, unpaged.

Table 6. Statistical summaries of selected water-quality measurements for long-term water-quality stations in Montana for water year 2002 and the period of record through water year 2001

[Symbols: <, less than; --, no data]

Station number	Station name	Water year 2002			Period of record through water year 2001			
		Number of samples	Minimum	Maximum	Number of samples	Minimum	Maximum	Median
	Dissolved solids, in milligrams per liter							
06054500	Missouri River near Toston	2	203	244	165	123	299	238
06178500	East Poplar River at International Boundary	6	702	1,080	257	97	1,480	940
06185500	Missouri River near Culbertson	8	336	381	223	221	579	407
06192500	Yellowstone River near Livingston	2	55	184	258	58	251	154
06326500	Powder River near Locate	8	1,160	2,140	198	408	3,450	1,460
06329500	Yellowstone River near Sidney	2	340	475	293	142	863	469
12301933	Kootenai River below Libby Dam, near Libby	2	109	141	238	55	211	139
12388700	Flathead River at Perma	2	94	100	67	89	106	96
	Dissolved oxygen, in milligrams per liter							
06054500	Missouri River near Toston	0	--	--	321	6.2	13.8	9.6
06178500	East Poplar River at International Boundary	6	8.2	11.1	253	.9	17.2	9.2
06185500	Missouri River near Culbertson	8	8.2	11.6	269	6.0	14.2	9.3
06192500	Yellowstone River near Livingston	0	--	--	198	7.0	14.6	9.5
06326500	Powder River near Locate	0	--	--	311	2.7	15.7	8.6
06329500	Yellowstone River near Sidney	10	8.2	14.3	480	4.4	15.0	8.6
12301933	Kootenai River below Libby Dam, near Libby	8	8.2	11.1	432	6.9	18.3	10.8
12388700	Flathead River at Perma	0	--	--	99	7.4	18.1	10.5
	Dissolved nitrite plus nitrate as nitrogen, in milligrams per liter							
06054500	Missouri River near Toston	4	.014	.147	93	<.05	.38	.08
06178500	East Poplar River at International Boundary	6	<.013	.175	55	<.05	.29	.07
06185500	Missouri River near Culbertson	8	<.013	.077	149	<.005	.38	.007
06192500	Yellowstone River near Livingston	4	.044	.191	235	<.05	1.2	.10
06326500	Powder River near Locate	8	<.013	1.24	136	<.05	1.8	.27
06329500	Yellowstone River near Sidney	11	<.05	.61	224	<.005	.73	.20
12301933	Kootenai River below Libby Dam, near Libby	9	.065	.108	293	<.05	.79	.10
12388700	Flathead River at Perma	4	.011	.085	32	<.005	.21	.02
	Total phosphorus, in milligrams per liter							
06054500	Missouri River near Toston	4	.02	.06	173	<.01	.44	.04
06178500	East Poplar River at International Boundary	6	.01	.09	259	<.01	.40	.03
06185500	Missouri River near Culbertson	8	.08	.63	209	.01	.93	.08
06192500	Yellowstone River near Livingston	4	.02	1.2	113	<.01	.47	.03
06326500	Powder River near Locate	8	.04	3.3	199	.008	26	.17
06329500	Yellowstone River near Sidney	11	.02	.52	355	<.01	2.7	.09
12301933	Kootenai River below Libby Dam, near Libby	9	.002	.008	506	<.001	.26	.009
12388700	Flathead River at Perma	4	.003	.01	79	<.008	.24	.004
	Suspended sediment, in milligrams per liter							
06054500	Missouri River near Toston	4	7	20	227	4	491	18
06178500	East Poplar River at International Boundary	6	51	141	223	4	322	54
06185500	Missouri River near Culbertson	8	95	917	175	19	2,370	249
06192500	Yellowstone River near Livingston	4	5	1,090	156	2	643	9
06326500	Powder River near Locate	8	122	5,270	271	8	41,400	751
06329500	Yellowstone River near Sidney	19	30	1,760	389	10	15,500	326
12301933	Kootenai River below Libby Dam, near Libby	5	2	3	12	1	2	1
12388700	Flathead River at Perma	4	5	18	68	1	65	4

BEAVERHEAD COUNTY

SITE IDENTIFICATION.--450937112393701. Local number 08S09W01CCCC01.

LOCATION.--Lat 45°09'37", long 112°39'37" (NAD 27), Hydrologic Unit 10020002. Owner: U.S. Geological Survey.

HYDROGEOLOGIC UNIT.--Tertiary sediments.

WELL CHARACTERISTICS.--Drilled in 1966, casing diameter 6 in., depth 47 ft.

INSTRUMENTATION.--Graphical water-level recorder from April 1967 to January 1981. Digital water-level recorder set to record every hour from July 1991 to current year.

DATUM.--Elevation of land surface is 5,240 ft (NGVD 29). Measuring point: top of casing, 2.15 ft above land surface.

REMARKS.--Water levels affected by irrigation. All water levels are reported below land surface.

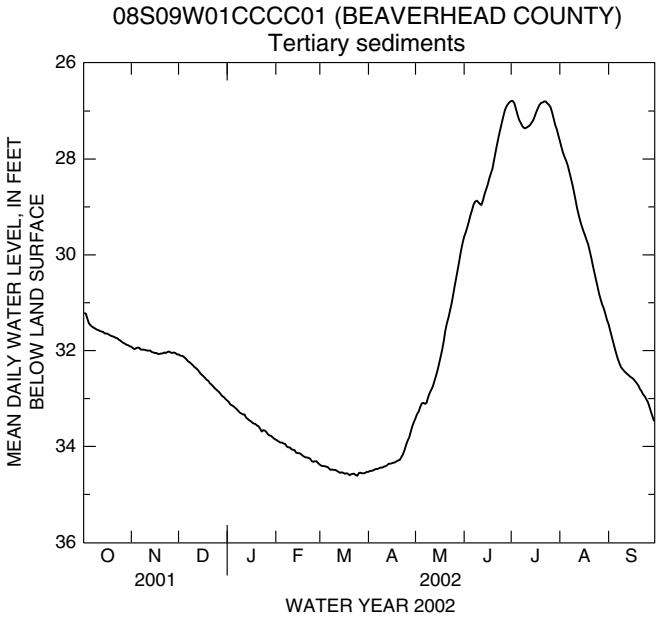
PERIOD OF RECORD.--August 1966 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 10.43 ft, Aug. 10, 1971 (from recorder); lowest, 36.07 ft, Sept. 20, 1989 (measured).

EXTREMES FOR WATER YEAR 2002.--Highest water level 26.76 ft, July 1 and 2 (from recorder); lowest, 34.61 ft, Mar. 25 and 26 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 2	31.22	Jan 23	33.65	Jul 17	27.03
Nov 2	31.94	Mar 26	34.59	Aug 30	31.18
Dec 4	32.13	Jun 5	29.22	Sep 2	32.44



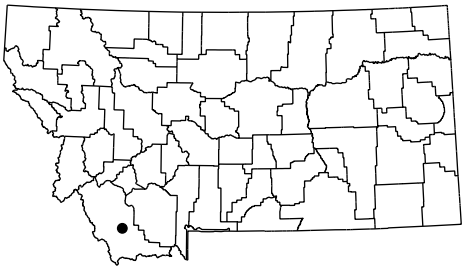


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002.

BEAVERHEAD COUNTY

SITE IDENTIFICATION.--450524112380701. Local number 08S08W31CCAA01.

LOCATION.--Lat 45°05'24", long 112°38'07" (NAD 27), Hydrologic Unit 10020002. Owner: Matador Cattle Company.

HYDROGEOLOGIC UNIT.--Tertiary sediments.

WELL CHARACTERISTICS.--Drilled in December 1992, casing diameter 5 in., depth 217 ft.

INSTRUMENTATION.--Digital water-level recorder set to record every 4 hours from November 1997 to present.

DATUM.--Elevation of land surface is 5,520.7 ft (NGVD 29). Measuring point: top of PVC cap, 2.00 ft above land surface. Prior to Feb. 3, 2000, measuring point was top of PVC casing 2.20 ft above land surface. Reference point of 8.71 ft established on May 20, 1999 (top of steel rod).

REMARKS.--All water levels are reported below land surface.

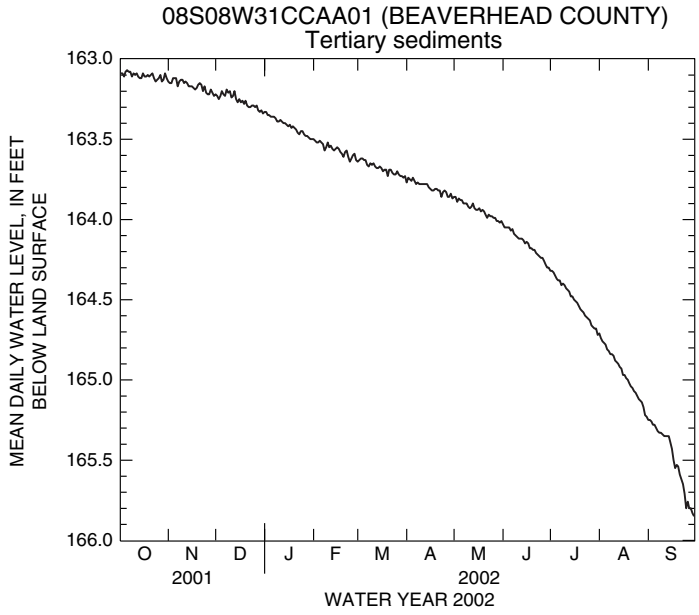
PERIOD OF RECORD.--Measured periodically December 1992 to November 1997 and continuously recorded every 4 hours from November 1997 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 138.72 ft, Oct. 23, 1995 (measured); lowest, 165.90 ft, Sept. 25, 2002 (from recorder)

EXTREMES FOR WATER YEAR 2002.--Highest water level 163.04, Oct. 23 (from recorder); lowest 165.90 Sept. 25 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 2	163.09	Mar 26	163.69	Aug 30	165.18	Sep 19	165.55
Dec 4	163.24	Jun 5	163.88	Sep 12	165.35	Sep 25	165.76
Jan 23	163.50	Jul 17	164.41				



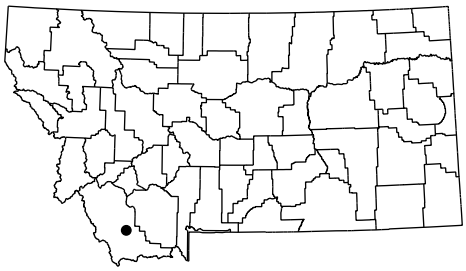


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

CASCADE COUNTY

SITE IDENTIFICATION.--473031111185001. Local number 20N03E11ABAD01.

LOCATION.--Lat 47°03'03", long 111°11'85" (NAD 27), Hydrologic Unit 10030102. Owner: R. Volk.

HYDROGEOLOGIC UNIT.--Mississippian Madison Group.

WELL CHARACTERISTICS.--Drilled in October 1959, casing diameter 8 in. to depth of 206 ft, 6 in. from 206-369 ft.

INSTRUMENTATION.--Digital water-level recorder set to record every 4 hours from Dec. 18, 2001 to present.

DATUM.--Elevation of land surface is 3,320 ft (NGVD 29). Measuring point: top of casing, 1.80 ft above land surface.

REMARKS.--All water levels are reported below land surface.

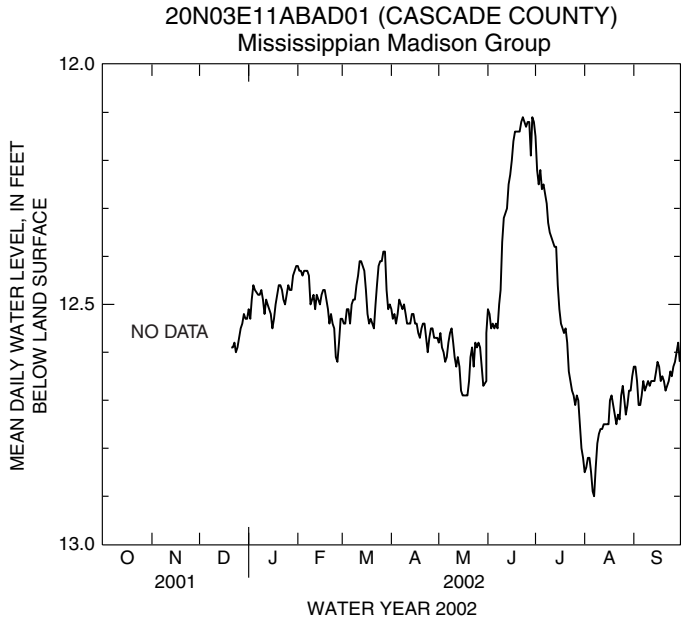
PERIOD OF RECORD.--December 2001 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 12.10 ft, June 22 and 29, 2002 (from recorder); lowest, 12.90 ft, Aug. 6 and 7, 2002 (from recorder).

EXTREMES FOR WATER YEAR 2002.--Highest water level, 12.10 ft, June 22 and 29 (from recorder); lowest, 12.90 ft, Aug. 6 and 7 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec 18	12.59	May 14	12.61
Jan 9	12.46	Jul 25	12.69
Mar 19	12.53	Sep 10	12.65



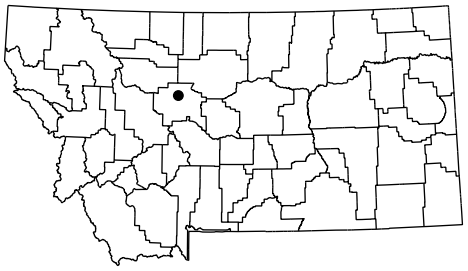


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

CASCADE COUNTY

SITE IDENTIFICATION.--472203111112602. Local number 19N04E26CACC02.

LOCATION.--Lat 47°22'03", long 111°11'26" (NAD 27), Hydrologic Unit 10060006. Owner: E. Chartier.

HYDROGEOLOGIC UNIT.--Lower Cretaceous Kootenai Formation.

WELL CHARACTERISTICS.--Drilled in December 1992, casing diameter 4 in., depth 198 ft.

INSTRUMENTATION.--Digital water-level recorder set to record every 4 hours from Dec. 16, 1998 to present (Montana Bureau of Mines and Geology operated site from May 1987 to October 1998).

DATUM.--Elevation of land surface is 3,817 ft (NGVD 29). Measuring point: top of casing, 1.10 ft above land surface. Reference point of 3,817.19 established on Apr. 26, 1999 (top of steel rod).

REMARKS.--All water levels are reported below land surface.

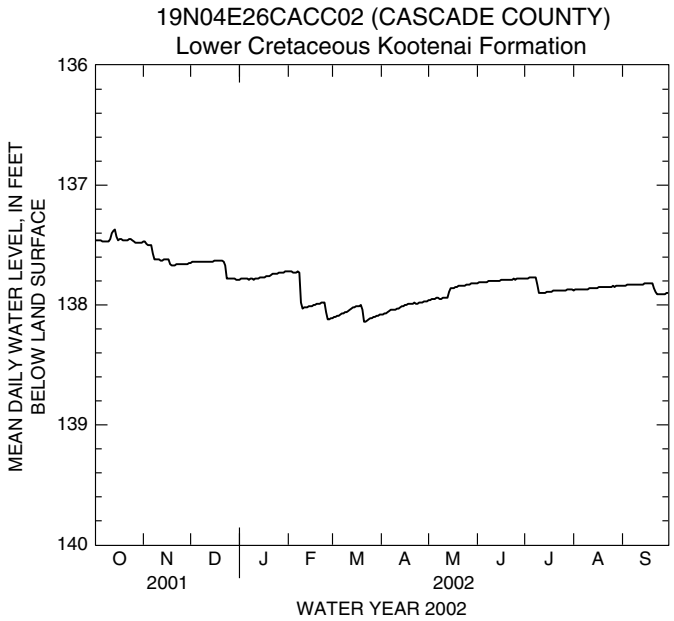
PERIOD OF RECORD.--August 1984 to May 1987 and December 1998 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 137.03 ft, Apr. 8-13, 1999 (from recorder); lowest, 138.15 ft, Mar. 21, 2002 (from recorder).

EXTREMES FOR WATER YEAR 2002.--Highest water level, 137.36 ft, Oct. 15 (from recorder); lowest, 138.15 ft, Mar. 21 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 11	137.47	Mar 19	137.98	Jul 25	137.86
Oct 15	137.41	May 14	137.86	Sep 10	137.82
Jan 10	137.78				



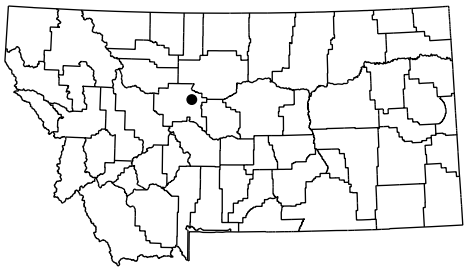


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

GALLATIN COUNTY

SITE IDENTIFICATION.--454809111095401. Local number 01N04E25DCDD01.

LOCATION.--Lat 45°48'09", long 111°09'54" (NAD 27), Hydrologic Unit 10020008. Owner: U.S. Geological Survey.

HYDROGEOLOGIC UNIT.--Quaternary alluvium.

WELL CHARACTERISTICS.--Drilled in August 1951, casing diameter 6 in. to depth of 400 ft. Well filled with gravel to within 101 ft of land surface.

INSTRUMENTATION.--Graphic recorder from May 1954 to August 1977. Digital water-level recorder set to record every hour from May 1991 to present.

DATUM.--Elevation of land surface is 4,385 ft (NGVD 29). Measuring point: top of casing 1.60 ft above land surface.

REMARKS.--All water levels are reported below land surface.

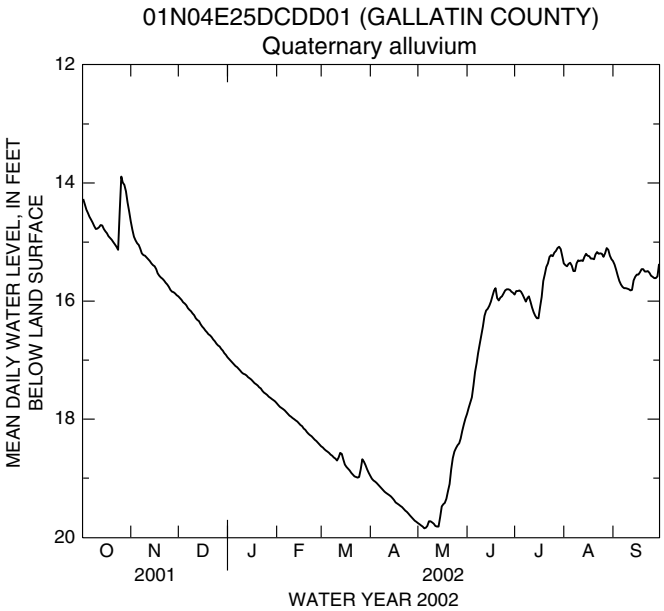
PERIOD OF RECORD.--1954 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 5.91 ft, Aug. 13, 1968 (from recorder); lowest, 19.86 ft, May 6, 2002 (from recorder).

EXTREMES FOR WATER YEAR 2002.--Highest water level 13.76, Oct. 26 (from recorder); lowest, 19.86 ft, May 6 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 15	14.78	Jan 11	17.25
Nov 2	14.81	Jan 23	17.52
Nov 29	15.87	Mar 15	18.62



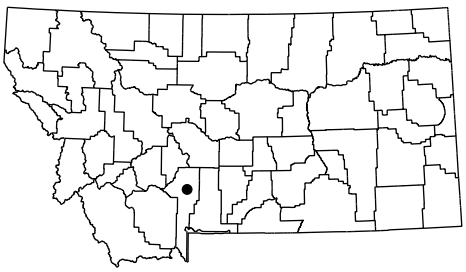


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

GARFIELD COUNTY

SITE IDENTIFICATION.--470709106061401. Local number 16N44E25BBAC01.

LOCATION.--Lat 47°07'09", long 106°06'14" (NAD 27), Hydrologic Unit 10040104. Owner: Burlington Northern Santa Fe Railroad.

HYDROGEOLOGIC UNIT.--Paleocene Tongue River Member of Fort Union Formation.

WELL CHARACTERISTICS.--Drilled in October 1980, casing diameter 4 in., depth 103 ft.

INSTRUMENTATION.--Digital water-level recorder set to record every 4 hours from Apr. 13, 1998 to present.

DATUM.--Elevation of land surface is 2,645 ft (NGVD 29). Measuring point: top of casing, 1.10 ft above land surface. Reference point of 2.99 ft established Oct. 12, 1999 (top of steel rod).

REMARKS.--All water levels are reported below land surface.

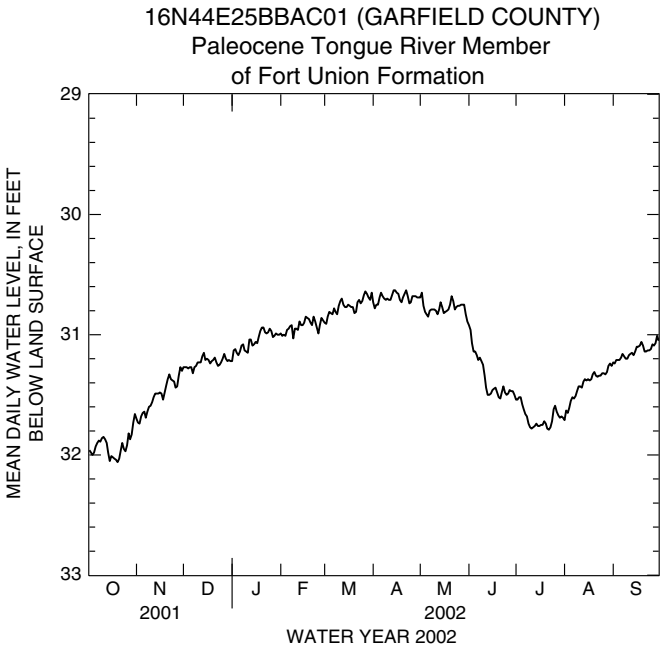
PERIOD OF RECORD.--Measured annually from 1984 to 1992 and recorded every 4 hours from Apr. 13, 1998 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 29.73 ft, Apr. 13, 1999 (from recorder); lowest, 32.08 ft, Oct. 20, 2001 (from recorder).

EXTREMES FOR WATER YEAR 2002.--Highest water level 30.59 ft, Apr. 19 (from recorder); lowest, 32.08 ft, Oct. 20 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 10	31.90	May 30	30.78
Jan 8	31.08	Jul 2	31.58
Mar 12	30.70		



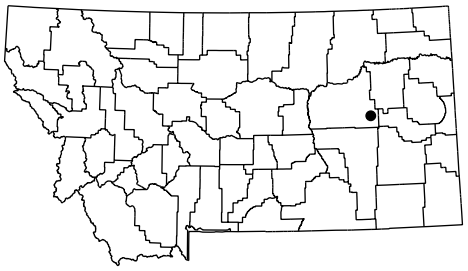


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

LAKE COUNTY

SITE IDENTIFICATION.--470946114013201. Local number 16N19W08ACBD01.

LOCATION.--Lat 47°09'46", long 114°01'32" (NAD 27), Hydrologic Unit 17010212. Owner: Makespeace.

HYDROGEOLOGIC UNIT.--Pleistocene alluvium.

WELL CHARACTERISTICS.--Drilled in August 1988, casing diameter 6 in. to depth of 322 ft and 5 in. from 322-398 ft. Total depth is 398 ft.

INSTRUMENTATION.--Digital water-level recorder set to record every hour from Sept. 13, 1990 to present.

DATUM.--Elevation of land surface is 3,300 ft (NGVD 29). Measuring point: top of casing, 1.50 ft above land surface.

REMARKS.--No data Oct. 2 and 3, 2001 and Mar. 25 and 26, 2002. All water levels are reported below land surface.

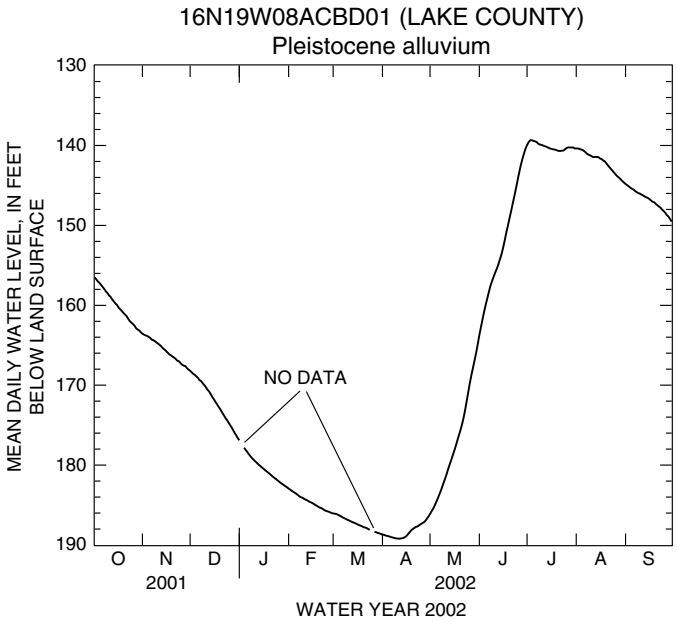
PERIOD OF RECORD.--Measured annually from 1988 to 1990 and recorded every hour from Sept. 13, 1990 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 137.92 ft, July 14, 1993 (from recorder); lowest, 189.22 ft, Apr. 11 and 12, 2002 (from recorder).

EXTREMES FOR WATER YEAR 2002.--Highest water level, 139.29 ft on July 3 (from recorder); lowest, 189.22 ft, Apr. 11 and 12 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 11	158.75	May 30	145.23
Dec 5	168.88	Aug 7	140.85
Feb 14	184.59		



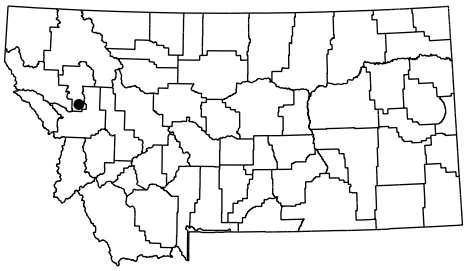


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

MC CONE COUNTY

SITE IDENTIFICATION.--480034105195401. Local number 26N49E13ACAB01.

LOCATION.--Lat 48°00'34", long 105°19'54" (NAD 27), Hydrologic Unit 10060002. Owner: U.S. Geological Survey and Bureau of Land Management.

HYDROGEOLOGIC UNIT.--Upper Cretaceous Hell Creek Formation and Fox Hills Sandstone.

WELL CHARACTERISTICS.--Drilled in August 1981, casing diameter 4 in., depth 180 ft.

INSTRUMENTATION.--Digital water-level recorder set to record every 6 hours from April 1998 to Aug. 3, 1999. Electronic water-level recorder set to record every 4 hours from Aug. 3, 1999 to present.

DATUM.--Elevation of land surface is 2,040 ft (NGVD 29). Measuring point: top of casing, 1.60 ft above land surface. Reference point of 41.72 established May 11, 1999 (top of steel rod).

REMARKS.--All water levels are reported below land surface.

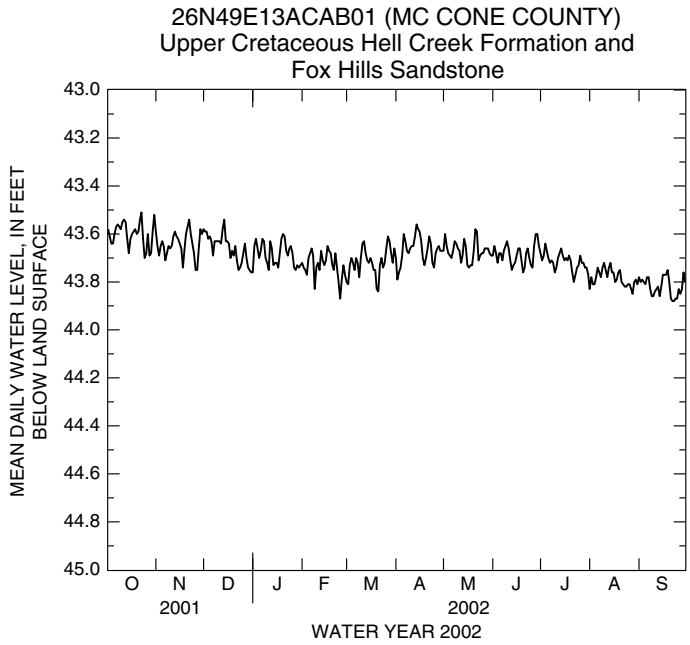
PERIOD OF RECORD.--Measured annually from 1982 to 1992, recorded every 6 hours from Apr. 14, 1998 to Aug. 3, 1999 and recorded every 4 hours from Aug. 3, 1999 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 42.37 ft, Aug. 28, 1992 (measured); lowest, 44.04 ft, Sept. 21, 1990 (measured).

EXTREMES FOR WATER YEAR 2002.--Highest water level, 43.48 ft on Oct. 23 (from recorder); lowest, 43.89 ft on Feb. 25 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 10	43.59	Mar 12	43.60
Jan 8	43.62	Jul 2	43.69



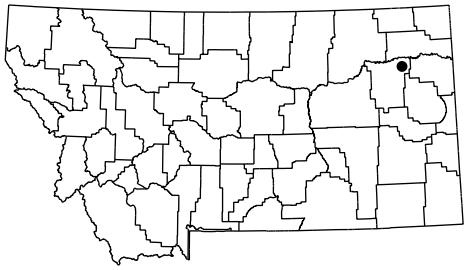


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

POWDER RIVER COUNTY

SITE IDENTIFICATION.--453107106110601. Local number 04S45E04BDDB01.

LOCATION.--Lat 45°31'07", long 106°11'06" (NAD 27), Hydrologic Unit 10090102. Owner: U.S. Geological Survey.

HYDROGEOLOGIC UNIT.--Quaternary alluvium.

WELL CHARACTERISTICS.--Drilled in December 1979, casing diameter 4 in., depth 68 ft.

INSTRUMENTATION.--Graphical water-level recorder from April 1980 to October 1982. Digital water-level recorder set to record every 12 hours from October 1982 to November 1996, and reset to record every hour from November 1996 to present.

DATUM.--Elevation of land surface is 3,020 ft (NGVD 29). Measuring point: top of casing, 1.70 ft above land surface.

REMARKS.--All water levels are reported below land surface.

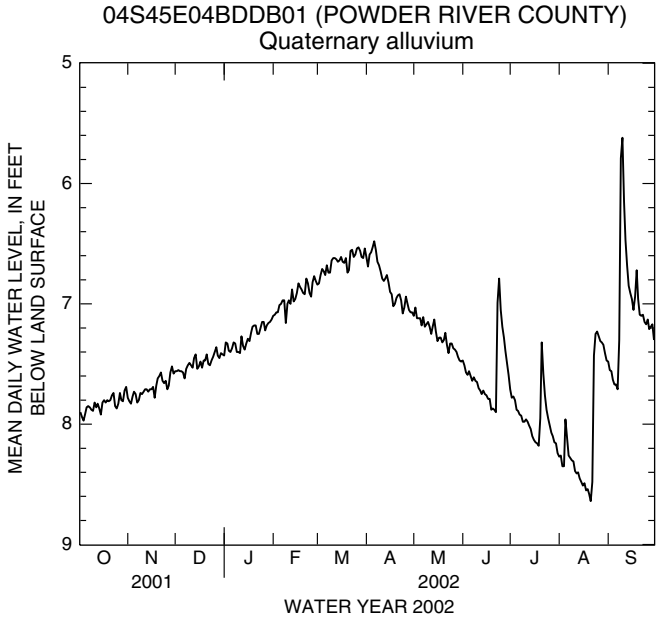
PERIOD OF RECORD.--Measured intermittently from December 1979 to April 1980 and recorded April 1980 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.67 ft, Apr. 11, 1997 (from recorder); lowest, 11.45 ft, Oct. 5, 1992 (from recorder).

EXTREMES FOR WATER YEAR 2002.--Highest water level, 5.37 ft, Sep. 10 (from recorder); lowest, 8.67 ft, Aug. 21 and 22 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 2	7.90	Mar 14	6.64	May 16	7.28
Nov 14	7.71	May 14	7.11	Jul 1	7.63
Jan 7	7.31				



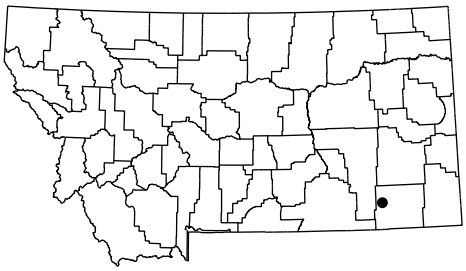


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

POWELL COUNTY

SITE IDENTIFICATION.--470049113035401. Local number 15N12W36BCDD01.

LOCATION.--Lat 47°00'49", long 113°03'54" (NAD 27), Hydrologic Unit 17010203. Owner: Montana Department of Transportation.

HYDROGEOLOGIC UNIT.--Cenozoic rocks.

WELL CHARACTERISTICS.--Drilled in September 1964, casing diameter 6 in., depth 206 ft.

INSTRUMENTATION.--Digital water-level recorder installed April 1991 and set to record every hour from April 1991 to present.

DATUM.--Elevation of land surface is 4,278 ft (NGVD 29). Measuring point: top of casing, 1.0 ft above land surface.

REMARKS.--All water levels are reported below land surface.

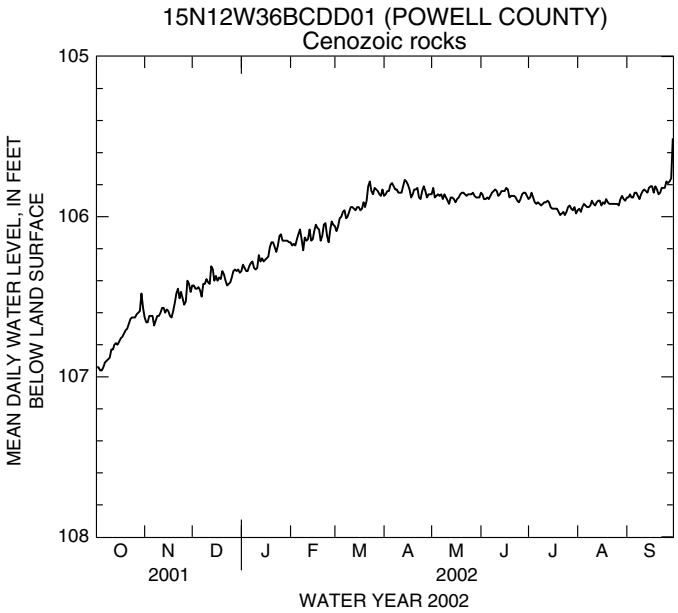
PERIOD OF RECORD.--Measured periodically from 1975 to 1991 and continuously recorded every hour from April 1991 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 95.90 ft, Dec. 12, 1991 (measured); lowest, 126.72 ft, Oct. 11, 1984 (measured).

EXTREMES FOR WATER YEAR 2002.--Highest water level, 105.51, Sept. 30 (from recorder); lowest, 106.98 ft, Oct. 4 (measured and from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 4	106.98	Feb 28	106.13	Apr 9	105.83
Oct 30	106.58	Apr 8	105.83	May 13	105.94
Jan 3	106.29				



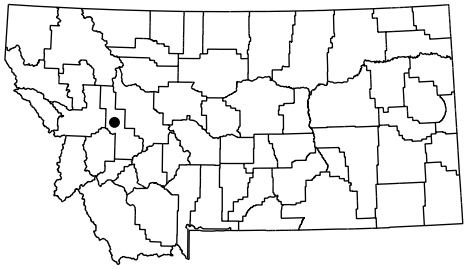


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

RAVALLI COUNTY

SITE IDENTIFICATION.--463750114033001. Local number 10N20W13BBA 01.

LOCATION.--Lat 46°37'50", long 114°03'30" (NAD 27), Hydrologic Unit 17010205. Owner: Bonneville Power Administration.

HYDROGEOLOGIC UNIT.--Quaternary alluvium.

WELL CHARACTERISTICS.--Drilled in September 1959, casing diameter 6 in., depth 50 ft.

INSTRUMENTATION.--Digital water-level recorder set to record every hour from April 1991 to present.

DATUM.--Elevation of land surface is 3,204 ft (NGVD 29). Measuring point: top of casing, 2.00 ft above land surface.

REMARKS.--All water levels are reported below land surface.

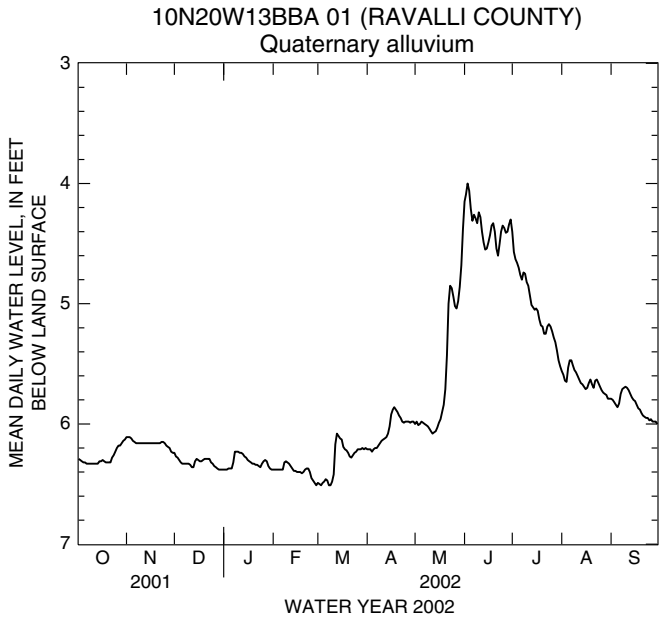
PERIOD OF RECORD.--Measured periodically from 1959 to 1982 and recorded every 1 hour from April 1991 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.48 ft, June 15, 1959 (measured); lowest, 7.21 ft, Sept. 21, 1977 (measured).

EXTREMES FOR WATER YEAR 2002.--Highest water level, 3.99 ft, June 3 (from recorder); lowest, 6.53 ft, Mar. 9 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 1	6.29	Feb 20	6.40
Nov 19	6.16	Apr 3	6.22
Jan 4	6.37	Aug 22	5.62



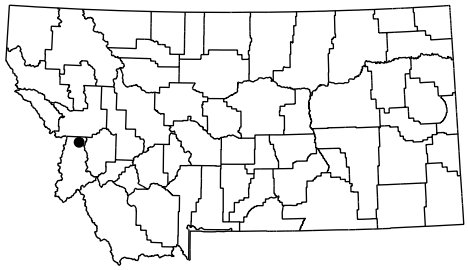


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

RAVALLI COUNTY

SITE IDENTIFICATION.--461518114090802. Local number 06N20W19CCCC02.

LOCATION.--Lat 46°15'18", long 114°09'08" (NAD 27), Hydrologic Unit 17010205. Owner: Bonneville Power Administration.

HYDROGEOLOGIC UNIT.--Quaternary alluvium.

WELL CHARACTERISTICS.--Drilled in September 1970, casing diameter 6 in., depth 40 ft.

INSTRUMENTATION.--Graphic recorder from September 1970 to January 1985. Digital water-level recorder set to record every hour from January 1985 to present.

DATUM.--Elevation of land surface is 3,558.3 ft (NGVD 29). Measuring point: top of casing, 1.30 ft above land surface.

REMARKS.--All water levels are reported below land surface.

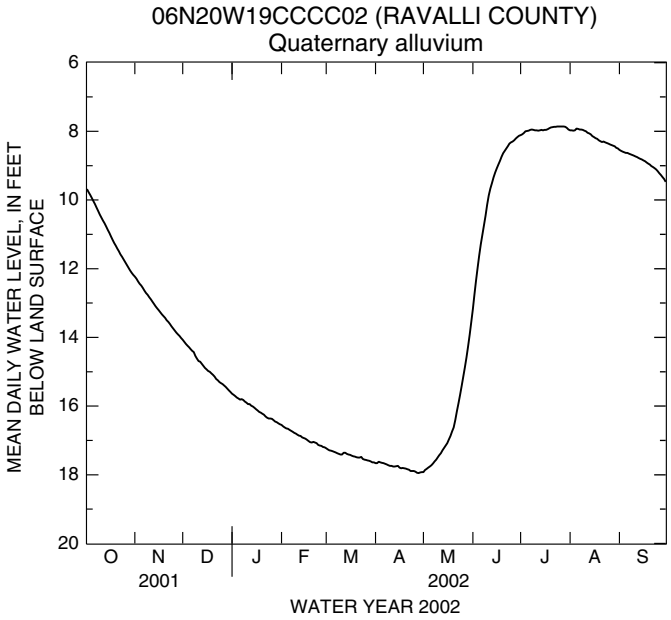
PERIOD OF RECORD.--September 1970 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.48 ft, Sept. 2, 1979 (from recorder); lowest, 18.32 ft, May 1, 1985 (measured).

EXTREMES FOR WATER YEAR 2002.--Highest water level, 7.85 ft, July 26 and 27 (from recorder); lowest, 17.95 ft, Apr. 28 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 2	9.72	Dec 31	14.78	Feb 20	17.08	Jul 17	7.97
Nov 20	13.46	Jan 3	15.70	Apr 2	17.67	Aug 21	8.33
Dec 5	14.31	Jan 15	16.05				



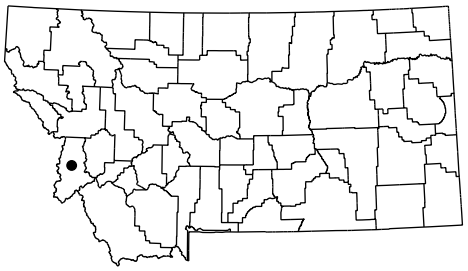


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

ROSEBUD COUNTY

SITE IDENTIFICATION.--451746106301101. Local number 06S43E19DDBA02.

LOCATION.--Lat 45°17'46", long 106°30'11" (NAD 27), Hydrologic Unit 10090101. Owner: U.S. Geological Survey and Art Hayes.

HYDROGEOLOGIC UNIT.--Quaternary alluvium.

WELL CHARACTERISTICS.--Drilled in October 1986, casing diameter 4 in., depth 67 ft.

INSTRUMENTATION.--Digital water-level recorder from April 1989 to current year.

DATUM.--Elevation of land surface is 3,170 ft (NGVD 29). Measuring point: top of casing, 1.40 ft above land surface.

REMARKS.--All water levels are reported below land surface.

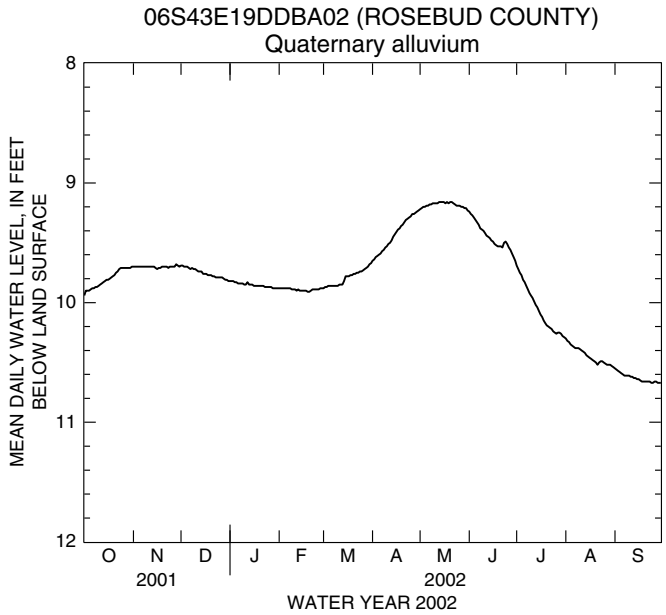
PERIOD OF RECORD.--April 1987 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.47 ft, Apr. 7, 1987 (measured); lowest, 11.40 ft, Jan. 11, 1995 (measured).

EXTREMES FOR WATER YEAR 2002.--Highest water level 9.16 ft, May 13-16, 18-21 (from recorder); lowest, 10.67 ft, Sept. 23-30 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 1	9.86	Mar 14	9.78
Nov 15	9.70	May 16	9.18
Jan 7	9.81	Jul 1	9.73



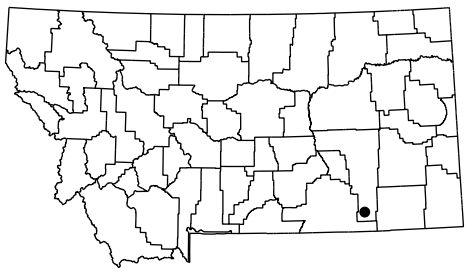


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

SANDERS COUNTY

SITE IDENTIFICATION.--474251114385201. Local number 23N24W34ADAA01.

LOCATION.--Lat 47°42'51", long 114°38'52" (NAD 27), Hydrologic Unit 17010212. Owner: Bureau of Indian Affairs.

HYDROGEOLOGIC UNIT.--Quaternary alluvium.

WELL CHARACTERISTICS.--Drilled in February 1941, casing diameter 20 in. from 1.00 ft above land surface to 300 ft below land surface, and 18 in. from 300-377 ft. Total depth is 377 ft.

INSTRUMENTATION.--Graphical water-level recorder from January 1971 to January 1985. Digital water-level recorder set to record every hour from January 1985 to present.

DATUM.--Elevation of land surface is 2,878.57 ft (NGVD 29). Measuring point: top of casing, 1.00 ft above land surface.

REMARKS.--Water levels affected by pumpage. Well located near Lonepine. All water levels are reported below land surface.

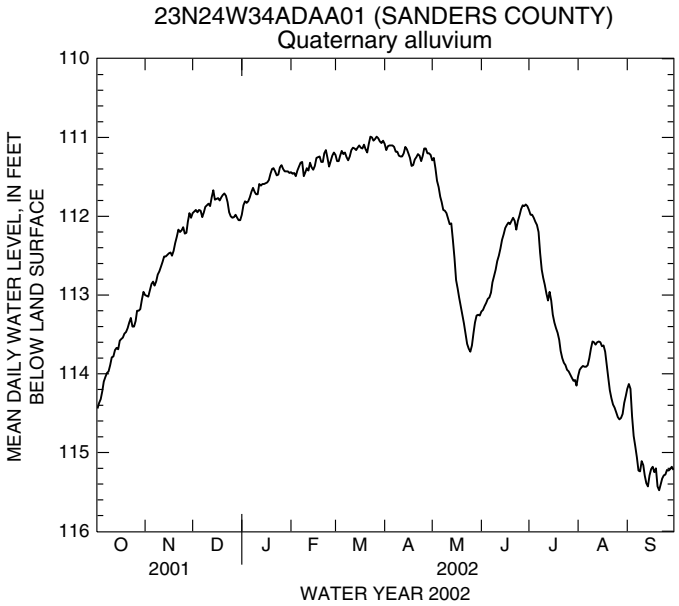
PERIOD OF RECORD.--March to May 1943, October 1970 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 102.43 ft, Mar. 20, 1981 (from recorder); lowest, 119.96 ft, Sept. 6, 1995 (from recorder).

EXTREMES FOR WATER YEAR 2002.--Highest water level, 110.95 ft, Mar. 27 (from recorder); lowest, 115.53 ft, Sept. 20 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 16	113.59	Apr 4	111.12
Feb 13	111.27	May 6	111.78
Feb 14	111.41	Aug 8	113.88



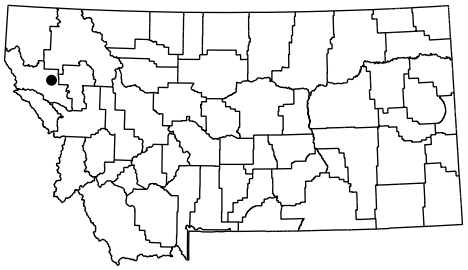


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

SHERIDAN COUNTY

SITE IDENTIFICATION.--483650104084001. Local number 33N58E17ADDD01.

LOCATION.--Lat 48°36'50", long 104°08'40" (NAD 27), Hydrologic Unit 10060006. Owner: Vern Guenther.

HYDROGEOLOGIC UNIT.--Pleistocene outwash.

WELL CHARACTERISTICS.--Drilled in 1984, casing diameter 4 in., depth 130 ft.

INSTRUMENTATION.--Digital water-level recorder set to record every hour from April to Oct. 18 1985, every 12 hours from Oct. 19, 1985 to Apr. 7, 1993, and every 4 hours from Apr. 8, 1993 to present.

DATUM.--Elevation of land surface is 1,992 ft (NGVD 29). Measuring point: top of casing, 2.10 ft above land surface.

REMARKS.--No record May 2-4 and June 22-30, 2002. All water levels are reported below land surface.

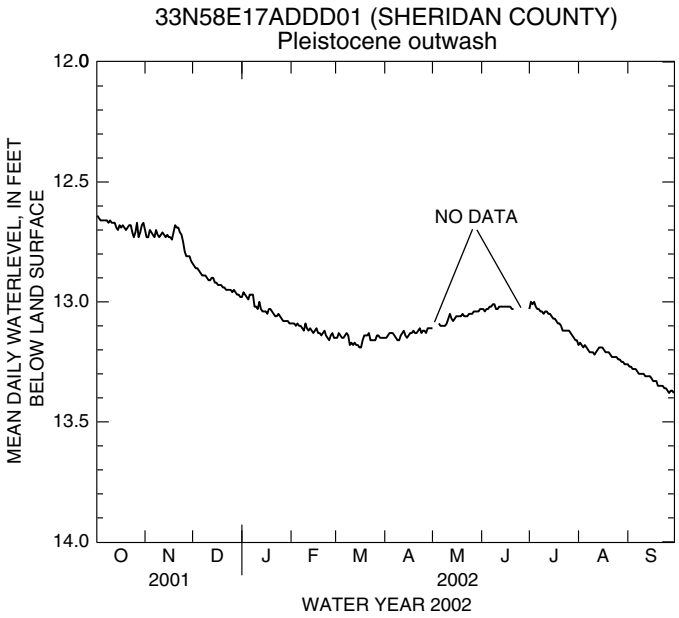
PERIOD OF RECORD.--August 1984 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.73 ft, June 19-26, 1999 (from recorder); lowest, 15.51 ft, Aug. 20-23, 1992 (from recorder).

EXTREMES FOR WATER YEAR 2002.--Highest water level, 12.64 ft, Oct. 1 and 2 (from recorder); lowest, 13.39 ft, Sept. 30 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 10	12.69	Mar 13	13.15	Jul 2	13.02
Jan 8	12.98	Jul 1	13.02	Aug 13	13.22
Feb 25	13.15				



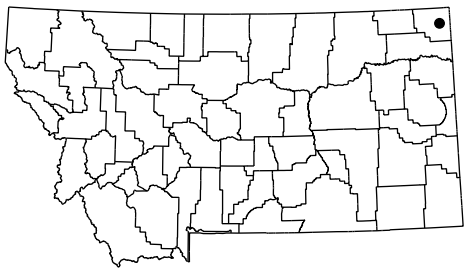


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

SHERIDAN COUNTY

SITE IDENTIFICATION.--483318104105402. Local number 32N58E04DBBD02.

LOCATION.--Lat 48°33'18", long 104°10'54" (NAD 27), Hydrologic Unit 10060006. Owner: U.S. Fish and Wildlife Service.

HYDROGEOLOGIC UNIT.--Pleistocene outwash.

WELL CHARACTERISTICS.--Drilled in July 1984, casing diameter 4 in., depth 143 ft.

INSTRUMENTATION.--Graphical water-level recorder from August 1984 through May 1985. Digital water-level recorder set to record every 24 hours from May 1985 to April 1996. Digital recorder set to record every hour from April 1996 to present.

DATUM.--Elevation of land surface is 1,977 ft (NGVD 1929). Measuring point: top of recorder shelf, 2.20 ft above land surface. From August 1984 to April 1994, measuring point was top of PVC casing, 1.50 ft above land surface.

REMARKS.--No record from Jan. 27 to Mar. 13, 2002. All water levels are reported below land surface.

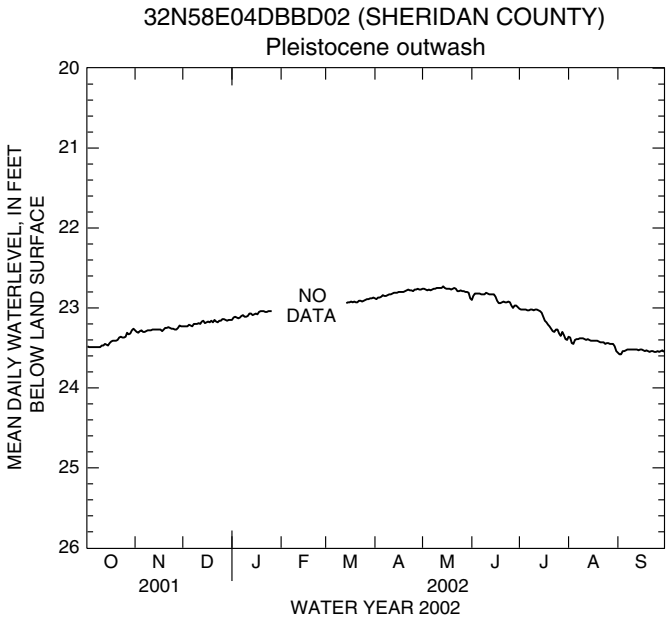
PERIOD OF RECORD.--August 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.46 ft, Apr. 27 and 28, 2001 (from recorder); lowest, 25.90 ft, Aug. 18 and 19, 1992 (from recorder).

EXTREMES FOR WATER YEAR 2002.--Highest water level, 22.73 ft, May 14 (from recorder); lowest, 23.60 ft, Sept. 3 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 10	23.48	Mar 13	22.94	Jul 2	23.00
Jan 8	23.10	Jul 1	23.00	Aug 12	23.40
Feb 25	22.98				



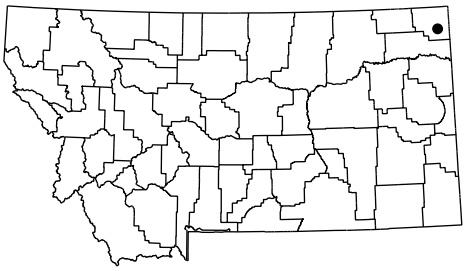


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

TETON COUNTY

SITE IDENTIFICATION.--474005111583803. Local number 22N03W15BAAD03.

LOCATION.--Lat 47°40'05", long 111°58'38" (NAD 27), Hydrologic Unit 10030104. Owner: Marvin Klinker.

HYDROGEOLOGIC UNIT.--Pleistocene terrace deposits.

WELL CHARACTERISTICS.--Drilled in 1991, casing diameter 4 in., depth 47 ft.

INSTRUMENTATION.--Digital water-level recorder set to record every hour from November 1991 to present.

DATUM.--Elevation of land surface is 5,240 ft (NGVD 29). Measuring point: top of casing, 1.90 ft above land surface from November 1991 to Mar. 12, 2001 and 1.80 ft above land surface from Mar. 12, 2001 to present.

REMARKS.--Water levels affected by irrigation. All water levels are reported below land surface.

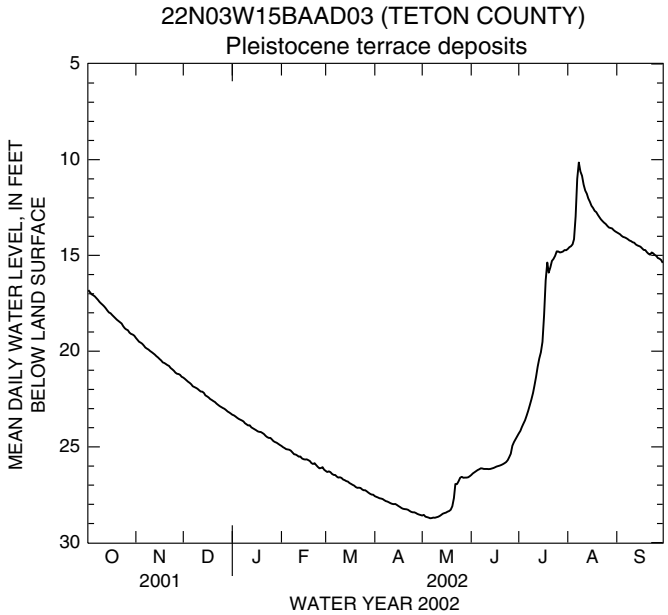
PERIOD OF RECORD.--November 1991 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 10.03 ft, Aug. 5, 1999 (from recorder); lowest, 28.74 ft, May 6 and 7, 2002 (from recorder).

EXTREMES FOR WATER YEAR 2002.--Highest water level, 9.69 ft, Aug. 8 (from recorder); lowest, 28.74 ft, May 6 and 7 (from recorder).

MEASURED WATER LEVEL, IN FEET BELOW LAND SURFACE,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 11	17.61	May 14	28.48
Jan 10	23.83	Jul 25	14.85
Mar 19	27.04	Sep 10	14.24



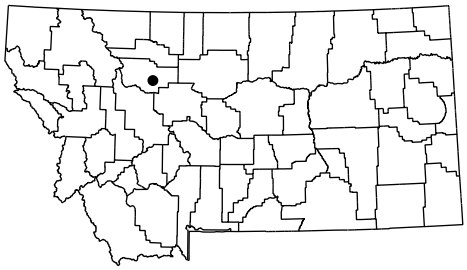


Figure 4. Fluctuations of water levels in selected observation wells in Montana for water year 2002--Continued.

Table 7. Periodic water levels in selected observation wells in Montana, water year 2002

[Local number--composed of township, range, section, position within a section, and a sequence number. Depth of well--in feet below land surface. Water level--in feet below or above (+) land surface. --, no data]

Local number	Depth of well	Aquifer	Date of measurement	Water level
		BEAVERHEAD COUNTY		
07S08W17DDC 02	50	Tertiary sediments	10-02-01	28.73
			06-05-02	34.02
08S09W01CCCC01	47	Tertiary sediments	10-02-01	31.22
			11-02-01	31.94
			12-04-01	32.13
			01-23-02	33.65
			03-26-02	34.59
			06-05-02	29.22
			07-17-02	27.03
			08-30-02	31.18
			09-02-02	32.44
08S08W31CCAA01	217	Tertiary sediments	10-02-01	163.09
			12-04-01	163.24
			01-23-02	163.50
			03-26-02	163.69
			06-05-02	163.88
			07-17-02	164.41
			08-30-02	165.18
			09-12-02	165.35
			09-19-02	165.55
			09-25-02	165.76
		CASCADE COUNTY		
20N03E11ABAD01	369	Mississippian Madison Group	12-18-01	12.59
			01-09-02	12.46
			03-19-02	12.53
			05-14-02	12.61
			07-25-02	12.69
			09-10-02	12.65
19N04E26CACC02	198	Lower Cretaceous Kootenai Formation	10-11-01	137.47
			10-15-01	137.41
			01-10-02	137.78
			03-19-02	137.98
			05-14-02	137.86
			07-25-02	137.86
			09-10-02	137.82
		GALLATIN COUNTY		
01N04E25DCDD01	101	Quaternary alluvium	10-15-01	14.78
			11-02-01	14.81
			11-29-01	15.87
			01-11-02	17.25
			01-23-02	17.52
			03-15-02	18.62
		GARFIELD COUNTY		
16N44E25BBAC01	103	Paleocene Tongue River Member of Fort Union Formation	10-10-01	31.90
			01-08-02	31.08
			03-12-02	30.70
			05-30-02	30.78
			07-02-02	31.58

Table 7. Periodic water levels in selected observation wells in Montana, water year 2002 (Continued)

Local number	Depth of well	Aquifer	Date of measurement	Water level
		JEFFERSON COUNTY		
09N03W14DACC01	145	Upper Cambrian Hasmark Formation	10-01-01	26.50
			11-09-01	25.61
			11-28-01	25.25
			01-03-02	21.58
			01-29-02	23.17
			02-25-02	21.73
			03-28-02	25.53
			05-01-02	27.56
			05-30-02	30.65
			06-26-02	27.71
			07-26-02	21.91
			08-27-02	31.47
			09-26-02	25.77
09N03W17DBC 01	207	Upper Cretaceous Boulder batholith intrusives	10-01-01	36.85
			11-09-01	37.00
			11-28-01	38.11
			01-03-02	40.09
			01-29-02	37.01
			02-25-02	37.59
			03-28-02	36.89
			05-01-02	36.89
			05-30-02	39.04
			06-26-02	35.00
			07-26-02	35.39
			08-27-02	36.21
			09-26-02	36.89
		LAKE COUNTY		
16N19W08ACBD01	398	Pleistocene alluvium	10-11-01	158.75
			12-05-01	168.88
			02-14-02	184.59
			05-30-02	145.23
			08-07-02	140.85
		LEWIS AND CLARK COUNTY		
12N06W36BCDD01	70	Upper Cretaceous Marysville intrusives	10-01-01	19.74
			11-09-01	20.73
			11-28-01	22.15
			01-03-02	22.84
			01-29-02	23.11
			02-26-02	23.13
			03-28-02	23.34
			05-01-02	20.37
			05-30-02	20.60
			06-27-02	19.47
			08-27-02	17.35
			09-26-02	20.21
11N05W14DDDD01	500	Middle Proterozoic Helena Formation	10-01-01	36.42
			11-09-01	34.89
			11-28-01	34.21
			01-03-02	33.69
			01-29-02	33.59
			02-26-02	33.47
			03-28-02	33.30
			05-01-02	32.88

Table 7. Periodic water levels in selected observation wells in Montana, water year 2002 (Continued)

Local number	Depth of well	Aquifer	Date of measurement	Water level
		LEWIS AND CLARK COUNTY--Continued		
11N05W14DDDD01 Continued	500	Middle Proterozoic Helena Formation	05-30-02	32.76
			06-27-02	32.58
			07-28-02	32.40
			08-27-02	32.06
			09-26-02	32.31
11N04W06DACA01	114	Middle Proterozoic Spokane Formation	10-01-01	43.89
			11-09-01	44.64
			11-28-01	45.02
			01-03-02	43.73
			01-29-02	43.69
			02-26-02	43.74
			03-28-02	43.67
			05-01-02	43.71
			05-30-02	43.60
			06-27-02	44.03
			07-29-02	51.50
			09-26-02	44.35
11N04W12CDDD01	176	Middle Proterozoic Spokane Formation	10-01-01	139.19
			11-13-01	131.59
			11-28-01	136.37
			01-03-02	135.58
			01-29-02	130.91
			02-26-02	129.47
			03-28-02	133.90
			05-01-02	130.47
			05-30-02	136.14
			06-27-02	141.11
			07-02-02	140.86
			07-29-02	138.39
			08-27-02	140.23
			09-26-02	140.00
11N04W24BBAB01	120	Middle Proterozoic Spokane Formation	07-26-02	93.89
11N04W34DCBA01	125	Upper Cretaceous Scratchgravel Hills intrusives	10-01-01	16.59
			11-09-01	16.19
			11-28-01	18.99
			01-03-02	18.01
			01-29-02	18.20
			02-25-02	18.22
			03-28-02	17.75
			05-01-02	16.71
			05-30-02	17.59
			06-26-02	15.49
			08-27-02	16.29
			09-26-02	16.70
11N03W05CCBC01	110	Middle Proterozoic Spokane Formation	10-01-01	64.51
			11-28-01	66.84
			01-03-02	67.39
			01-29-02	67.75
			02-26-02	65.17
			03-28-02	66.20
			05-01-02	64.35
			05-30-02	64.57
			06-27-02	69.23

Table 7. Periodic water levels in selected observation wells in Montana, water year 2002 (Continued)

Local number	Depth of well	Aquifer	Date of measurement	Water level
		LEWIS AND CLARK COUNTY--Continued		
11N03W05CCBC01 Continued	110	Middle Proterozoic Spokane Formation	07-02-02	69.01
			07-29-02	67.95
			08-27-02	Dry
			09-26-02	Dry
11N03W08BCBA01	208	Middle Proterozoic Spokane Formation	10-01-01	57.54
			11-13-01	57.30
			11-28-01	57.12
			01-03-02	56.94
			01-29-02	56.94
			02-26-02	56.91
			03-28-02	57.89
			05-01-02	56.78
			05-30-02	57.79
			06-27-02	62.65
			08-27-02	58.14
			09-26-02	58.14
11N03W11BBBA01	350	Middle Proterozoic Spokane Formation	10-01-01	170.74
			11-13-01	166.55
			11-28-01	168.05
			01-03-02	165.11
			01-29-02	162.58
			02-26-02	163.87
			03-28-02	164.35
			05-01-02	164.55
			05-30-02	164.18
			06-27-02	166.39
			07-28-02	166.79
			08-27-02	164.44
			09-26-02	164.62
10N05W03ABDD01	140	Middle Cambrian Wolsey Shale	10-01-01	23.52
			11-09-01	23.06
			11-28-01	23.08
			01-03-02	23.19
			01-29-02	23.24
			02-26-02	22.97
			03-28-02	22.32
			05-01-02	22.46
			05-30-02	21.51
			06-27-02	25.21
			07-02-02	24.11
			07-29-02	24.64
			08-27-02	24.09
			09-26-02	23.65
10N05W09BDBC01	280	Upper Cretaceous Boulder batholith intrusives	10-01-01	55.20
			11-09-01	43.91
			11-28-01	45.19
			01-03-02	47.98
			01-29-02	54.81
			02-26-02	57.91
			03-28-02	48.03
			05-01-02	34.26
			05-30-02	33.41
			07-29-02	43.26
			08-27-02	56.26
			09-26-02	49.39

Table 7. Periodic water levels in selected observation wells in Montana, water year 2002 (Continued)

Local number	Depth of well	Aquifer	Date of measurement	Water level
		LEWIS AND CLARK COUNTY--Continued		
10N05W25DBDA02	100	Upper Cretaceous Boulder batholith intrusives	10-01-01	79.24
			11-09-01	79.41
			11-28-01	78.32
			01-03-02	79.40
			01-29-02	79.44
			02-25-02	79.49
			03-28-02	79.89
			05-01-02	78.91
			05-30-02	78.94
			06-26-02	79.32
			07-26-02	79.37
			08-27-02	79.17
			09-26-02	79.21
10N05W33CDCD01	135	Upper Cretaceous Boulder batholith intrusives	10-01-01	20.98
			11-09-01	18.77
			11-28-01	18.49
			01-03-02	18.56
			01-29-02	19.17
			02-25-02	18.43
			03-28-02	18.73
			05-01-02	17.26
			05-30-02	17.19
			06-26-02	16.51
			07-26-02	16.28
			08-27-02	17.32
			09-26-02	17.36
10N04W02CBAA01	110	Upper Cretaceous Scratchgravel Hills intrusives	11-07-01	38.05
			02-09-02	38.19
			03-29-02	38.15
			05-28-02	38.45
			07-05-02	37.24
			08-18-02	37.10
			09-26-02	37.06
10N04W03CDBA01	206	Upper Cretaceous Scratchgravel Hills intrusives	10-01-01	30.41
			11-09-01	27.66
			11-28-01	27.36
			01-03-02	27.66
			01-29-02	28.11
			02-25-02	28.87
			03-28-02	27.93
			05-01-02	29.42
			05-30-02	29.19
			06-27-02	28.11
			07-29-02	27.69
			08-27-02	27.95
			09-26-02	27.77
10N04W08DCAC01	120	Middle Proterozoic Helena Formation	10-01-01	55.74
			11-09-01	52.87
			11-28-01	51.95
			01-03-02	50.87
			01-29-02	50.27
			02-26-02	49.88
			03-28-02	49.31
			05-01-02	48.85
			05-30-02	49.35

Table 7. Periodic water levels in selected observation wells in Montana, water year 2002 (Continued)

Local number	Depth of well	Aquifer	Date of measurement	Water level
		LEWIS AND CLARK COUNTY--Continued		
10N04W08DCAC01 Continued	120	Middle Proterozoic Helena Formation	06-27-02	49.06
			07-29-02	47.59
			08-27-02	50.41
			09-26-02	50.05
10N04W15BDAC01	260	Middle Proterozoic Spokane Formation	10-01-01	38.35
			11-09-01	35.57
			11-28-01	38.12
			01-03-02	39.76
			01-29-02	39.91
			02-26-02	40.47
			03-28-02	40.19
			05-02-02	35.88
			05-30-02	35.70
			06-27-02	40.29
			07-02-02	40.40
			07-29-02	41.93
			08-27-02	41.11
			09-26-02	41.27
10N04W23CADD01	130	Middle Proterozoic Helena Formation	10-01-01	54.22
			11-09-01	54.29
			11-28-01	54.61
			01-03-02	57.14
			01-29-02	57.16
			02-25-02	57.84
			03-28-02	57.13
			05-01-02	57.09
			05-30-02	58.14
			06-26-02	55.47
			07-26-02	55.86
			08-27-02	55.79
			09-26-02	57.47
10N03W20CCAA01	100	Middle Proterozoic Helena Formation	10-01-01	38.43
			11-09-01	39.48
			11-28-01	40.54
			01-03-02	40.65
			01-29-02	41.29
			02-25-02	41.94
			03-28-02	41.92
			05-01-02	41.31
			05-30-02	40.46
			06-26-02	36.09
			07-26-02	35.80
			08-27-02	35.97
			09-18-02	36.75
			09-26-02	36.74
10N03W32BCBD01	140	Middle Proterozoic Helena Formation	10-01-01	40.38
			11-09-01	42.80
			11-28-01	43.51
			01-03-02	44.11
			01-29-02	45.09
			02-25-02	46.14
			03-28-02	46.82
			05-01-02	45.80
			05-30-02	44.27
			06-26-02	37.81

Table 7. Periodic water levels in selected observation wells in Montana, water year 2002 (Continued)

Local number	Depth of well	Aquifer	Date of measurement	Water level
		LEWIS AND CLARK COUNTY--Continued		
10N03W32BCBD01 Continued	140	Middle Proterozoic Helena Formation	07-26-02	37.93
			08-27-02	34.51
			09-26-02	33.72
09N05W12CCDA01	260	Upper Cretaceous Boulder batholith intrusives	10-01-01	56.18
			11-09-01	45.24
			11-28-01	38.76
			01-03-02	39.79
			01-29-02	37.74
			02-25-02	41.12
			03-28-02	36.24
			05-01-02	34.03
			05-30-02	34.83
			06-26-02	32.29
			07-26-02	43.32
			08-27-02	38.90
			09-26-02	35.82
09N04W11CCCB01	122	Upper Cretaceous Boulder batholith intrusives	10-01-01	28.07
			11-09-01	27.58
			11-28-01	27.31
			01-03-02	28.06
			01-29-02	26.87
			02-25-02	26.73
			03-28-02	26.41
			05-01-02	23.22
			05-30-02	20.67
			06-26-02	18.74
			07-26-02	20.05
			08-27-02	19.24
			09-26-02	22.24
09N04W11CDBD01	124	Upper Cretaceous Boulder batholith intrusives	10-01-01	75.55
			11-09-01	74.70
			11-28-01	74.55
			01-03-02	74.81
			01-29-02	75.22
			02-25-02	76.07
			03-28-02	75.71
			05-01-02	75.05
			05-30-02	75.14
			06-26-02	74.99
			07-26-02	76.04
			08-27-02	75.45
			09-26-02	76.80
		MC CONE COUNTY		
26N49E13ACAB01	180	Upper Cretaceous Hell Creek Formation and Fox Hills Sandstone	10-10-01	43.59
			01-08-02	43.62
			03-12-02	43.60
			07-02-02	43.69
		MINERAL COUNTY		
18N28W24DCBA01	199	Quaternary alluvium	11-14-01	+20.48
			02-05-02	+20.48
			05-16-02	+25.55

Table 7. Periodic water levels in selected observation wells in Montana, water year 2002 (Continued)

Local number	Depth of well	Aquifer	Date of measurement	Water level
		MINERAL COUNTY--Continued		
18N27W19CBBD01	58	Quaternary alluvium	11-14-01	13.20
			02-02-02	12.76
			05-16-02	10.06
18N27W30ABBA01	192	Quaternary alluvium	11-14-01	146.88
			02-05-02	147.48
			05-05-02	142.93
17N26W30DAAD01	318	Quaternary alluvium	11-14-01	192.66
			05-16-02	189.05
		POWDER RIVER COUNTY		
04S45E04BDDB01	68	Quaternary alluvium	10-02-01	7.90
			11-14-01	7.71
			01-07-02	7.31
			03-14-02	6.64
			05-14-02	7.11
			05-16-02	7.28
			07-01-02	7.63
		POWELL COUNTY		
15N12W36BCDD01	206	Cenozoic rocks	10-04-01	106.98
			10-30-01	106.58
			01-03-02	106.29
			02-28-02	106.13
			04-08-02	105.83
			04-09-02	105.83
			05-13-02	105.94
		RAVALLI COUNTY		
10N20W13BBA 01	50	Quaternary alluvium	10-01-01	6.29
			11-19-01	6.16
			01-04-02	6.37
			02-20-02	6.40
			04-03-02	6.22
			08-22-02	5.62
06N20W19CCCC02	40	Quaternary alluvium	10-02-01	9.72
			11-20-01	13.46
			12-05-01	14.31
			12-31-01	14.78
			01-03-02	15.70
			01-15-02	16.05
			02-20-02	17.08
			04-02-02	17.67
			07-17-02	7.97
			08-21-02	8.33
		ROSEBUD COUNTY		
06S43E19DDBA02	67	Quaternary alluvium	10-01-01	9.86
			11-15-01	9.70
			01-07-02	9.81
			03-14-02	9.78
			05-16-02	9.18
			07-01-02	9.73
		SANDERS COUNTY		
26N34W03BDAD01	400	Quaternary alluvium	11-14-01	236.10
			02-13-02	253.60
			05-06-02	248.70

Table 7. Periodic water levels in selected observation wells in Montana, water year 2002 (Continued)

Local number	Depth of well	Aquifer	Date of measurement	Water level
		SANDERS COUNTY--Continued		
25N31W30DCCC01	282	Quaternary alluvium	11-14-01	222.79
			02-13-02	223.15
			05-06-02	223.60
			08-08-02	223.02
23N24W34ADAA01	377	Quaternary alluvium	10-16-01	113.59
			02-13-02	111.27
			02-14-02	111.41
			04-04-02	111.12
			05-06-02	111.78
			08-08-02	113.88
22N29W32ACDD01	308	Quaternary alluvium	11-14-01	244.64
			02-13-02	239.42
			05-06-02	236.74
20N26W22CBBA01	50	Quaternary alluvium	11-14-01	18.71
			02-13-02	18.13
			05-06-02	16.88
			08-08-02	16.66
19N25W07CDDA01	--	Quaternary alluvium	11-14-01	+11.78
			02-13-02	+9.96
			05-06-02	+16.19
			08-08-02	+13.19
19N25W28BABB01	369	Middle Proterozoic Belt Supergroup	11-14-01	18.47
			02-13-02	19.38
			05-06-02	3.76
			08-08-02	14.46
		SHERIDAN COUNTY		
33N58E17ADDD01	130	Pleistocene outwash	10-10-01	12.69
			01-08-02	12.98
			02-25-02	13.15
			03-13-02	13.15
			07-01-02	13.02
			07-02-02	13.02
			08-13-01	13.22
32N58E04DBBD02	143	Pleistocene outwash	10-10-01	23.48
			01-08-02	23.10
			02-25-02	22.98
			03-13-02	22.94
			07-01-02	23.00
			07-02-02	23.00
			08-12-02	23.40
		TETON COUNTY		
22N03W15BAAD03	47	Pleistocene terrace deposits	10-11-01	17.61
			01-10-02	23.83
			03-19-02	27.04
			05-14-02	28.48
			07-25-02	14.85
			09-10-02	14.24

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the streamflow representative of undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities. At 10 of these sites, water-quality information is being gathered on major ions and nutrients, primarily to assess the effects of acid deposition on stream chemistry. Additional information on the Hydrologic Benchmark Program can be found at:

http://water.usgs.gov/hbn/

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within the Nation's largest river basins. From 1995 through 1999, a network of approximately 40 stations was operated in the Mississippi, Columbia, Colorado, and Rio Grande basins. For the period 2000 through 2004, sampling was reduced to a few index stations on the Colorado and Columbia so that a network of five stations could be implemented on the Yukon River. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals. Additional information about the NASQAN Program can be found at:

http://water.usgs.gov/nasqan/

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical constituents in precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 225 precipitation chemistry monitoring sites. This long-term, nationally consistent monitoring program, coupled with ecosystem research, provides critical information toward a national scorecard to evaluate the effectiveness of ongoing and future regulations intended to reduce atmospheric emissions and subsequent impacts to the Nation's land and water resources. Reports and other information on the NADP/NTN Program, as well as all data from the individual sites, can be found at http://bqs.usgs.gov/acidrain/.

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in 59 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents will be measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for decision making by water-resources managers and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, State, and federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key federal, State, and local water resources agencies, Indian nations, and universities in the study unit. Liaison committees typically meet semiannually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities to collaborate efforts among the agencies. Additional information about the NAWQA Program can be found at:

http://water.usgs.gov/nawqa/

EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are for water year 2002 that began October 1, 2001, and ended September 30, 2002. 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, water-quality data for surface and ground water, and ground-water-level data. The locations of the stations and wells where the data were collected are shown in figures 6 through 8. 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, whether stream site or well, in this report is assigned a unique identification number. The number usually is assigned when a station is first established and is

retained for that station indefinitely. The systems used by the USGS to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. Generally, the "downstream-order" system is used for regular surface-water stations, the "latitude-longitude" system is used for miscellaneous surface-water stations where discharge measurements or water samples are obtained infrequently. The rectangular-grid system is used to assign identification numbers for wells.

Downstream-Order System

Since October 1, 1950, the order of listing hydrologic-station records in USGS 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 tributaries to 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 shows 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 06090300, which appears just to the left of the station name, includes the two-digit Part number "06" plus the six-digit downstream-order number "090300." The Part number designates the major river basin; for example, Part "06" is the Missouri River basin. All records for a drainage basin encompassing more than one State can be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

Latitude-Longitude System

The identification numbers for miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the sites within a 1-second grid. This site-identification number, once assigned, is a pure number and has no locational significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description. (See figure 5.) The North America Datum of 1927 (NAD 27) or 1983 (NAD 83) were used to determine the latitude and longitudes listed in the LOCATION paragraph.

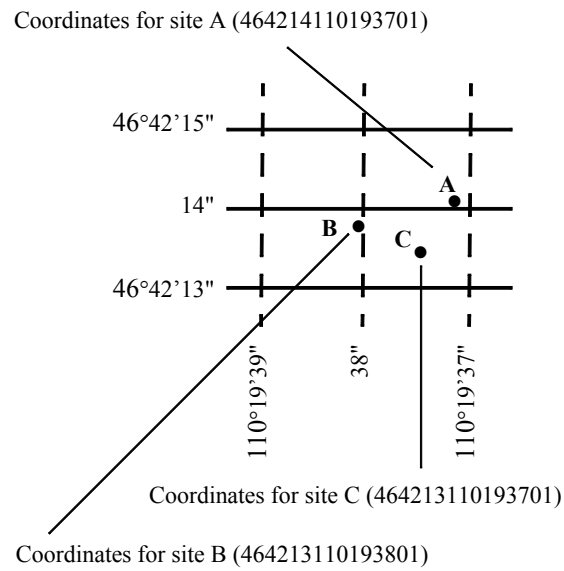


Figure 5. System for numbering miscellaneous sites (latitude and longitude).

Rectangular-Grid System

In this report, wells are numbered according to geographic position within the rectangular-grid system of land subdivision. The location (local) number consists of as many as 14 characters. The first three characters specify the township and its position north (N) or south (S) of the Montana Base Line. The next three characters specify the range and its position west (W) or east (E) of the Montana Principal Meridian. The next two characters are the section number. The next one to four characters designate the quarter section (160-acre tract), quarter-quarter section (40-acre tract), quarter-quarter-quarter section (10-acre tract), and quarter-quarter-quarter-quarter section (2.5-acre tract), respectively, in which the well is located. The subdivisions of the section are designated A, B, C, and D in a counterclockwise direction, beginning in the northeast quadrant. The last two characters form a sequence number based on the order of inventory. For example, well 30N33W05ABAB01 is the first well inventoried in the NW$^1/_4$ NE$^1/_4$ NW$^1/_4$ NE$^1/_4$ sec.5, T. 30 N., R. 33 W.

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." Location of streamflow-gaging stations for which data are given in this report are shown in figure 6.

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 relation 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 adopted by the USGS as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations, 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 streamgaging 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 the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

At some streamgaging stations in Montana the stage-discharge relation is usually affected by ice from November to March, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of gage-height record and occasional winter discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

In computing records of lake or reservoir contents, it is necessary to have available from surveys, curves or tables defining the relation of stage and 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. Even when this is done, the contents computed may become increasingly in error as the lapsed time since the last survey increases. Discharges over lake or reservoir spillways are computed from stage-discharge relation much as other stream discharges are computed.

For some gaging stations, there are periods when no gage-height record is obtained, or the recorded gage height is so faulty 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."

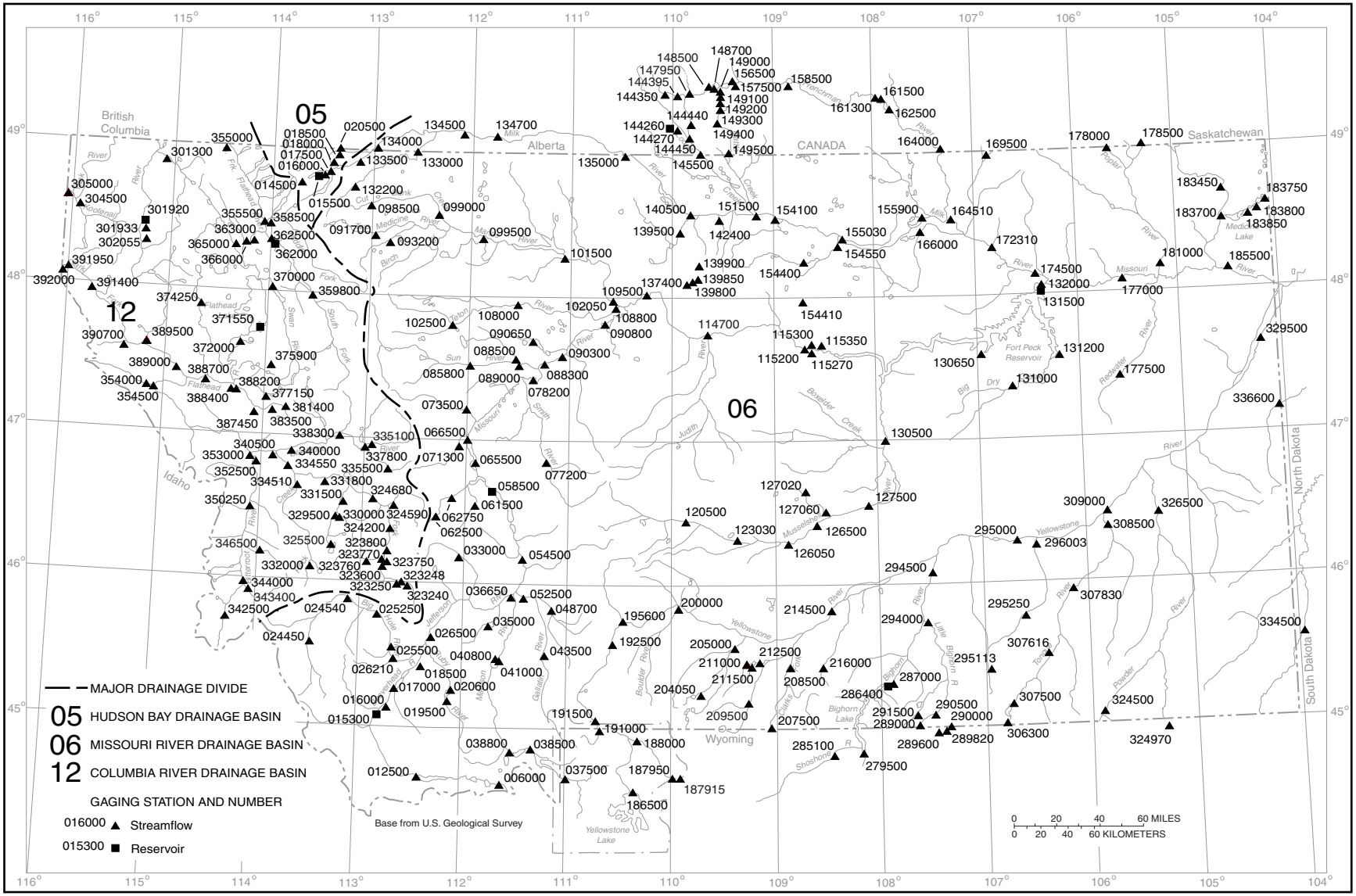


Figure 6. Location of streamflow-gaging stations in Montana and adjacent areas, water year 2002.

Data Presentation

Records published for each continuous-record surface-water discharge station (streamflow-gaging station) consist of four parts: the manuscript or station description; the data table of daily mean values of discharge for the current water year with summary data; a tabular statistical summary of monthly mean flow data for a designated period, by water year; and a summary statistics table that includes statistical data of annual, daily, and instantaneous flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration.

Station manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside the period of record, record accuracy, and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

LOCATION.--Information on locations is obtained from the most accurate maps available. The North America Datum of 1927 (NAD 1927) or 1983 (NAD 1983) reference is used for all latitudes and longitudes listed. The location of the streamflow-gaging station 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 were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers or river mile indexes supplied by the Montana Department of Natural Resources and Conservation.

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 records have been published 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 flow at it can reasonably be considered equivalent to flow at the present station.

REVISED RECORDS.--Because of new information, published records 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 that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

GAGE.--The type of gage in current use, the datum of the current gage, and a condensed history of the types, locations, and datums of previous gages are given under this heading. Most datums are referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29), but the Canadian Geodetic Vertical Datum 1928 and the International Boundary Commission Survey Datum are also referenced.

REMARKS.--All periods of estimated daily discharge 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 paragraph 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, to special methods of computation, and to conditions that affect natural flow at the station. In addition, information may be presented pertaining to average discharge data for the period of record; to extremes data for the period of record and the current year; and, possibly, to 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 USGS 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 USGS.

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 District Office (address given on the back of the title page of this report) to determine if the published records were ever revised after the station was discontinued. Of course, if the data for a discontinued station 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.

Headings for AVERAGE DISCHARGE, EXTREMES FOR PERIOD OF RECORD, AND EXTREMES FOR CURRENT YEAR have been deleted and the information contained in these paragraphs is now presented in the tabular summaries following the discharge table or in the REMARKS

paragraph. No changes have been made to the data presentations of lake contents.

Data table of daily mean values

The daily table of discharge records for streamflow-gaging stations gives mean discharge for each day of the water year. In the monthly summary for the table, the line headed "TOTAL" gives the sum of the daily figures for each month; the line headed "MEAN" gives the average flow in cubic feet per second for the month; and the lines headed "MAX" and "MIN" give the maximum and minimum daily mean discharges, respectively, for each 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 or in acre-feet may be omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversion data or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Statistics of monthly mean data

A tabular summary of the mean (line headed "MEAN"), maximum (line headed "MAX"), and minimum (line headed "MIN") of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those figures. The designated period will be expressed as "FOR WATER YEARS _____-_____, BY WATER YEAR (WY)," and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. It will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript.

Summary statistics

A table titled "SUMMARY STATISTICS" follows the statistics of monthly mean data tabulation. This table consists of four columns, with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, "WATER YEARS _____-_____" will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (See line headings below.), except for the "ANNUAL SEVEN-DAY MINIMUM" statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column may not be within the selected water years listed in the heading. When this occurs, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration curve statistics and runoff data are also given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

The following summary statistics data, as appropriate, are provided with each continuous record of discharge. Comments to follow clarify information presented under the various line headings of the summary statistics table.

ANNUAL TOTAL.--The sum of the daily mean values of discharge for the year. At some stations the annual total discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

ANNUAL MEAN.--The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period. At some stations the yearly mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

HIGHEST ANNUAL MEAN.--The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.--The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.--The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.--The minimum daily mean discharge for the year or for the designated period.

ANNUAL SEVEN-DAY MINIMUM.--The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1-March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

MAXIMUM PEAK FLOW.--The maximum instantaneous discharge occurring for the water year or for the designated period. Note that secondary instantaneous peak discharges above a selected base discharge are stored in District computer files for stations meeting certain criteria. Those discharge values may be obtained by writing to the District Office. (See address on back of title page of this report.)

MAXIMUM PEAK STAGE.--The maximum instantaneous stage occurring for the water year or for the designated period. If the dates of occurrence for the instantaneous peak flow and instantaneous peak stage differ, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.--The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF.--Is the total quantity of water that is discharged ("runs off") from a drainage area in a year. Data reports may use any of the following units of measurement in presenting annual runoff data:

Acre-foot (AC-FT) is a unit of volume commonly used to measure quantities of water used or stored, equivalent tot he volume of water required to cover 1 acre to a depth of 1 foot and is equal to 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters.

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

Inches (INCHES) indicates the depth to which the drainage area would be covered if all of the runoff for a given time period were uniformly distributed on it.

10 PERCENT EXCEEDS.--The discharge that has been exceeded 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.--The discharge that has been exceeded 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.--The discharge that has been exceeded 90 percent of the time for the designated period.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual Montana 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.

Currently, statistics are not computed for seasonal Canadian stations, which are published by calendar year. Monthly statistics can be obtained for these stations by contacting the District Office in Helena.

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 "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of their true values; "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; to the nearest tenth between 1.0 and 10 ft^3/s; to whole numbers between 10 and 1,000 ft^3/s; and to 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. No rounding rules apply to discharges listed for partial-record stations and miscellaneous sites. Listed discharges are those actually computed.

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

Other Records Available

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables is on file in the Montana District office. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the office whose address is given on the back of the title page of this report.

Publications

The annual series of Water-Supply Papers that give information on quantity of surface waters in Montana are

given in table 8. Data for the Hudson Bay basin is given in Part 5, for the Missouri River basin in Part 6, and for the Columbia River basin in Part 12.

Records of Surface-Water Quality

Records of surface-water quality in this report represent a variety of data types and measurement frequencies. Whenever possible, records of surface-water quality are obtained at or near streamflow-gaging stations because interpretation of surface-water quality and seasonal variation is enhanced by knowledge of corresponding discharge data. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 7.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A daily-record station is a site where data are collected with sufficient frequency to develop a daily record of water-quality values, such as water temperature, suspended sediment, and specific conductance. A periodic-record station is a site where water-quality data are collected systematically over a period of years. A miscellaneous sampling site is a location where samples are collected one time or intermittently to provide better areal coverage for defining water-quality conditions over a broad area in a river basin.

A careful distinction needs to be made between "continuing records," as used in reference to data for daily-record stations, and "continuous record," which refers to a continuous graph over time or a series of discrete values recorded at short time intervals on a paper tape. Some records of water quality, such as water temperature and specific conductance, may be obtained through continuous recordings; however, most water-quality data are obtained on a monthly or less frequent basis.

Onsite Measurements and Sample Collection

When obtaining water-quality data, a major concern is assuring that onsite water-quality measurements and the samples collected for laboratory analysis are representative of the actual quality of the water. Measurements such as water temperature, pH, and dissolved oxygen are made onsite when the samples are taken because of the potential for significant change with time. To assure that measurements made in the laboratory also represent the actual environmental concentrations of constituents, prescribed procedures need to be followed in collection and processing of samples. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," (TWRI) Book 1, Chapter D2; Book 3, Chapter C2; Book 5, Chapter A4. All of these references are listed under "TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS OF THE U.S. GEOLOGICAL SURVEY" which appears at the end of the introductory text. Also, detailed information on collecting, treating, and shipping samples may be obtained from other references and from the USGS Montana District office.

Chemical data published in this report are considered to represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. A sample collected from a single point in a stream or lake can adequately define the water quality at a given time if the mixture of dissolved and suspended constituents is homogeneous throughout the stream cross section or lake volume. However, the concentration of constituents at different locations in the stream cross section or at different depths in a lake may vary widely with different rates of water discharge or lake stratification. Most streams must be sampled through several vertical sections to obtain a representative composite sample needed for an accurate mean concentration and for calculating loads. Samples of the water-sediment mixture in streams typically are collected using suspended-sediment samplers modified to prevent chemical contamination. Samples of the water-sediment mixture in lakes typically are collected near mid-depth in shallow (less than 10 feet deep) lakes or at multiple depths in deeper lakes that are thermally stratified.

For water-quality stations equipped with electronic monitors and digital recorders, the record consists of a 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 of the individual hourly values (unit values) may be obtained from the USGS Montana District office whose address is given on the back of the title page of this report.

Water Temperature

Water temperatures are measured at water-quality stations at the time of sampling. In addition, water temperatures are taken at the time of discharge measurements for streamflow-gaging stations. Large streams commonly have a small diurnal temperature change, whereas shallow streams may have a daily range of several degrees that closely follows the changes in air temperature. The water temperature in some streams may be affected by industrial discharges of warm water. For stations where recording instruments are used, the record consists of daily maximum, minimum, and mean temperatures for each day.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained from several verticals in the cross section. At daily sediment stations, daily samples may be obtained from a single vertical and a coefficient applied to determine the mean concentration in the cross section. Daily mean suspended-sediment concentrations are computed using sample concentrations and the continuous streamflow record according to the methods described in TWRI Book 3, Chapter

Table 8. Water-Supply Paper numbers and parts for surface-water stations, 1899-1970

Year	Part 5	Part 6	Part 12	Year	Part 5	Part 6	Part 12
1899		36,37	38				
1900	49	49	51,52				
1901	66,75	66,75	66,75	1936	805	806	812
1902	83,85	84	85	1937	825	826	832
1903	98,99,100	99	100	1938	855	856	862
1904	130	130	135	1939	875	876	882
1905	171	172	178	1940	895	896	902
1906	207	208	214	1941	925	926	932
1907	245	246	252	1942	955	956	962
1908	245	246	252	1943	975	976	982
1909	265	266	272	1944	1005	1006	1012
1910	285	286	292	1945	1035	1036	1042
1911	305	306	312	1946	1055	1056	1062
1912	325	326	332A	1947	1085	1086	1092
1913	355	356	362A	1948	1115	1116	1122
1914	385	386	392	1949	1145	1146	1152
1915	405	406	412	1950	1175	1176	1182
1916	435	436	442	1951	1208	1209	1216
1917	455	456	462	1952	1238	1239	1246
1918	475	476	482	1953	1278	1279	1286
1919	505	506	512	1954	1338	1339	1346
1920	505	506	512	1955	1388	1389	1396
1921	525	526	532	1956	1438	1439	1446
1922	545	546	552	1957	1508	1509	1516
1923	565	566	572	1958	1558	1559	1566
1924	585	586	592	1959	1628	1629	1636
1925	605	606	612	1960	1708	1709	1716
1926	625	626	632	1961-65	1913	1916	1933
1927	645	646	652	1966-70	2113	2116	2133
1928	665	666	672				
1929	685	686	692	1950	1308	1309	1316
1930	700	701	707	Compilation			
1931	715	716	722	1960	1728	1729	1736
1932	730	731	737	Compilation			
1933	745	746	752				
1934	760	761	767				
1935	785	786	792				

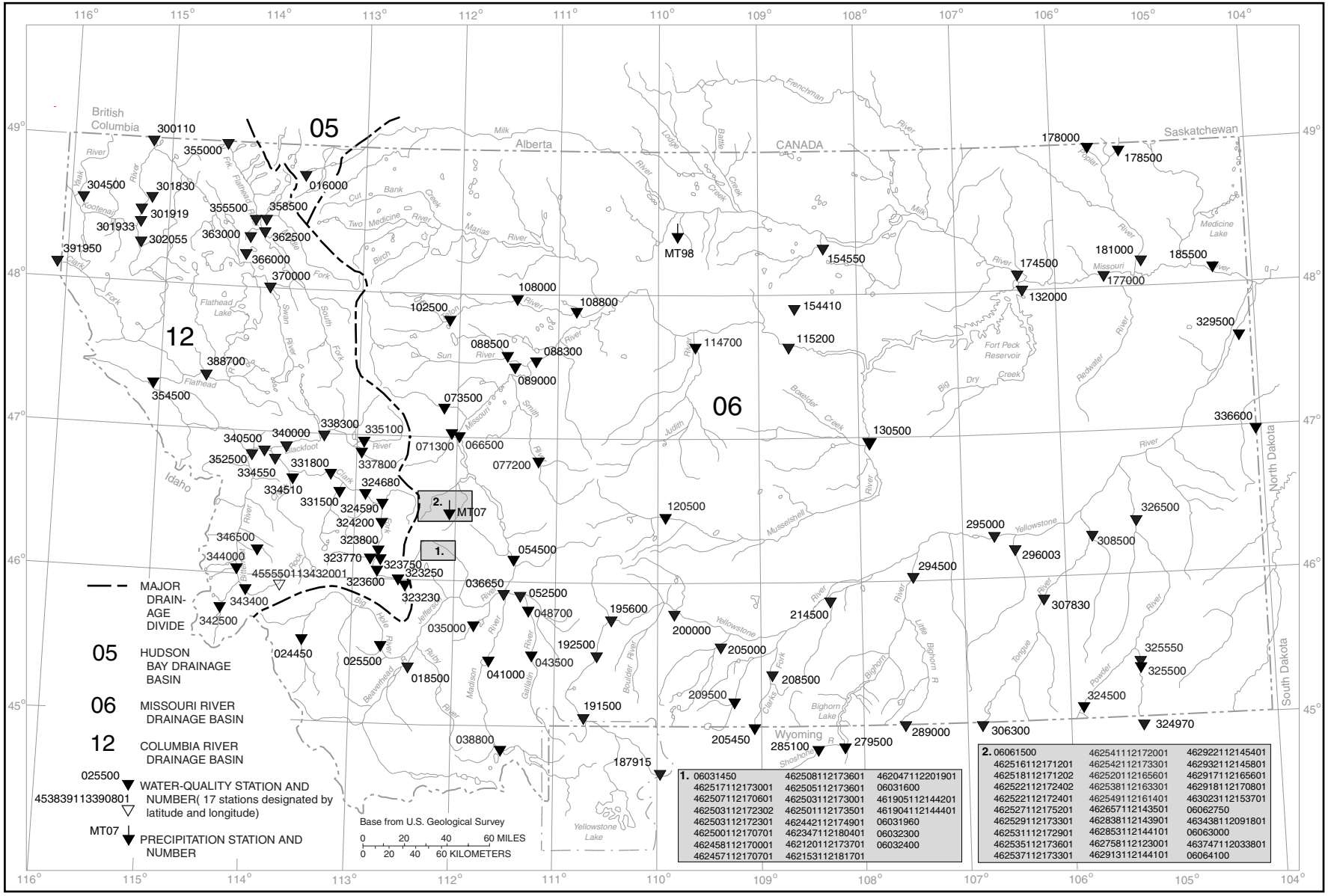


Figure 7. Location of surface-water-quality stations in Montana and adjacent areas, water year 2002.

C3. Daily suspended-sediment discharge is then computed as the product of stream discharge times the daily mean concentration times a unit conversion factor of 0.0027.

During periods of rapidly changing flow or rapidly changing 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 water-quality stations that are not daily sediment stations, suspended-sediment samples are collected periodically during the year. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between suspended-sediment concentration and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of suspended-sediment discharge, records of particle-size distribution of the suspended sediment and bed material for periodic samples are included for some stations.

Laboratory Analyses

Suspended-sediment samples, samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. Samples of precipitation and dry atmospheric deposition collected at National Atmospheric Deposition Program/National Trends Network sites are analyzed by the Illinois State Water Survey laboratory in Champaign, Illinois. Other samples are analyzed at the USGS National Water-Quality Laboratory in Denver, Colorado. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 3, Chapter C3 and Book 5, Chapter C1. Methods used by the National Water-Quality Laboratory are given in TWRI, Book 5, Chapter A1-A6.

In March 1989, the National Water-Quality Laboratory discovered a bias in the turbidimetric method for sulfate analysis, indicating that values below 75 mg/L have a median positive bias of 2 mg/L above the true value for the period between 1982 and 1989.

New protocols have been established by the USGS for the collection and processing of surface-water samples that are analyzed for dissolved inorganic constituents[5]. These protocols are designed to produce trace-element data that are free of potential contamination associated with sample collection and filtration procedures. Because of the very low concentrations of some trace constituents in the environment, special precautions are necessary to protect the sample during processing from the introduction of trace constituents that could lead to a positive bias in reported concentrations. The protocols have been tested to assure reliable results at the microgram per liter (parts per billion) level. Dissolved trace-element data published prior to implementation of the protocols in 1993 may have a potential positive bias ranging from negligible to several micrograms per liter, depending on the procedures and sampling equipment used at the site.

Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter (µg/L) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are commonly within the range of 10's to 100's of nanograms per liter (ng/L, parts per trillion) in many streams. Data above the µg/L level may actually represent elevated environmental concentrations resulting from natural or human causes; however, past data could reflect trace levels of contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the USGS began using new trace-element protocols at some stations in water year 1993.

Explanation of the Reporting Convention for Long-Term Method Detection Levels

The U.S. Geological Survey National Water Quality Laboratory collects quality-control data on a continuing basis to evaluate selected analytical methods to determine long-term method detection levels (LT-MDL's) and laboratory reporting levels (LRL's). These values are re-evaluated each year on the basis of the most recent quality-control data and, consequently, may change from year to year.

This reporting procedure limits the occurrence of false positive error. The chance of falsely reporting a concentration greater than the LT-MDL for a sample in which the analyte is not present is 1 percent or less. Application of the LRL limits the occurrence of false negative error. The chance of falsely reporting a non-detection for a sample in which the analyte is present at a concentration equal to or greater than the LRL is 1 percent or less.

Accordingly, concentrations are reported as <LRL for samples in which the analyte was either not detected or did not pass identification. Analytes that are detected at concentrations between the LT-MDL and LRL and that pass identification criteria are estimated. Estimated concentrations will be

[5]Horowitz, A.J., Demas, C.R., Fitzgerald, K.K., Miller, T.L., and Rickert, D.A., 1994, U.S. Geological Survey Protocol for the Collection and Processing of Surface-Water Samples for the Subsequent Determination of Inorganic Constituents in Filtered Water: U.S. Geological Survey Open-File Report 94-539, 57 p.

noted with a remark code of "E." These data should be used with the understanding that their uncertainty is greater than that of data reported without the "E" remark code.

Presentation of Water-Quality Records

Water-quality records collected at a streamflow-gaging station are published immediately following the daily discharge record. Station number and name are the same for both records. Where a daily discharge record is not available or where the location of the water-quality station differs significantly from that of the nearby streamflow-gaging station, the water-quality record is published with its own station number and name in the standard downstream-order sequence.

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, cooperating agencies, and extremes for parameters measured on a daily basis. Tables of chemical, physical, biological, and radiochemical data obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, water temperature, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the streamflow-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, temperature monitor, 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 USGS 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.

Remark Codes

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

PRINTED OUTPUT	REMARK
E	Value is estimated.
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the value shown.
M	Presence of material verified, but not quantified.
N	Presumptive evidence of presence of material.
U	Material specifically analyzed for, but not detected.
A	Value is an average.
V	Analyte was detected in both the environmental sample and the associated blanks.
S	Most probable value.

Quality-Control Data

Water-quality data generated from quality-control (QC) samples are used to evaluate the quality of the sampling and processing techniques, as well as data from the actual samples themselves. Interpretation of environmental sample data is aided when the errors associated with sample measurements are known. The various types of QC samples collected by this district are described in the following section. Procedures have been established for the storage of QC data within the USGS. These procedures allow for identification of various types of QC data so that they can be related to corresponding environmental samples.

Blank Samples

Blank samples are collected and analyzed to ensure that environmental samples have not been contaminated by the overall data-collection process. The blank solution used to develop specific types of blank samples is a solution of deionized water that is free of the constituents of interest. Any detectable concentration of a constituent in the blank solution is believed to be due to contamination introduced at some point during sample collection, processing, or analysis. There are many types of blank samples possible, each designed to test a different part of the overall data-collection process. The types of blank samples collected in this district are:

Field blank - a blank solution that is subjected to all aspects of sample collection, field processing, preservation, transportation, and laboratory handling as an environmental sample.

Trip blank - a blank solution that is not processed in the field, but is put in the same type of bottle used for an environmental sample and transported with the set of sample bottles before and after sample collection.

Source solution blank - a blank solution that is not processed through any equipment or treated with preservative. It is transferred directly to a clean sample bottle in the office laboratory and analyzed to confirm that the solution is free of detectable concentrations of analytes.

Equipment blank - a blank solution that is processed through all equipment used for collecting and processing an environmental sample (similar to a field blank but normally done in the more controlled conditions of the office using recently cleaned equipment).

Sampler blank - a blank solution that is poured or pumped through the same field sampler used for collecting an environmental sample.

Filter blank - a blank solution that is filtered in the same manner and through the same filter apparatus used for an environmental sample.

Splitter blank - a blank solution that is mixed and separated using a field splitter in the same manner and through the same apparatus used for splitting an environmental sample.

Preservation blank - a blank solution that is treated with the same preservatives used for an environmental sample.

Pump blank - a blank solution that is processed through the same pump-and-tubing system used for an environmental sample.

Reference Samples

Reference material is a solution or material prepared by a laboratory whose composition is certified for one or more properties so that it can be used to assess a measurement method. Samples of reference material are submitted for analysis to ensure that an analytical method is accurate for the known properties of the reference material. Generally, the selected reference material properties are similar to the environmental sample properties.

Replicate Samples

Replicate samples are two or more sets of environmental samples collected in the same manner such that the samples are considered to be essentially identical in composition. Replicate samples are collected and analyzed to establish the amount of variability in the data, which can be contributed by either the collection or analytical process or both. There are many types of replicate samples possible, each of which may yield slightly different results in a dynamic hydrologic setting, such as a flowing stream. The types of replicate samples collected in this district are:

Sequential samples - a type of replicate sample in which the samples are collected one after the other, typically over a short time (pumped samples).

Split sample - a type of replicate sample in which a single composite sample is split into subsamples.

Concurrent replicate sample - two sets of samples, collected independently, but at the same time and place. The samples are collected simultaneously with two or more samplers or by using one sampler and alternating collection of samples into two or more compositing containers.

Spike Samples

Spike samples are samples to which known quantities of a solution with one or more well-established constituent concentrations have been added. These samples are analyzed to determine the extent of matrix interference or degradation on the constituent concentration during sample processing and analysis.

Publications

The annual series of Water-Supply Papers that give information on quality of surface waters in Montana are shown in the following table. Data for Hudson Bay and Missouri River basins are given in parts 5-6 and data for Upper Columbia River basin are given in part 12.

Table 9. Water-Supply Paper numbers and parts for water-quality stations, 1947-70

Year	Parts 5-6	Part 12	Year	Parts 5-6	Part 12
1946	1050	---	1961	1883	1885
1947	1102	---	1962	1943	1945
1948	1132	---	1963	1949	1951
1949	1162	1163	1964	1956	1959
1950	1187	1189	1965	1963	1966
1951	1198	1200	1966	1993	1996
1952	1251	1253	1967	2013	2016
1953	1291	1293	1968	2094, 2095	2100
1954	1351	1353	1969	2145	2150
1955	1401	1403	1970	2155	2160
1956	1451	1453			
1957	1521	1523			
1958	1572	1574			
1959	1643	1645			
1960	1743	1745			

Records of Ground-Water Levels

Water-level data from a network of observation wells are given in this report. These data are intended to provide a sampling and historical record of water-level changes in the Nation's most important aquifers. Locations of the

observation wells in this network in Montana are shown in figure 8.

Data Collection and Computation

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensure that measurements at each well are of consistent accuracy and reliability. Water-level records are obtained primarily from direct measurements with a steel or electric tape.

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error of determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given to a tenth of a foot or a larger unit.

Publications

Publication of ground-water level data for the United States in Water-Supply Papers was begun by the USGS in 1935. From 1935 through 1939, a single Water-Supply Paper for each year covering the entire nation was issued (Water-Supply Papers 777, 817, 840, 845, and 886). From 1940 through 1974, separate Water-Supply Papers were issued for 6 sections of the United States. Water-level data for Montana are in the Water-Supply Papers listed in the following table, each report containing one or more calendar years (January-December) of data. Data in this report are for the 12-month water year ending September 30. Information about reports and other data on ground water in Montana may be obtained from the District office, at the address given on the back of the title page.

Table 10. Water-Supply Paper numbers and parts for ground-water stations, 1940-74

Year	WSP No. Pt. 5	Year	WSP No. Pt. 5	Year	WSP No. Pt.5
1940	910	1947	1100	1954	1325
1941	940	1948	1130	1955	1408
1942	948	1949	1160	1956-60	1760
1943	990	1950	1169	1961-65	1845
1944	1020	1951	1195	1966-70	1980
1945	1027	1952	1225	1971-74	2161
1946	1075	1953	1269		

ACCESS TO USGS WATER DATA

The USGS provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily mean and peak-flow discharge for most current or discontinued gaging stations through the world wide web (WWW). These data for Montana may be accessed at:

http://montana.usgs.gov

or for the nation at:

http://water.usgs.gov

Some water-quality and ground-water data also are available through the WWW. In addition, data can be provided in various machine-readable formats on 3.5-in. floppy disk or compact disc. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the Water Resources Division District Offices (see address on the back of the title page).

DEFINITION OF TERMS

Specialized technical terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. Definitions of common terms such as algae, water level, and precipitation are given in standard dictionaries. Not all terms defined in this alphabetical list apply to every State. See also table for converting inch/pound units to International System (SI) units on the inside of the back cover.

Acid neutralizing capacity (ANC) is the equivalent sum of all bases or base-producing materials, solutes plus particulates, in an aqueous system that can be titrated with acid to an equivalence point. This term designates titration of an “unfiltered” sample (formerly reported as alkalinity).

Acre-foot (AC-FT, acre-ft) is a unit of volume, commonly used to measure quantities of water used or stored, equivalent to the volume of water required to cover 1 acre to a depth of 1 foot and equivalent to 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters. (See also “Annual runoff”)

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

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. (See also “Biomass” and “Dry weight”)

Alkalinity is the capacity of solutes in an aqueous system to neutralize acid. This term designates titration of a “filtered” sample.

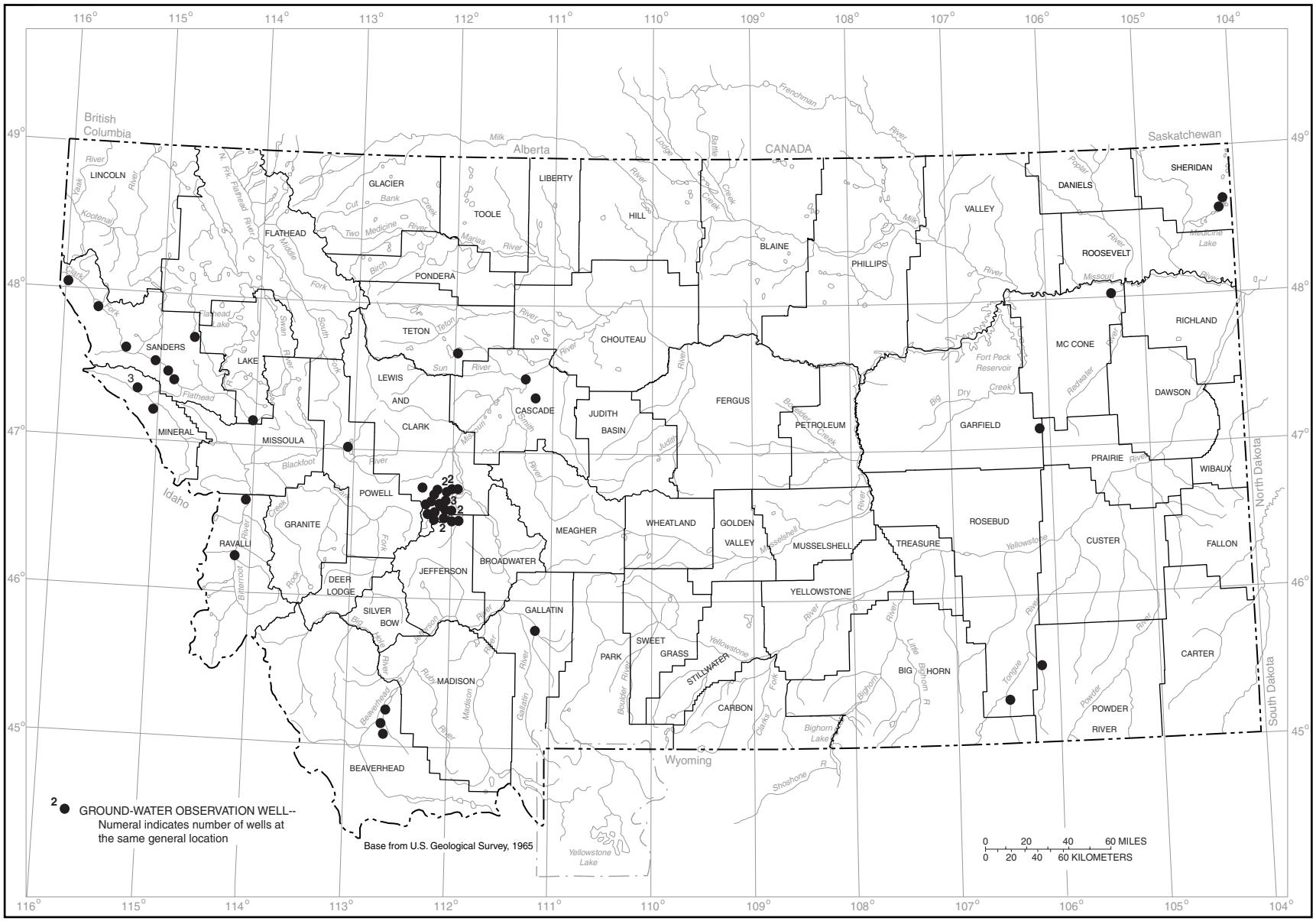


Figure 8. Location of ground-water observation wells in Montana, water year 2002.

Annual runoff is the total quantity of water that is discharged ("runs off") from a drainage basin in a year. Data reports may present annual runoff data as volumes in acre-feet, as discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches.

Annual 7-day minimum is the lowest mean value for any 7-consecutive-day period in a year. Annual 7-day minimum values are reported herein for the calendar year and the water year (October 1 through September 30). Most low-flow frequency analyses use a climatic year (April 1-March 31), which tends to prevent the low-flow period from being artificially split between adjacent years. The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day, 10-year low-flow statistic.)

Aroclor is the registered trademark for a group of poly-chlorinated biphenyls that were manufactured by the Monsanto Company prior to 1976. Aroclors are assigned specific 4-digit reference numbers dependent upon molecular type and degree of substitution of the biphenyl ring hydrogen atoms by chlorine atoms. The first two digits of a numbered aroclor represent the molecular type, and the last two digits represent the percentage weight of the hydrogen-substituted chlorine.

Artificial substrate is a device that 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 collected. 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 collection. (See also "Substrate")

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

Aspect is the direction toward which a slope faces with respect to the compass.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, whereas 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.

Bankfull stage, as used in this report, is the stage at which a stream first overflows its natural banks formed by floods with 1- to 3-year recurrence intervals.

Base discharge (for peak discharge) is a discharge value, determined for selected stations, above which peak discharge data are published. The base discharge at each station is selected so that an average of about three peak flows per year will be published. (See also "Peak flow")

Base flow is sustained flow of a stream in the absence of direct runoff. It includes natural and human-induced streamflows. Natural base flow is sustained largely by ground-water discharge.

Bedload is material in transport that is supported primarily by the streambed. In this report, bedload is considered to consist of particles in transit from the bed to an elevation equal to the top of the bedload sampler nozzle (ranging from 0.25 to 0.5 foot) that are retained in the bedload sampler. A sample collected with a pressure-differential bedload sampler also may contain a component of the suspended load.

Bedload discharge (tons per day) is the rate of sediment moving as bedload, reported as dry weight, that passes through a cross section in a given time. NOTE: Bedload discharge values in this report may include a component of the suspended-sediment discharge. A correction may be necessary when computing the total sediment discharge by summing the bedload discharge and the suspended-sediment discharge. (See also "Bedload," "Dry weight," "Sediment," and "Suspended-sediment discharge")

Bed material is the sediment mixture of which a stream-bed, lake, pond, reservoir, or estuary bottom is composed. (See also "Bedload" and "Sediment")

Benthic organisms are the group of organisms inhabiting the bottom of an aquatic environment. They include a number of types of organisms, such as bacteria, fungi, insect larvae and nymphs, snails, clams, and crayfish. They are useful as indicators of water quality.

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 microorganisms, such as bacteria.

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

Biomass pigment ratio is an indicator of the total proportion of periphyton that are autotrophic (plants). This is also called the Autotrophic Index.

Blue-green algae (*Cyanophyta*) 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. Concentrations are expressed as a number of cells per milliliter (cells/mL) of sample. (See also "Phytoplankton")

Bottom material (See "Bed material")

Bulk electrical conductivity is the combined electrical conductivity of all material within a doughnut-shaped volume surrounding an induction probe. Bulk conductivity is affected by different physical and chemical properties of the material including the dissolved solids content of the pore water and lithology and porosity of the rock.

Cells/volume refers to the number of cells of any organism that 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 volume, and are generally reported as cells or units per milliliter (mL) or liter (L).

Cells volume (biovolume) determination is one of several common methods used to estimate biomass of algae in aquatic systems. Cell members of algae are frequently used in aquatic surveys as an indicator of algal production. However, cell numbers alone cannot represent true biomass because of considerable cell-size variation among the algal species. Cell volume (μm^3) is determined by obtaining critical cell measurements or cell dimensions (for example, length, width, height, or radius) for 20 to 50 cells of each important species to obtain an average biovolume per cell. Cells are categorized according to the correspondence of their cellular shape to the nearest geometric solid or combinations of simple solids (for example, spheres, cones, or cylinders). Representative formulae used to compute biovolume are as follows:

sphere $4/3\ \pi r^3$ cone $1/3\ \pi r^2 h$ cylinder $\pi r^2 h$.

pi (π) is the ratio of the circumference to the diameter of a circle; pi = 3.14159….

From cell volume, total algal biomass expressed as biovolume (μm^3/mL) is thus determined by multiplying the number of cells of a given species by its average cell volume and then summing these volumes for all species.

Canadian Geodetic Vertical Datum 1928 is a geodetic datum derived from a general adjustment of Canada's first order level network in 1928.

Cfs-day (See "Cubic foot per second-day")

Channel bars, as used in this report, are the lowest prominent geomorphic features higher than the channel bed.

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 BOD or with carbonaceous organic pollution from sewage or industrial wastes. [See also "Biochemical oxygen demand (BOD)"]

Clostridium perfringens *(C. perfringens)* is a spore-forming bacterium that is common in the feces of human and other warmblooded animals. Clostridial spores are being used experimentally as an indicator of past fecal contamination and presence of microorganisms that are resistant to disinfection and environmental stresses. (See also "Bacteria")

Coliphages are viruses that infect and replicate in coliform bacteria. They are indicative of sewage contamination of water and of the survival and transport of viruses in the environment.

Color unit is produced by 1 milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Confined aquifer is a term used to describe an aquifer containing water between two relatively impermeable bound-aries. The water level in a well tapping a confined aquifer stands above the top of the confined aquifer and can be higher or lower than the water table that may be present in the material above it. In some cases, the water level can rise above the ground surface, yielding a flowing well.

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.

Continuous-record station is a site where data are collected with sufficient frequency to define daily mean values and variations within a day.

Control designates a feature in the channel that physically affects the water-surface elevation and thereby determines the stage-discharge relation at the gage. This feature may be a constriction of the channel, a bedrock outcrop, a gravel bar, 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 saltwater.

Cubic foot per second (CFS, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point in 1 second. It is equivalent to approximately 7.48 gallons per second or approximately 449 gallons per minute, or 0.02832 cubic meters per second. The term "second-foot" sometimes is used synonymously with "cubic foot per second" but is now obsolete.

Cubic foot per second-day (CFS-DAY, Cfs-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, 1.98347 acre-feet, 646,317 gallons, or 2,446.6 cubic meters. The daily mean discharges reported in the daily value data tables are numerically equal to the daily volumes in cfs-days, and the totals also represent volumes in cfs-days.

Cubic foot per second per square mile [CFSM, (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 the

runoff is distributed uniformly in time and area. (See also "Annual runoff")

Daily mean suspended-sediment concentration is the time-weighted concentration of suspended sediment passing a stream cross section during a 24-hour day. (See also "Sediment" and "Suspended-sediment concentration")

Daily-record station is a site where data are collected with sufficient frequency to develop a record of one or more data values per day. The frequency of data collection can range from continuous recording to periodic sample or data collection on a daily or near-daily basis.

Data collection platform (DCP) is an electronic instrument that collects, processes, and stores data from various sensors, and transmits the data by satellite data relay, line-of-sight radio, and/or landline telemetry.

Data logger is a microprocessor-based data acquisition system designed specifically to acquire, process, and store data. Data are usually downloaded from onsite data loggers for entry into office data systems.

Datum is a surface or point relative to which measurements of height and/or horizontal position are reported. A vertical datum is a horizontal surface used as the zero point for measurements of gage height, stage, or elevation; a horizontal datum is a reference for positions given in terms of latitude-longitude, State Plane coordinates, or UTM coordinates. (See also "Gage datum," "Land-surface datum," "National Geodetic Vertical Datum of 1929," and "North American Vertical Datum of 1988")

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. (See also "Phytoplankton")

Diel is of or pertaining to a 24-hour period of time; a regular daily cycle.

Discharge, or **flow**, is the rate that matter passes through a cross section of a stream channel or other water body per unit of time. The term commonly refers to the volume of water (including, unless otherwise stated, any sediment or other constituents suspended or dissolved in the water) that passes a cross section in a stream channel, canal, pipeline, etc., within a given period of time (cubic feet per second). Discharge also can apply to the rate at which constituents, such as suspended sediment, bedload, and dissolved or suspended chemicals, pass through a cross section, in which cases the quantity is expressed as the mass of constituent that passes the cross section in a given period of time (tons per day).

Dissolved refers to that material in a representative water sample that passes through a 0.45-micrometer membrane filter. This is a convenient operational definition used by Federal and State agencies that collect water-quality data. Determinations of "dissolved" constituent concentrations are made on sample water that has been filtered.

Dissolved oxygen (DO) is the molecular oxygen (oxygen gas) dissolved in water. The concentration in water is a function of atmospheric pressure, temperature, and dissolved-solids concentration of the water. The ability of water to retain oxygen decreases with increasing temperature or dissolved-solids concentration. Photosynthesis and respiration by plants commonly cause diurnal variations in dissolved-oxygen concentration in water from some streams.

Dissolved-solids concentration in water is the quantity of dissolved material in a sample of water. It 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, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. In the mathematical calculation, the bicarbonate value, in milligrams per liter, is multiplied by 0.4926 to convert it to carbonate. Alternatively, alkalinity concentration (as mg/L $CaCO_3$) can be converted to carbonate concentration by multiplying by 0.60.

Diversity index (H) (Shannon index) is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = -\sum_{i \approx 1}^{s} \frac{n_i}{n} \log_2 \frac{n_i}{n} \ ,$$

where n_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specific location is that area upstream from the location, measured in a horizontal plane, that has a common outlet at the site for its surface runoff from precipitation that normally drains by gravity into a stream. Drainage areas given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

Drainage basin is a part of the Earth's surface that contains a drainage system with a common outlet for its surface runoff. (See "Drainage area")

Dry mass refers to the mass of residue present after drying in an oven at 105 °C, 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. (See also "Ash mass," "Biomass," and "Wet mass")

Dry weight refers to the weight of animal tissue after it has been dried in an oven at 65 °C until a constant weight is achieved. Dry weight represents total organic and inorganic matter in the tissue. (See also "Wet weight")

Embeddedness is the degree to which gravel-sized and larger particles are surrounded or enclosed by finer-sized particles. (See also "Substrate embeddedness class")

Enterococcus bacteria are commonly found in the feces of humans and other warmblooded animals. Although some strains are ubiquitous and not related to fecal pollution, the presence of enterococci in water is an indication of fecal pollution and the possible presence of enteric pathogens. Enterococcus bacteria are those bacteria that produce pink to red colonies with black or reddish-brown precipitate after incubation at 41 °C on mE agar (nutrient medium for bacterial growth) and subsequent transfer to EIA medium. Enterococci include *Streptococcus feacalis, Streptococcus feacium, Streptococcus avium,* and their variants. (See also "Bacteria")

EPT Index is the total number of distinct taxa within the insect orders Ephemeroptera, Plecoptera, and Trichoptera. This index summarizes the taxa richness within the aquatic insects that are generally considered pollution sensitive; the index usually decreases with pollution.

Escherichia coli *(E. coli)* are bacteria present in the intestine and feces of warmblooded animals. *E. coli* are a member species of the fecal coliform group of indicator bacteria. In the laboratory, they are defined as those bacteria that produce yellow or yellow-brown colonies on a filter pad saturated with urea substrate broth after primary culturing for 22 to 24 hours at 44.5 °C on mTEC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also "Bacteria")

Estimated (E) concentration value is reported when an analyte is detected and all criteria for a positive result are met. If the concentration is less than the method detection limit (MDL), an 'E' code will be reported with the value. If the analyte is qualitatively identified as present, but the quantitative determination is substantially more uncertain, the National Water Quality Laboratory will identify the result with an 'E' code even though the measured value is greater than the MDL. A value reported with an 'E' code should be used with caution. When no analyte is detected in a sample, the default reporting value is the MDL preceded by a less than sign (<).

Euglenoids (*Euglenophyta*) are a group of algae that are usually free-swimming and rarely creeping. They have the ability to grow either photosynthetically in the light or heterotrophically in the dark. (See also "Phytoplankton")

Extractable organic halides (EOX) are organic compounds that contain halogen atoms such as chlorine. These organic compounds are semivolatile and extractable by ethyl acetate from air-dried streambed sediment. The ethyl acetate extract is combusted, and the concentration is determined by microcoulometric determination of the halides formed. The concentration is reported as micrograms of chlorine per gram of the dry weight of the streambed sediment.

Fecal coliform bacteria are present in the intestines or feces of warmblooded animals. They often are 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. (See also "Bacteria")

Fecal streptococcal bacteria are present in the intestines of warmblooded animals and are ubiquitous in the environment. They are characterized as gram-positive, cocci bacteria that are capable of growth in brain-heart infusion broth. In the laboratory, they are defined as all the organisms that 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. (See also "Bacteria")

Fire algae (*Pyrrhophyta*) are free-swimming unicells characterized by a red pigment spot. (See also "Phytoplankton")

Flow-duration percentiles are values on a scale of 100 that indicate the percentage of time for which a flow is not exceeded. For example, the 90th percentile of river flow is greater than or equal to 90 percent of all recorded flow rates.

Gage datum is a horizontal surface used as a zero point for measurement of stage or gage height. This surface usually is located slightly below the lowest point of the stream bottom such that the gage height is usually slightly greater than the maximum depth of water. Because the gage datum itself is not an actual physical object, the datum usually is defined by specifying the elevations of permanent reference marks such as bridge abutments and survey monuments, and the gage is set to agree with the reference marks. Gage datum is a local datum that is maintained independently of any national geodetic datum. However, if the elevation of the gage datum relative to the national datum (North American Vertical Datum of 1988 or National Geodetic Vertical Datum of 1929) has been determined, then the gage readings can be converted to elevations above the national datum by adding the elevation of the gage datum to the gage reading.

Gage height (G.H.) is the water-surface elevation, in feet above the gage datum. If the water surface is below the gage datum, the gage height is negative. Gage height often is used interchangeably with the more general term "stage," although gage height is more appropriate when used in reference to a reading on a gage.

Gage values are values that are recorded, transmitted, and/or computed from a gaging station. Gage values typically are collected at 5-, 15-, or 30-minute intervals.

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

Gas chromatography/flame ionization detector (GC/FID) is a laboratory analytical method used as a screening technique for semivolatile organic compounds that are extractable from water in methylene chloride.

Geomorphic channel units, as used in this report, are fluvial geomorphic descriptors of channel shape and stream velocity. Pools, riffles, and runs are types of geomorphic channel units considered for National Water-Quality Assessment (NAWQA) Program habitat sampling.

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. (See also "Phytoplankton")

Habitat, as used in this report, includes all nonliving (physical) aspects of the aquatic ecosystem, although living components like aquatic macrophytes and riparian vegetation also are usually included. Measurements of habitat are typically made over a wider geographic scale than are measurements of species distribution.

Habitat quality index is the qualitative description (level 1) of instream habitat and riparian conditions surrounding the reach sampled. Scores range from 0 to 100 percent with higher scores indicative of desirable habitat conditions for aquatic life. Index only applicable to wadable streams.

Hardness of water is a physical-chemical characteristic that commonly is recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations (primarily calcium and magnesium) and is expressed as the equivalent concentration of calcium carbonate ($CaCO_3$).

High tide is the maximum height reached by each rising tide. The high-high and low-high tides are the higher and lower of the two high tides, respectively, of each tidal day. See NOAA web site http://www.co-ops.nos.noaa.gov/tideglos.html.

Hilsenhoff's Biotic Index (HBI) is an indicator of organic pollution that uses tolerance values to weight taxa abundances; usually increases with pollution. It is calculated as follows:

$$HBI = sum \frac{(n)(a)}{N} \quad ,$$

where n is the number of individuals of each taxon, a is the tolerance value of each taxon, and N is the total number of organisms in the sample.

Horizontal datum (See "Datum")

Hydrologic index stations referred to in this report are continuous-record gaging stations that have been selected as representative of streamflow patterns for their respective regions. Station locations are shown on index maps.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as defined by the former Office of Water Data Coordination and delineated on the State Hydrologic Unit Maps by the USGS. Each hydrologic unit is identified by an 8-digit number.

Inch (IN., in.), as used in this report, refers to the depth to which the drainage area would be covered with water if all of the runoff for a given time period were uniformly distributed on it. (See also "Annual runoff")

Instantaneous discharge is the discharge at a particular instant of time. (See also "Discharge")

International Boundary Commission Survey Datum refers to a geodetic datum established at numerous monuments along the United States-Canada boundary by the International Boundary Commission.

Island, as used in this report, is a mid-channel bar that has permanent woody vegetation, is flooded once a year on average, and remains stable except during large flood events.

Laboratory reporting level (LRL) is generally equal to twice the yearly determined long-term method detection level (LT-MDL). The LRL controls false negative error. The probability of falsely reporting a nondetection for a sample that contained an analyte at a concentration equal to or greater than the LRL is predicted to be less than or equal to 1 percent. The value of the LRL will be reported with a "less than" (<) remark code for samples in which the analyte was not detected. The National Water Quality Laboratory (NWQL) collects quality-control data from selected analytical methods on a continuing basis to determine LT-MDLs and to establish LRLs. These values are reevaluated annually on the basis of the most current quality-control data and, therefore, may change. [Note: In several previous NWQL documents (NWQL Technical Memorandum 98.07, 1998), the LRL was called the nondetection value or NDV—a term that is no longer used.]

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

Latent heat flux (often used interchangeably with latent heat-flux density) is the amount of heat energy that converts water from liquid to vapor (evaporation) or from vapor to

liquid (condensation) across a specified cross-sectional area per unit time. Usually expressed in watts per square meter.

Light-attenuation coefficient, also known as the extinction coefficient, is a measure of water clarity. Light is attenuated according to the Lambert-Beer equation:

$$I = I_o e^{-\lambda L} \ ,$$

where I_o is the source light intensity, I is the light intensity at length L (in meters) from the source, λ is the light-attenuation coefficient, and e is the base of the natural logarithm. The light-attenuatin coefficient is defined as:

$$\lambda = -\frac{1}{L}\log_e \frac{I}{I_o} \quad .$$

Lipid is any one of a family of compounds that are insoluble in water and that make up one of the principal components of living cells. Lipids include fats, oils, waxes, and steroids. Many environmental contaminants such as organochlorine pesticides are lipophilic.

Long-term method detection level (LT-MDL) is a detection level derived by determining the standard deviation of a minimum of 24 method detection limit (MDL) spike sample measurements over an extended period of time. LT-MDL data are collected on a continuous basis to assess year-to-year variations in the LT-MDL. The LT-MDL controls false positive error. The chance of falsely reporting a concentration at or greater than the LT-MDL for a sample that did not contain the analyte is predicted to be less than or equal to 1 percent.

Low tide is the minimum height reached by each falling tide. The high-low and low-low tides are the higher and lower of the two low tides, respectively, of each tidal day. See NOAA web site http://www.co-ops.nos.noaa.gov/tideglos.html.

Macrophytes are the macroscopic plants in the aquatic environment. The most common macrophytes are the rooted vascular plants that usually are arranged in zones in aquatic ecosystems and restricted in the area by the extent of illumination through the water and sediment deposition along the shoreline.

Mean concentration of suspended sediment (Daily mean suspended-sediment concentration) is the time-weighted concentration of suspended sediment passing a stream cross section during a given time period. (See also "Daily mean suspended-sediment concentration" and "Suspended-sediment concentration")

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

Mean high or **low tide** is the average of all high or low tides, respectively, over a specific period.

Mean sea level is a local tidal datum. It is the arithmetic mean of hourly heights observed over the National Tidal Datum Epoch. Shorter series are specified in the name; for example, monthly mean sea level and yearly mean sea level. In order that they may be recovered when needed, such datums are referenced to fixed points known as benchmarks. (See also "Datum")

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

Membrane filter is a thin microporous material of specific pore size used to filter bacteria, algae, and other very small particles from water.

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.

Method detection limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99-percent confidence that the analyte concentration is greater than zero. It is determined from the analysis of a sample in a given matrix containing the analyte. At the MDL concentration, the risk of a false positive is predicted to be less than or equal to 1 percent.

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, µg/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 kilogram (UG/KG, µg/kg) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the constituent per unit mass (kilogram) of the material analyzed. One microgram per kilogram is equivalent to 1 part per billion.

Micrograms per liter (UG/L, µg/L) is a unit expressing the concentration of chemical constituents in water as mass (micrograms) of constituent per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter. One microgram per liter is equivalent to 1 part per billion.

Microsiemens per centimeter (US/CM, µS/cm) is a unit expressing the amount of electrical conductivity of a solution as measured between opposite faces of a centimeter cube of solution at a specified temperature. Siemens is the International System of Units nomenclature. It is

synonymous with mhos and is the reciprocal of resistance in ohms.

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

Minimum reporting level (MRL) is the smallest measured concentration of a constituent that may be reliably reported by using a given analytical method.

Miscellaneous site, miscellaneous station, or miscellaneous sampling site is a site where streamflow, sediment, and/or water-quality data or water-quality or sediment samples are collected once, or more often on a random or discontinuous basis to provide better areal coverage for defining hydrologic and water-quality conditions over a broad area in a river basin.

Most probable number (MPN) is an index of the number of coliform bacteria that, more probably than any other number, would give the results shown by the laboratory examination; it is not an actual enumeration. MPN is determined from the distribution of gas-positive cultures among multiple inoculated tubes.

Multiple-plate samplers are artificial substrates of known surface area used for obtaining benthic invertebrate samples. They consist of a series of spaced, hardboard plates on an eyebolt.

Nanograms per liter (NG/L, ng/L) is a unit expressing the concentration of chemical constituents in solution as mass (nanograms) of solute per unit volume (liter) of water. One million nanograms per liter is equivalent to 1 milligram per liter.

National Geodetic Vertical Datum of 1929 (NGVD 29) is a fixed reference adopted as a standard geodetic datum for elevations determined by leveling. It was formerly called "Sea Level Datum of 1929" or "mean sea level." Although the datum was derived from the mean sea level at 26 tide stations, it does not necessarily represent local mean sea level at any particular place. See NOAA web site http://www.ngs.noaa.gov/faq.shtml#WhatVD29VD88. (See "North American Vertical Datum of 1988")

Natural substrate refers to any naturally occurring immersed or submersed solid surface, such as a rock or tree, upon which an organism lives. (See also "Substrate")

Nekton are the consumers in the aquatic environment and consist of large free-swimming organisms that are capable of sustained, directed mobility.

Nephelometric turbidity unit (NTU) is the measurement for reporting turbidity that is based on use of a standard suspension of formazin. Turbidity measured in NTU uses nephelometric methods that depend on passing specific light of a specific wavelength through the sample.

North American Datum of 1927 (NAD 27) is the horizontal control datum for the United States that was defined by a location and azimuth on the Clarke spheroid of 1866.

North American Datum of 1983 (NAD 83) is the horizontal control datum for the United States that is based on the adjustment of 250,000 points including 600 satellite Doppler stations which constrain the system to a geocentric origin.

North American Vertical Datum of 1988 (NAVD 88) is a fixed reference adopted as the official civilian vertical datum for elevations determined by Federal surveying and mapping activities in the United States. This datum was established in 1991 by minimum-constraint adjustment of the Canadian, Mexican, and United States first-order terrestrial leveling networks.

Open or **screened interval** is the length of unscreened opening or of well screen through which water enters a well, in feet below land surface.

Organic carbon (OC) is a measure of organic matter present in aqueous solution, suspension, or bottom sediment. May be reported as dissolved organic carbon (DOC), particulate organic carbon (POC), or total organic carbon (TOC).

Organic mass or **volatile mass** of a living substance is the difference between the dry mass and ash mass and represents the actual mass of the living matter. Organic mass is expressed in the same units as for ash mass and dry mass. (See also "Ash mass," "Biomass," and "Dry mass")

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per 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.

Organochlorine compounds are any chemicals that contain carbon and chlorine. Organochlorine compounds that are important in investigations of water, sediment, and biological quality include certain pesticides and industrial compounds.

Parameter code is a 5-digit number used in the USGS computerized data system, National Water Information System (NWIS), to uniquely identify a specific constituent or property.

Partial-record station is a site where discrete measurements of one or more hydrologic parameters are obtained over a period of time without continuous data being recorded or

computed. A common example is a crest-stage gage partial-record station at which only peak stages and flows are recorded.

Particle size is the diameter, in millimeters (mm), of a particle determined by sieve or sedimentation methods. The sedimentation method utilizes the principle of Stokes law to calculate sediment particle sizes. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube, sedigraph) 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, as 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	>0.004 - 0.062	Sedimentation
Sand	>0.062 - 2.0	Sedimentation/sieve
Gravel	>2.0 - 64.0	Sieve
Cobble	>64 - 256	Manual measurement
Boulder	>256	Manual measurement

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. For the sedimentation method, 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.

Peak flow (peak stage) is an instantaneous local maximum value in the continuous time series of streamflows or stages, preceded by a period of increasing values and followed by a period of decreasing values. Several peak values ordinarily occur in a year. The maximum peak value in a year is called the annual peak; peaks lower than the annual peak are called secondary peaks. Occasionally, the annual peak may not be the maximum value for the year; in such cases, the maximum value occurs at midnight at the beginning or end of the year, on the recession from or rise toward a higher peak in the adjoining year. If values are recorded at a discrete series of times, the peak recorded value may be taken as an approximation of the true peak, which may occur between the recording instants. If the values are recorded with finite precision, a sequence of equal recorded values may occur at the peak; in this case, the first value is taken as the peak.

Percent composition or **percent of total** 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, weight, mass, or volume.

Percent shading is a measure of the amount of sunlight potentially reaching the stream. A clinometer is used to measure left and right bank canopy angles. These values are added together, divided by 180, and multiplied by 100 to compute percentage of shade.

Periodic-record station is a site where stage, discharge, sediment, chemical, physical, or other hydrologic measurements are made one or more times during a year but at a frequency insufficient to develop a daily record.

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

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

pH of water is the negative logarithm of the hydrogen-ion activity. Solutions with pH less than 7.0 standard units are termed “acidic,” and solutions with a pH greater than 7.0 are termed “basic.” Solutions with a pH of 7.0 are neutral. The presence and concentration of many dissolved chemical constituents found in water are affected, in part, by the hydrogen-ion activity of water. Biological processes including growth, distribution of organisms, and toxicity of the water to organisms also are affected, in part, by the hydrogen-ion activity of water.

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 commonly are known as algae. (See also “Plankton”)

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactive nuclide represented by a curie (Ci). A curie is the quantity of radioactive nuclide that yields 3.7×10^{10} radioactive disintegrations per second (dps). A picocurie yields 0.037 dps, or 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers. Concentrations are expressed as a number of cells per milliliter (cells/mL) of sample.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Polychlorinated naphthalenes (PCNs) are industrial chemicals that are mixtures of chlorinated naphthalene

compounds. They have properties and applications similar to polychlorinated biphenyls (PCBs) and have been identified in commercial PCB preparations.

Pool, as used in this report, is a small part of a stream reach with little velocity, commonly with water deeper than surrounding areas.

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 (carbon method) by the plants.

Primary productivity (carbon method) is expressed as milligrams of carbon per area per unit time [mg C/(m^2/time)] for periphyton and macrophytes or per volume [mg C/(m^3/time)] for phytoplankton. The carbon method defines 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 with unenriched water samples. Unit time may be either the hour or day, depending on the incubation period. (See also "Primary productivity")

Primary productivity (oxygen method) is expressed as milligrams of oxygen per area per unit time [mg O/(m^2/time)] for periphyton and macrophytes or per volume [mg O/(m^3/time)] for phytoplankton. The oxygen method defines 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. (See also "Primary productivity")

Radioisotopes are isotopic forms of elements that exhibit radioactivity. Isotopes are varieties of a chemical element that differ in atomic weight but are very nearly alike in chemical properties. The difference arises because the atoms of the isotopic forms of an element differ in the number of neutrons in the nucleus; for example, ordinary chlorine is a mixture of isotopes having atomic weights of 35 and 37, and the natural mixture has an atomic weight of about 35.453. Many of the elements similarly exist as mixtures of isotopes, and a great many new isotopes have been produced in the operation of nuclear devices such as the cyclotron. There are 275 isotopes of the 81 stable elements, in addition to more than 800 radioactive isotopes.

Reach, as used in this report, is a length of stream that is chosen to represent a uniform set of physical, chemical, and biological conditions within a segment. It is the principal sampling unit for collecting physical, chemical, and biological data.

Recoverable from bed (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. (See also "Bed material")

Recurrence interval, also referred to as return period, is the average time, usually expressed in years, between occurrences of hydrologic events of a specified type (such as exceedances of a specified high flow or nonexceedance of a specified low flow). The terms "return period" and "recurrence interval" do not imply regular cyclic occurrence. The actual times between occurrences vary randomly, with most of the times being less than the average and a few being substantially greater than the average. For example, the 100-year flood is the flow rate that is exceeded by the annual maximum peak flow at intervals whose average length is 100 years (that is, once in 100 years, on average); almost two-thirds of all exceedances of the 100-year flood occur less than 100 years after the previous exceedance, half occur less than 70 years after the previous exceedance, and about one-eighth occur more than 200 years after the previous exceedance. Similarly, the 7-day, 10-year low flow ($7Q_{10}$) is the flow rate below which the annual minimum 7-day-mean flow dips at intervals whose average length is 10 years (that is, once in 10 years, on average); almost two-thirds of the nonexceedances of the $7Q_{10}$ occur less than 10 years after the previous nonexceedance, half occur less than 7 years after, and about one-eighth occur more than 20 years after the previous nonexceedance. The recurrence interval for annual events is the reciprocal of the annual probability of occurrence. Thus, the 100-year flood has a 1-percent chance of being exceeded by the maximum peak flow in any year, and there is a 10-percent chance in any year that the annual minimum 7-day-mean flow will be less than the $7Q_{10}$.

Replicate samples are a group of samples collected in a manner such that the samples are thought to be essentially identical in composition.

Return period (See "Recurrence interval")

Riffle, as used in this report, is a shallow part of the stream where water flows swiftly over completely or partially submerged obstructions to produce surface agitation.

River mileage is the curvilinear distance, in miles, measured upstream from the mouth along the meandering path of a stream channel in accordance with Bulletin No. 14 (October

1968) of the Water Resources Council and typically is used to denote location along a river.

Run, as used in this report, is a relatively shallow part of a stream with moderate velocity and little or no surface turbulence.

Runoff is the quantity of water that is discharged ("runs off") from a drainage basin during a given time period. Runoff data may be presented as volumes in acre-feet, as mean discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches. (See also "Annual runoff")

Sea level, as used in this report, refers to one of the two commonly used national vertical datums (NGVD 1929 or NAVD 1988). See separate entries for definitions of these datums. See conversion factors and vertical datum page (inside back cover) for identification of the datum used in this report.

Sediment is solid material that originates mostly from disintegrated rocks; when transported by, suspended in, or deposited from water, it is referred to as "fluvial sediment." Sediment 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 affected by environmental and land-use factors. Some major factors are topography, soil characteristics, land cover, and depth and intensity of precipitation.

Sensible heat flux (often used interchangeably with latent sensible heat-flux density) is the amount of heat energy that moves by turbulent transport through the air across a specified cross-sectional area per unit time and goes to heating (cooling) the air. Usually expressed in watts per square meter.

Seven-day, 10-year low flow ($7Q_{10}$) is the discharge below which the annual 7-day minimum flow falls in 1 year out of 10 on the long-term average. The recurrence interval of the $7Q_{10}$ is 10 years; the chance that the annual 7-day minimum flow will be less than the $7Q_{10}$ is 10 percent in any given year. (See also "Annual 7-day minimum" and "Recurrence interval")

Shelves, as used in this report, are streambank features extending nearly horizontally from the flood plain to the lower limit of persistent woody vegetation.

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. Sodium hazard in water is an index that can be used to evaluate the suitability of water for irrigating crops.

Soil heat flux (often used interchangeably with soil heat-flux density) is the amount of heat energy that moves by conduction across a specified cross-sectional area of soil per unit time and goes to heating (or cooling) the soil. Usually expressed in watts per square meter.

Soil-water content is the water lost from the soil upon drying to constant mass at 105 °C; expressed either as mass of water per unit mass of dry soil or as the volume of water per unit bulk volume of soil.

Specific electrical conductance (conductivity) is a measure of the capacity of water (or other media) to conduct an electrical current. It is expressed in microsiemens per centimeter at 25 °C. Specific electrical conductance is a function of the types and quantity of dissolved substances in water and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is from 55 to 75 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.

Stable isotope ratio (per MIL) is a unit expressing the ratio of the abundance of two radioactive isotopes. Isotope ratios are used in hydrologic studies to determine the age or source of specific water, to evaluate mixing of different water, as an aid in determining reaction rates, and other chemical or hydrologic processes.

Stage (See "Gage height")

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

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.

Substrate embeddedness class is a visual estimate of riffle streambed substrate larger than gravel that is surrounded or covered by fine sediment (<2mm, sand or finer). Below are the class categories expressed as the percentage covered by fine sediment:

0	no gravel or larger substrate	3	26-50 percent
1	> 75 percent	4	5-25 percent
2	51-75 percent	5	< 5 percent

Surface area of a lake is that area (acres) encompassed by the boundary of the lake as shown on USGS topographic maps, or other available maps or photographs. Because surface area changes with lake stage, surface areas listed in this report represent those determined for the stage at the time the maps or photographs were obtained.

Surficial bed material is the upper surface (0.1 to 0.2 foot) 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 defined operationally as the material retained on a 0.45-micrometer filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative suspended water-sediment sample that is retained on a 0.45-micrometer 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 directly analyzing the suspended material collected on the filter or, more commonly, by difference, on the basis of determinations of (1) dissolved and (2) total recoverable concentrations of the constituent. (See also "Suspended")

Suspended sediment is the sediment maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid. (See also "Sediment")

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 foot above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L). The analytical technique uses the mass of all of the sediment and the net weight of the water-sediment mixture in a sample to compute the suspended-sediment concentration. (See also "Sediment" and "Suspended sediment")

Suspended-sediment discharge (tons/d) is the rate of sediment transport, as measured by dry mass or volume, that passes a cross 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. (See also "Sediment," "Suspended sediment," and "Suspended-sediment concentration")

Suspended-sediment load is a general term that refers to a given characteristic of the material in suspension that passes a point during a specified period of time. The term needs to be qualified, such as "annual suspended-sediment load" or "sand-size suspended-sediment load," and so on. It is not synonymous with either suspended-sediment discharge or concentration. (See also "Sediment")

Suspended, total is the total amount of a given constituent in the part of a water-sediment sample that is retained on a 0.45-micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. 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 directly analyzing portions of the suspended material collected on the filter or, more commonly, by difference, on the basis of determinations of (1) dissolved and (2) total concentrations of the constituent. (See also "Suspended")

Suspended solids, total residue at 105 °C concentration is the concentration of inorganic and organic material retained on a filter, expressed as milligrams of dry material per liter of water (mg/L). An aliquot of the sample is used for this analysis.

Synoptic studies are short-term investigations of specific water-quality conditions during selected seasonal or hydrologic periods to provide improved spatial resolution for critical water-quality conditions. For the period and conditions sampled, they assess the spatial distribution of selected water-quality conditions in relation to causative factors, such as land use and contaminant sources.

Taxa (Species) richness is the number of species (taxa) present in a defined area or sampling unit.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification 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*

Thalweg is the line formed by connecting points of minimum streambed elevation (deepest part of the channel).

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table descriptions 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 resulting from the mixing of flow proportionally to the duration of the concentration.

Tons per acre-foot (T/acre-ft) is the dry mass (tons) of a constituent per unit volume (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, tons/d) is a common chemical or sediment discharge unit. It is the quantity of a substance in solution, in suspension, or as bedload that passes a stream section during a 24-hour period. It is equivalent to 2,000 pounds per day, or 0.9072 metric tons per day.

Total is the amount of a given constituent in a representative whole-water (unfiltered) 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 at least 95 percent of the constituent in the sample.)

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. This group includes coliforms that inhabit the intestine of warmblooded animals and those that inhabit soils. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that 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 of sample. (See also "Bacteria")

Total discharge is the quantity of a given constituent, measured as dry mass or volume, that passes a stream cross section per unit of time. When referring to constituents other than water, this term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total in bottom material is the amount of a given constituent in a representative sample of bottom material. 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 judge when the results should be reported as "total in bottom material."

Total length (fish) is the straight-line distance from the anterior point of a fish specimen's snout, with the mouth closed, to the posterior end of the caudal (tail) fin, with the lobes of the caudal fin squeezed together.

Total load refers to all of a constituent in transport. When referring to sediment, it includes suspended load plus bed load.

Total organism count is the number of organisms collected and enumerated in any particular sample. (See also "Organism count/volume")

Total recoverable is the amount of a given constituent in a whole-water sample after a 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 for whole-water samples, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures may produce different analytical results.

Total sediment discharge is the mass of suspended-sediment plus bed-load transport, measured as dry weight, that passes a cross section in a given time. It is a rate and is reported as tons per day. (See also "Bedload," "Bedload discharge," "Sediment," "Suspended sediment," and "Suspended-sediment concentration")

Total sediment load or **total load** is the sediment in transport as bedload and suspended-sediment load. The term may be qualified, such as "annual suspended-sediment load" or "sand-size suspended-sediment load," and so on. It differs from total sediment discharge in that load refers to the material, whereas discharge refers to the quantity of material, expressed in units of mass per unit time. (See also "Sediment," "Suspended-sediment load," and "Total load")

Transect, as used in this report, is a line across a stream perpendicular to the flow and along which measurements are taken, so that morphological and flow characteristics along the line are described from bank to bank. Unlike a cross section, no attempt is made to determine known elevation points along the line.

Turbidity is the reduction in the transparency of a solution due to the presence of suspended and some dissolved substances. The measurement technique records the collective optical properties of the solution that cause light to be scattered and attenuated rather than transmitted in straight lines; the higher the intensity of scattered or attenuated light, the higher the value of the turbidity. Turbidity is expressed in nephelometric turbidity units

(NTU). Depending on the method used, the turbidity units as NTU can be defined as the intensity of light of a specified wavelength scattered or attenuated by suspended particles or absorbed at a method specified angle, usually 90 degrees, from the path of the incident light. Currently approved methods for the measurement of turbidity in the USGS include those that conform to U.S. EPA Method 180.1, ASTM D1889-00, and ISO 7027. Measurements of turbidity by these different methods and different instruments are unlikely to yield equivalent values.

Ultraviolet (UV) absorbance (absorption) at 254 or 280 nanometers is a measure of the aggregate concentration of the mixture of UV absorbing organic materials dissolved in the analyzed water, such as lignin, tannin, humic substances, and various aromatic compounds. UV absorbance (absorption) at 254 or 280 nanometers is measured in UV absorption units per centimeter of pathlength of UV light through a sample.

Unconfined aquifer is an aquifer whose upper surface is a water table free to fluctuate under atmospheric pressure. (See "Water-table aquifer")

Vertical datum (See "Datum")

Volatile organic compounds (VOCs) are organic compounds that can be isolated from the water phase of a sample by purging the water sample with inert gas, such as helium, and subsequently analyzed by gas chromatography. Many VOCs are human-made chemicals that are used and produced in the manufacture of paints, adhesives, petroleum products, pharmaceuticals, and refrigerants. They are often components of fuels, solvents, hydraulic fluids, paint thinners, and dry cleaning agents commonly used in urban settings. VOC contamination of drinking-water supplies is a human health concern because many are toxic and are known or suspected human carcinogens.

Water table is that surface in a ground-water body at which the water pressure is equal to the atmospheric pressure.

Water-table aquifer is an unconfined aquifer within which the water table is found.

Water year in USGS 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, 2002, is called the "2002 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.

Wet mass is the mass of living matter plus contained water. (See also "Biomass" and "Dry mass")

Wet weight refers to the weight of animal tissue or other substance including its contained water. (See also "Dry weight")

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

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and often are 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. (See also "Plankton")

TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS OF THE U.S. GEOLOGICAL SURVEY

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

The reports listed below are for sale by the USGS, Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be made in the form of a check or money order payable to the "U.S. Geological Survey." Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address or by calling 1-888-ASK-USGS. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and mention the "Techniques of Water-Resources Investigations of the U.S. Geological Survey."

Book 1. Collection of Water Data by Direct Measurement

Section D. Water Quality

1-D1. *Water temperature—influential factors, field measurement, and data presentation*, by H.H. Stevens, Jr., J.F. Ficke, and G.F. Smoot: USGS–TWRI book 1, chap. D1. 1975. 65 p.

1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W.W. Wood: USGS–TWRI book 1, chap. D2. 1976. 24 p.

Book 2. Collection of Environmental Data

Section D. Surface Geophysical Methods

2-D1. *Application of surface geophysics to ground-water investigations,* by A.A.R. Zohdy, G.P. Eaton, and D.R. Mabey: USGS–TWRI book 2, chap. D1. 1974. 116 p.

2-D2. *Application of seismic-refraction techniques to hydrologic studies,* by F.P. Haeni: USGS–TWRI book 2, chap. D2. 1988. 86 p.

Section E. Subsurface Geophysical Methods

2-E1. *Application of borehole geophysics to water-resources investigations,* by W.S. Keys and L.M. MacCary: USGS–TWRI book 2, chap. E1. 1971. 126 p.

2-E2. *Borehole geophysics applied to ground-water investigations,* by W.S. Keys: USGS–TWRI book 2, chap. E2. 1990. 150 p.

Section F. Drilling and Sampling Methods

2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W.E. Teasdale: USGS–TWRI book 2, chap. F1. 1989. 97 p.

Book 3. Applications of Hydraulics

Section A. Surface-Water Techniques

3-A1. *General field and office procedures for indirect discharge measurements,* by M.A. Benson and Tate Dalrymple: USGS–TWRI book 3, chap. A1. 1967. 30 p.

3-A2. *Measurement of peak discharge by the slope-area method,* by Tate Dalrymple and M.A. Benson: USGS–TWRI book 3, chap. A2. 1967. 12 p.

3-A3. *Measurement of peak discharge at culverts by indirect methods,* by G.L. Bodhaine: USGS–TWRI book 3, chap. A3. 1968. 60 p.

3-A4. *Measurement of peak discharge at width contractions by indirect methods,* by H.F. Matthai: USGS-TWRI book 3, chap. A4. 1967. 44 p.

3-A5. *Measurement of peak discharge at dams by indirect methods,* by Harry Hulsing: USGS–TWRI book 3, chap. A5. 1967. 29 p.

3-A6. *General procedure for gaging streams,* by R.W. Carter and Jacob Davidian: USGS–TWRI book 3, chap. A6. 1968. 13 p.

3-A7. *Stage measurement at gaging stations,* by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A7. 1968. 28 p.

3-A8. *Discharge measurements at gaging stations,* by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A8. 1969. 65 p.

3-A9. *Measurement of time of travel in streams by dye tracing,* by F.A. Kilpatrick and J.F. Wilson, Jr.: USGS–TWRI book 3, chap. A9. 1989. 27 p.

3-Al0. *Discharge ratings at gaging stations,* by E.J. Kennedy: USGS–TWRI book 3, chap. A10. 1984. 59 p.

3-A11. *Measurement of discharge by the moving-boat method,* by G.F. Smoot and C.E. Novak: USGS–TWRI book 3, chap. A11. 1969. 22 p.

3-A12. *Fluorometric procedures for dye tracing*, Revised, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS–TWRI book 3, chap. A12. 1986. 34 p.

3-A13. *Computation of continuous records of streamflow*, by E.J. Kennedy: USGS–TWRI book 3, chap. A13. 1983. 53 p.

3-A14. *Use of flumes in measuring discharge,* by F.A. Kilpatrick and V.R. Schneider: USGS–TWRI book 3, chap. A14. 1983. 46 p.

3-A15. *Computation of water-surface profiles in open channels,* by Jacob Davidian: USGS–TWRI book 3, chap. A15. 1984. 48 p.

3-A16. *Measurement of discharge using tracers*, by F.A. Kilpatrick and E.D. Cobb: USGS–TWRI book 3, chap. A16. 1985. 52 p.

3-A17. *Acoustic velocity meter systems,* by Antonius Laenen: USGS–TWRI book 3, chap. A17. 1985. 38 p.

3-A18. *Determination of stream reaeration coefficients by use of tracers,* by F.A. Kilpatrick, R.E. Rathbun, Nobuhiro Yotsukura, G.W. Parker, and L.L. DeLong: USGS–TWRI book 3, chap. A18. 1989. 52 p.

3-A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS–TWRI book 3, chap. A19. 1990. 31 p.

3-A20. *Simulation of soluble waste transport and buildup in surface waters using tracers*, by F.A. Kilpatrick: USGS–TWRI book 3, chap. A20. 1993. 38 p.

3-A21 *Stream-gaging cableways,* by C. Russell Wagner: USGS–TWRI book 3, chap. A21. 1995. 56 p.

Section B. Ground-Water Techniques

3-B1. *Aquifer-test design, observation, and data analysis,* by R.W. Stallman: USGS–TWRI book 3, chap. B1. 1971. 26 p.

3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G.D. Bennett: USGS–TWRI book 3, chap. B2. 1976. 172 p.

3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J.E. Reed: USGS–TWRI book 3, chap. B3. 1980. 106 p.

3-B4. *Regression modeling of ground-water flow,* by R.L. Cooley and R.L. Naff: USGS–TWRI book 3, chap. B4. 1990. 232 p.

3-B4. *Supplement 1. Regression modeling of ground-water flow--Modifications to the computer code for nonlinear regression solution of steady-state ground-water flow problems,* by R.L. Cooley: USGS–TWRI book 3, chap. B4. 1993. 8 p.

3-B5. *Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems—An introduction*, by O.L. Franke, T.E. Reilly, and G.D. Bennett: USGS–TWRI book 3, chap. B5. 1987. 15 p.

3-B6. *The principle of superposition and its application in ground-water hydraulics,* by T.E. Reilly, O.L. Franke, and G.D. Bennett: USGS–TWRI book 3, chap. B6. 1987. 28 p.

3-B7. *Analytical solutions for one-, two-, and three-dimensional solute transport in ground-water systems with uniform flow,* by E.J. Wexler: USGS–TWRI book 3, chap. B7. 1992. 190 p.

3-B8. *System and boundary conceptualization in ground-water flow simulation,* by T.E. Reilly: USGS–TWRI book 3, chap. B8. 2001. 29 p.

Section C. Sedimentation and Erosion Techniques

3-C1. *Fluvial sediment concepts,* by H.P. Guy: USGS–TWRI book 3, chap. C1. 1970. 55 p.

3-C2. *Field methods for measurement of fluvial sediment*, by T.K. Edwards and G.D. Glysson: USGS–TWRI book 3, chap. C2. 1999. 89 p.

3-C3. *Computation of fluvial-sediment discharge,* by George Porterfield: USGS–TWRI book 3, chap. C3. 1972. 66 p.

Book 4. Hydrologic Analysis and Interpretation

Section A. Statistical Analysis

4-A1. *Some statistical tools in hydrology*, by H.C. Riggs: USGS–TWRI book 4, chap. A1. 1968. 39 p.

4-A2. *Frequency curves,* by H.C. Riggs: USGS–TWRI book 4, chap. A2. 1968. 15 p.

4-A3. *Statistical methods in water resources,* by D.R. Helsel and R.M. Hirsh: USGS–TWRI book 4, chap. A3. 1991. Available only online at http://water.usgs.gov/pubs/twri/twri4a3/.

Section B. Surface Water

4-B1. *Low-flow investigations,* by H.C. Riggs: USGS–TWRI book 4, chap. B1. 1972. 18 p.

4-B2. *Storage analyses for water supply*, by H.C. Riggs and C.H. Hardison: USGS–TWRI book 4, chap. B2. 1973. 20 p.

4-B3. *Regional analyses of streamflow characteristics,* by H.C. Riggs: USGS–TWRI book 4, chap. B3. 1973. 15 p.

Section D. Interrelated Phases of the Hydrologic Cycle

4-D1. *Computation of rate and volume of stream depletion by wells*, by C.T. Jenkins: USGS–TWRI book 4, chap. D1. 1970. 17 p.

Book 5. Laboratory Analysis

Section A. Water Analysis

5-A1. *Methods for determination of inorganic substances in water and fluvial sediments,* by M.J. Fishman and L.C. Friedman, editors: USGS–TWRI book 5, chap. A1. 1989. 545 p.

5-A2. *Determination of minor elements in water by emission spectroscopy,* by P.R. Barnett and E.C. Mallory, Jr.: USGS–TWRI book 5, chap. A2. 1971. 31 p.

5-A3. *Methods for the determination of organic substances in water and fluvial sediments*, edited by R.L. Wershaw, M.J. Fishman, R.R. Grabbe, and L.E. Lowe: USGS–TWRI book 5, chap. A3. 1987. 80 p.

5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples,* by L.J. Britton and P.E. Greeson, editors: USGS–TWRI book 5, chap. A4. 1989. 363 p.

5-A5. *Methods for determination of radioactive substances in water and fluvial sediments,* by L.L. Thatcher, V.J. Janzer, and K.W. Edwards: USGS–TWRI book 5, chap. A5. 1977. 95 p.

5-A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments,* by L.C. Friedman and D.E. Erdmann: USGS–TWRI book 5, chap. A6. 1982. 181 p.

Section C. Sediment Analysis

5-C1. *Laboratory theory and methods for sediment analysis*, by H.P. Guy: USGS–TWRI book 5, chap. C1. 1969. 58 p.

Book 6. Modeling Techniques

Section A. Ground Water

6-A1. *A modular three-dimensional finite-difference ground-water flow model*, by M.G. McDonald and A.W. Harbaugh: USGS–TWRI book 6, chap. A1. 1988. 586 p.

6-A2. *Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model,* by S.A. Leake and D.E. Prudic: USGS–TWRI book 6, chap. A2. 1991. 68 p.

6-A3. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 1: Model Description and User's Manual,* by L.J. Torak: USGS–TWRI book 6, chap. A3. 1993. 136 p.

6-A4. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 2: Derivation of finite-element equations and comparisons with analytical solutions,* by R.L. Cooley: USGS–TWRI book 6, chap. A4. 1992. 108 p.

6-A5. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 3: Design philosophy and programming details,* by L.J. Torak: USGS–TWRI book 6, chap. A5. 1993. 243 p.

6-A6. *A coupled surface-water and ground-water flow model (MODBRANCH) for simulation of stream-aquifer interaction*, by Eric D. Swain and Eliezer J. Wexler: USGS–TWRI book 6, chap. A5. 1996. 125 p.

6-A7. *User's guide to SEAWAT: A computer program for simulation of three-dimensional variable-density ground-water flow*, by Weixing Guo and Christian D. Langevlin: USGS–TWRI book 6, chap. A7. 2002. 77 p.

Book 7. Automated Data Processing and Computations

Section C. Computer Programs

7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments,* by P.C. Trescott, G.F. Pinder, and S.P. Larson: USGS–TWRI book 7, chap. C1. 1976. 116 p.

7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L.F. Konikow and J.D. Bredehoeft: USGS–TWRI book 7, chap. C2. 1978. 90 p.

7-C3. *A model for simulation of flow in singular and interconnected channels,* by R.W. Schaffranek, R.A. Baltzer, and D.E. Goldberg: USGS–TWRI book 7, chap. C3. 1981. 110 p.

Book 8. Instrumentation

Section A. Instruments for Measurement of Water Level

8-A1. *Methods of measuring water levels in deep wells,* by M.S. Garber and F.C. Koopman: USGS–TWRI book 8, chap. A1. 1968. 23 p.

8-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J.D. Craig: USGS–TWRI book 8, chap. A2. 1983. 57 p.

Section B. Instruments for Measurement of Discharge

8-B2. *Calibration and maintenance of vertical-axis type current meters,* by G.F. Smoot and C.E. Novak: USGS–TWRI book 8, chap. B2. 1968. 15 p.

Book 9. Handbooks for Water-Resources Investigations

Section A. National Field Manual for the Collection of Water-Quality Data

9-A1. *National Field Manual for the Collection of Water-Quality Data: Preparations for Water Sampling*, by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A1. 1998. 47 p.

9-A2. *National Field Manual for the Collection of Water-Quality Data: Selection of Equipment for Water Sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A2. 1998. 94 p.

9-A3. *National Field Manual for the Collection of Water-Quality Data: Cleaning of Equipment for Water Sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A3. 1998. 75 p.

9-A4. *National Field Manual for the Collection of Water-Quality Data: Collection of Water Samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A4. 1999. 156 p.

9-A5. *National Field Manual for the Collection of Water-Quality Data: Processing of Water Samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A5. 1999, 149 p.

9-A6. *National Field Manual for the Collection of Water-Quality Data: Field Measurements*, edited by F.D. Wilde and D.B. Radtke: USGS–TWRI book 9, chap. A6. 1998. Variously paginated.

9-A7. *National Field Manual for the Collection of Water-Quality Data: Biological Indicators*, edited by D.N. Myers and F.D. Wilde: USGS–TWRI book 9, chap. A7. 1997 and 1999. Variously paginated.

9-A8. *National Field Manual for the Collection of Water-Quality Data: Bottom-material samples*, by D.B. Radtke: USGS–TWRI book 9, chap. A8. 1998. 48 p.

9-A9. *National Field Manual for the Collection of Water-Quality Data: Safety in Field Activities*, by S.L. Lane and R.G. Fay: USGS–TWRI book 9, chap. A9. 1998. 60 p.

Other USGS Methods Report:

OFR 93-125. *Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory--Determination of inorganic and organic constituents in water and fluvial sediments*, by M.J. Fishman, ed., 1993. 217 p.

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)
[P, present;--, no data]

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 5--Hudson Bay Basin									
05010000	Belly River at international boundary	74.8	1947-64	1948-64	--	--	--	--	--	--
05010500	North Fork Belly River at international boundary	10.1	1947-55	1948-55	--	--	--	--	--	--
05010700	Mountain View Irrigation District Canal near Mtn. View, Alberta	--	1935-78	--	--	--	--	--	--	--
05011000	Belly River near Mountain View, Alberta	121	1912-78	1912-78	--	--	--	--	--	--
05011500	Waterton River near international boundary	61.0	1947-64	1948-64	--	--	--	--	--	--
05012000	Street Creek at international boundary	6.0	1948-55	1948-55, 1964	--	--	--	--	--	--
05012500	Boundary Creek at international boundary	21.0	1948-64	1948-64	--	--	--	--	--	--
05013000	Waterton River near Waterton Park, Alberta	238	1908-33, 1948-78	1908-30, 1933, 1948-78	--	--	--	--	--	--
05013500	St. Mary Lake near St. Mary	130	1929-61	--	--	--	--	--	--	--
05013600	St. Mary River near St. Mary	130	1961-62	--	--	--	--	--	--	--
05013700	St. Mary River above Swiftcurrent Creek, near Babb	173	1902-15	1902-15	--	--	--	--	--	--
05013900	Grinnell Creek at Grinnell Glacier, near Many Glacier	1.1	1959-71	1960-63, 1965-66, 1968-71	--	--	--	--	--	--
05014000	Grinnell Creek near Many Glacier	3.32	1949-78	1950-78	--	--	--	--	--	--
05014500	**Swiftcurrent Creek at Many Glacier**	30.9	**1912-P**	**1913-P**	--	1966-69	--	--	1966	--
05015000	Canyon Creek near Many Glacier	7.1	1918-37	1919, 1921-27, 1929-31, 1934,1936	--	--	--	--	--	--
05015500	**Lake Sherburne at Sherburne**	64.1	**1915-P**	--	--	--	--	--	--	--
05016000	**Swiftcurrent Creek at Sherburne**	64.6	**1912-81, 1984-P**	**1913-P**	--	--	--	1990-92	**1996-P**	--
05016400	Swiftcurrent Creek at mouth, near Babb	--	--	--	--	--	--	--	1996	--
05016500	Swiftcurrent Creek near Babb	98.6	1902-10	1902, 1904-07, 1909	--	--	--	--	--	--
05017000	Lower St. Mary Lake near Babb	276	1929-55	--	--	--	--	--	--	--
05017500	**St. Mary River near Babb**	276	**1901-02, 1910-25, 1950-P**	**1902, 1911-25, 1951-P**	--	--	--	1965	--	--
05018000	**St. Mary Canal at intake, near Babb**	--	**1918-50, 1997-P**	--	--	--	--	--	--	--
05018500	**St. Mary Canal at St. Mary Crossing, near Babb**	--	**1918-P**	--	--	--	--	--	--	--
05019000	St. Mary Canal at Hudson Bay Divide, near Browning	--	1917-66	--	--	--	--	1965, 1981-83	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
			Part 5--Hudson Bay Basin--Continued							
05019500	St. Mary River below St. Mary Canal, near Babb	286	1929-50	1929-33, 1935-50	--	--	--	--	--	--
05020000	Kennedy Creek near Babb	60.8	1905	1964,1975	--	--	--	--	--	--
05020500	**St. Mary River at international boundary**	465	**1902-P**	**1903-P**	1978-81	1978-79	--	1978-93	1978-93	1978-93
			Part 6--Missouri River Basin							
06006000	**Red Rock Creek above Lakes, near Lakeview**	39.2	**1997-P**	**1997-P**	--	--	--	--	--	--
06007000	Tom Creek near Lakeview	6.43	1989	1989	--	--	--	--	--	--
06008000	Odell Creek above Taft Ranch, near Lakeview	17.7	1993-98	1994-98	--	--	--	--	--	--
06010000	Red Rock River near Lakeview	237	1933-37	--	--	--	--	--	--	--
06010500	Red Rock River at Metzel Fork, near Monida	264	1925-29	--	--	--	--	--	--	--
06010600	Red Rock River at Brundage Bridge, near Lakeview	277	1988-89	1989	--	--	--	--	--	--
06011000	Red Rock River at Kennedy Ranch, near Lakeview	323	1936-67	1937-42, 1945-54, 1956-67, 1984	--	--	--	--	--	--
06011400	Long Creek near Lakeview	36	--	1960-67, 1969,1984	--	--	--	--	--	--
06011500	Red Rock River above Lima Reservoir, near Monida	431	1911, 1914-18, 1925,1930	--	--	--	--	--	--	--
06011900	Red Rock River tributary near Monida	0.37	--	1960-67, 1984	--	--	--	--	--	--
06012000	**Lima Reservoir near Monida**	570	**1940-P**	--	--	--	--	--	--	--
06012500	**Red Rock River below Lima Reservoir, near Monida**	570	**1911-19, 1925-69, 1974-82, 1985-P**	**1912-18, 1926-69, 1974-82, 1985-P**	--	--	--	--	--	--
06013000	Red Rock River at Lima	602	1907-11	--	--	--	--	--	--	--
06013200	Traux Creek near Lima	4.06	--	1960-74, 1984	--	--	--	--	--	--
06013400	Muddy Creek near Dell	63.4	--	1960-74, 1984	--	--	--	--	--	--
06013500	Big Sheep Creek below Muddy Creek, near Dell	278	1936, 1946-53, 1977-79	1946-53, 1960-91	--	1977-79	1977-79	--	1977-79	--
06013900	Sage Creek tributary near Dell	0.34	--	1959-67	--	--	--	--	--	--
06014000	Red Rock River near Dell	1,421	1942-67	1943-67	--	--	--	--	--	--
06014500	Red Rock River at Red Rock	1,548	1890, 1951-52, 1974-83	1974-83	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06015000	Horse Prairie Creek near Grant	325	1946-53	1946-53	--	--	--	--	--	--
06015300	**Clark Canyon Reservoir near Grant**	2,321	**1964-P**	--	--	--	--	--	--	--
06015400	Beaverhead River near Grant	2,322	1962-83	1963-83	--	--	--	--	--	--
06015430	**Clark Canyon near Dillon**	18.0	--	**1969, 1974-P**	--	--	--	--	--	--
06015500	Grasshopper Creek near Dillon	348	1921-33, 1946-54, 1955-58, 1960-61	1921-32, 1946-53, 1955-58, 1960-73, 1975	--	--	--	1986	--	--
06016000	**Beaverhead River at Barretts**	2,737	**1907-P**	**1908-P**	1965-78	1965-78	--	1965-78, 1986		--
06016500	Rattlesnake Creek near Dillon	23.9	1946-49	--	--	--	--	--	--	--
06016900	Beaverhead River tributary near Dillon	0.93	--	1960-74	--	--	--	--	--	--
06017000	**Beaverhead River at Dillon**	2,895	**1950-52, 1963-71 2002**	**1951-52, 1964-71 2002**	--	--	--	--	--	--
06017500	Blacktail Deer Creek near Dillon	312	1946-54, 1955-66	1946-53, 1955-66, 1984	--	--	--	--	--	--
06017600	Blacktail Deer Creek at Dillon	--	--	--	--	--	--	1986	--	--
06018000	Beaverhead River near Dillon	3,484	1951-52, 1963-83	1951-52, 1964-83	--	--	--	--	--	--
06018200	Beaverhead River tributary No. 2 near Dillon	0.88	--	1958-65	--	--	--	--	--	--
06018500	**Beaverhead River near Twin Bridges**	3,619	**1935-P**	**1936-44, 1946-P**	--	**2001-P**	1962-74	**1950-51, 1962-81, 1986, 1999-P**	**1999-P**	--
06019000	Ruby River above Warm Springs Creek, near Alder	145	1948-53	1948-53	--	--	--	--	--	--
06019400	Sweetwater Creek near Alder	81.5	--	1974-91	--	--	--	--	--	--
06019500	**Ruby River above Reservoir, near Alder**	534	**1938-P**	**1939-P**	--	--	--	--	1994	--
06019800	Idaho Creek near Alder	11.0	--	1960-85	--	--	--	--	--	--
06020000	Ruby River at damsite, near Alder	592	1911-14, 1935-37	--	--	--	--	--	--	--
06020600	**Ruby River below Reservoir, near Alder**	596	**1962-P**	**1963-P**	--	--	--	--	1994	--
06021000	Ruby River near Alder	614	1929-39, 1946-61	1929-39, 1947-60	--	--	--	--	--	--
06021500	Ruby River at Laurin	650	1946-61	1947-60	--	--	--	--	--	--
06022000	Ruby River below Ramshorn Creek, near Sheridan	843	1946-53	1947-53	--	--	--	--	--	--
06022500	Ruby River near Sheridan	863	1946-51	--	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year): Discharge or contents: Daily or monthly	Discharge or contents: Annual peak	Water quality: Daily: Specific conductance	Water quality: Daily: Water temperature	Water quality: Daily: Sediment	Water quality: Periodic: Chemistry	Water quality: Periodic: Sediment	Water quality: Periodic: Biology
	Part 6--Missouri River Basin--Continued									
06023000	Ruby River near Twin Bridges	935	1940-43, 1946-65, 1979-81	1942-73, 1947-65, 1980-81	--	1979-81	--	1986	1965	--
06023500	Big Hole River near Jackson	44.0	1948-54	1948-53	--	--	--	--	--	--
06024000	Miner Creek near Jackson	17.6	1948-54	1948-53	--	--	--	--	--	--
06024450	**Big Hole River below Big Lake Creek, at Wisdom**	575	**1988-P**	**1988-P**	--	**1988-P**	--	--	--	--
06024470	Swamp Creek near Wisdom	66.1	1995-96	1995-96	--	--	--	--	--	--
06024500	Trail Creek near Wisdom	71.4	1948-54, 1966-72	1948-53, 1967-72	--	--	--	--	--	--
06024510	West Fork Ruby Creek near Wisdom	13.4	1995-96	1995-96	--	--	--	--	--	--
06024540	**Big Hole River below Mudd Creek, near Wisdom**	1,267	**1997-P**	**1998-P**	--	--	--	--	--	--
06024580	Big Hole River near Wise River	1,611	1979-81	1980-81	--	--	--	--	--	--
06024590	Wise River near Wise River	214	1973-85	1973-85	--	--	--	--	--	--
06025000	Big Hole River near Dewey	1,990	1910-13	--	--	--	--	--	--	--
06025100	**Quartz Hill Gulch near Wise River**	14.3	--	**1974-P**	--	--	--	--	--	--
06025250	**Big Hole River at Maiden Rock, near Divide**	2,199	**1997-P**	1998-P	--	--	--	--	--	--
06025270	Moose Creek above McClean Creek, near Divide	31.9	1998-99	1998-99	--	--	--	--	--	--
06025300	Moose Creek near Divide	42.3	--	1960-74	--	--	--	--	--	--
06025480	Rock Creek below Browns Lake, near Glen	23.0	1998-99	1998-99	--	--	--	--	--	--
06025500	**Big Hole River near Melrose**	2,476	**1923-P**	**1924-40, 1942-P**	--	**1960-64, 1977-P**	1960-64	1957, 1961, 1961-64	--	--
06025700	Willow Creek diversions to Birch Creek, near Glen	--	1946-53, 1955-66	--	--	--	--	--	--	--
06025800	Willow Creek near Glen	35.6	1962-66, 1997-99	1998-99	--	--	--	1963-65	1964-65	--
06026000	Birch Creek near Glen	36.0	1946-53, 1955-76	1946-53, 1955-76	--	--	--	1959-62	1960-61	--
06026210	**Big Hole River near Glen**	2,655	**1997-P**	**1998-P**	--	--	--	--	--	--
06026400	Big Hole River near Twin Bridges	2,762	1979-81	1980-81	--	--	--	1986	--	--
06026500	**Jefferson River near Twin Bridges**	7,632	**1940-43, 1958-72, 1994-P**	**1942-43, 1958-72, 1994-P**	--	**1994-P**	1960-62, 1965-72	1958-62, 1965-72	1971-72	--
06027000	Jefferson River near Silver Star	7,683	1910-16, 1920-39	1911-16, 1921-39, 1966	--	--	--	--	--	--
06027200	Jefferson River at Silver Star	7,683	1972-74	1973-74	--	--	--	1973-74	1974	--
06027500	Bell Creek near Waterloo	5.63	1941-42	--	--	--	--	--	--	--
06027700	Fish Creek near Silver Star	38.9	1959-91	1959-91	--	--	--	--	--	--
06028000	Big Pipestone Creek near Whitehall	108	1910-11	--	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06028500	Little Pipestone Creek near Whitehall	30.7	1935-40	1935-40	--	--	--	--	--	--
06028700	Big Pipestone Creek at Whitehall	--	--	--	--	--	--	1986	--	--
06029000	Whitetail Creek near Whitehall	30.8	1949-68	1950-53, 1955-68, 1981	--	--	--	--	--	--
06029500	Little Whitetail Creek near Whitetail	91.0	1911	--	--	--	--	--	--	--
06030000	Whitetail Creek at Whitehall	179	1911	--	--	--	--	--	--	--
06030200	Jefferson River tributary near Whitehall	1.85	--	1960-75	--	--	--	--	--	--
06030300	**Jefferson River tributary No. 2 near Whitehall**	4.50	--	**1958-P**	--	--	--	--	--	--
06030500	Boulder River above Rock Creek, near Basin	19.4	1936, 1946-53, 1955-57	1947-53,| 1955-57, 1975,1981	--	--	--	--	--	--
06031000	Rock Creek at CCC Camp, near Bernice	9.87	1936	--	--	--	--	--	--	--
06031450	**Boulder River above Kleinsmith Gulch, near Basin**	--	--	--	--	--	--	**1997-P**	**1997-P**	--
06031500	Boulder River at Basin	219	1921-23	--	--	--	--	1997-99	1997-99	--
06031600	**Basin Creek at Basin**	--	--	--	--	--	--	**1997-P**	**1997-P**	--
06031950	**Cataract Creek near Basin**	30.6	--	**1973-P**	--	--	--	1997-99	1997-99	--
06031960	**Cataract Creek at Basin**	--	--	--	--	--	--	**1997-P**	**1997-P**	--
06032000	Boulder River near Basin	292	1919-20	--	--	--	--	1997-99	1997-99	--
06032300	**High Ore Creek near Basin**	8.86	1997	1997	--	--	1997	**1997-P**	**1997-P**	--
06032400	**Boulder River below Little Galena Gulch near Boulder**	318	1997	1997	--	--	1997	**1997-P**	**1997-P**	--
06032500	Muskrat Creek near Boulder	6.09	1912-14	--	--	--	--	--	--	--
06033000	**Boulder River near Boulder**	381	**1929-72, 1985-P**	**1929-72, 1975,1981, 1985-P**	--	--	--	1997-99	1997-99	--
06033500	North Fork Little Boulder River near Boulder	18.8	1926-27	--	--	--	--	--	--	--
06033900	Boulder River near Cardwell	756	--	--	--	--		1986	1997--	--
06034000	South Boulder River near Jefferson Island	27.5	1926-33	1926-33	--	--	--	--	--	--
06034300	South Boulder River near Cardwell	--	--	--	--	--	--	1986	--	--
06034500	Jefferson River at Sappington	9,277	1895-1905, 1938-69	1895-1905, 1939-69, 1975	--	--	--	--	--	--
06034700	Sand Creek at Sappington	9.41	--	1960-74	--	--	--	--	--	--
06034800	Jefferson River tributary No. 3 near Sappington	1.14	--	1960-74	--	--	--	--	--	--
06035000	**Willow Creek near Harrison**	83.8	**1938-P**	**1938-P**	--	**2002**	--	--	--	--
06035500	Norwegian Creek near Harrison	22.4	1938-43, 1946-51	1938-43, 1947-51	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06036500	Willow Creek near Willow Creek	165	1919-33, 1946-53, 1955-57	1920-29, 1931-32, 1947-53, 1955-56	--	--	--	1986	--	--
06036600	Jefferson River tributary No. 4 near Three Forks	0.53	--	1960-74, 1982-83	--	--	--	--	--	--
06036650	**Jefferson River near Three Forks**	9,532	**1978-P**	**1979-P**	--	**1980-81 2000-P**	--	**1986-87, 1999-P**	**1999-P**	--
06036700	Jefferson River tributary No. 5 near Three Forks	3.69	--	1960-73, 1980, 1982-83	--	--	--	--	--	--
06036800	Firehole River near Old Faithful, Yellowstone National Park	--	--	--	--	--	--	1958	--	--
06036905	Firehole River near West Yellowstone	282	1984-96	1984-96	1983-88	1983-93	--	1987,1989	--	--
06037000	Gibbon River near West Yellowstone	118	1913-16, 1984-96	1984-96	1983-88	1983-93	--	1987, 1989	--	--
06037500	**Madison River near West Yellowstone**	420	**1913-73, 1983-86, 1989-P**	**1914-17, 1919-73, 1984-86, 1989-P**	1983-86	1983-86	--	1959, 1986-95	1989-90 1992-95	--
06037600	Madison River above Hebgen Lake, near West Yellowstone	--	--	--	--	--	--	1993-94	1993-94	--
06037700	South Fork Madison River above Denny Creek, near West Yellowstone	--	--	--	--	--	--	1987-88	--	--
06038000	**Hebgen Lake near Grayling**	904	**1936-P**	--	--	--	--	--	--	--
06038500	**Madison River below Hebgen Lake, near Grayling**	905	**1909-P**	**1940-P**	--	--	--	1986-95	1992-95	--
06038550	**Cabin Creek near West Yellowstone**	30.3	--	**1974-P**	--	--	--	--	--	--
06038800	**Madison River at Kirby Ranch, near Cameron**	1,065	**1959-63, 1978-P**	**1960-61, 1963, 1985-P**	--	**1995-P**	1960	1959	1959-60	--
06039000	West Fork Madison River near Lakeview	11.9	1936	--	--	--	--	--	--	--
06039200	West Fork Madison River near Cameron	220	1965-67	1966-67	--	--	--	1986-88	--	--
06039500	Madison River at Lyon	1,346	1928-32	--	--	--	--	1959	--	--
06040000	Madison River near Cameron	1,669	1952-63, 1968-70	1952-58, 1960-63, 1968-70	--	--	--	1988, 1993-95	1993-95	--
06040010	Blaine Spring Creek near Cameron	3.42	1971-72	--	--	--	--	--	--	--
06040300	Jack Creek near Ennis	51.5	1973-86, 1992	1974-86, 1991-92	--	--	--	1980	--	--
06040400	Meadow Creek near McAllister	--	--	--	--	--	--	1986	--	--
06040500	**Ennis Lake near McAllister**	2,181	**1936-P**	--	--	--	--	--	--	--
06040800	**Madison River above Powerplant, near McAllister**	4,690	**2002**	**2002**	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06041000	**Madison River below Ennis Lake, near McAllister**	2,186	**1901-P**	**1943-P**	--	**1977-P**	--	1972-73, 1986-87, 1991-95	1991-95	1972-73
06041300	Hot Springs Creek near Norris	72.5	--	--	--	--	--	1986-87, 1993-94	1993-94	--
06041500	Madison River near Norris	2,288	1890-93, 1910	--	--	--	--	1993-95	1993-95	--
06041700	Cherry Creek near Norris	--	--	--	--	--	--	1986-87, 1993-94	1993-94	--
06042000	Madison River below Cherry Creek, near Norris	2,387	1897-1905	1898-1905	--	--	--	--	--	--
06042500	Madison River near Three Forks	2,511	1893-97, 1928-32, 1941-50	1894-96 1929-32, 1942-50	--	--	--	--	--	--
06042600	Madison River at Three Forks	2,531	--	--	--	--	--	1986-87 1990, 1993-95	1990, 1993-95	--
06043000	Taylor Creek near Grayling	98.0	1946-54, 1955-57, 1966-67	1947-53, 1955-57, 1967	--	--	--	--	--	--
06043200	Squaw Creek near Gallatin Gateway	40.4	--	1959-75	--	--	--	--	--	--
06043300	**Logger Creek near Gallatin Gateway**	2.48	--	**1959-P**	--	--	--	--	--	--
06043500	**Gallatin River near Gallatin Gateway**	825	**1889-94, 1930-69, 1971-81, 1985-P**	**1890-94, 1931-81, 1985-P**	--	**2001-P**	--	1949-51, 1986-87, 1998	--	1998
06044000	Gallatin River near Salesville	833	1895-1905, 1910-13, 1921-23	1896-1905, 1912-13, 1921-23	--	--	--	--	--	--
06044100	Wilson Creek near Gallatin Gateway	5.33	1952-53	--	--	--	--	--	--	--
06044200	West Fork Wilson Creek near Gallatin Gateway	3.81	1952-53	--	--	--	--	--	--	--
06044300	Big Bear Creek near Gallatin Gateway	13.2	1952-53	--	--	--	--	--	--	--
06044400	Little Bear Creek near Gallatin Gateway	3.87	1952-53	--	--	--	--	--	--	--
06044500	South Cottonwood Creek near Gallatin Gateway	21.9	1951-53	--	--	--	--	--	--	--
06045000	Gallatin River at Axtell Bridge, near Gallatin Gateway	927	1950-54	--	--	--	--	--	--	--
06045200	Fish Creek near Gallatin Gateway	--	1952-53	--	--	--	--	--	--	--
06045300	Yellow Dog Creek near Belgrade	6.85	1952-53	--	--	--	--	--	--	--
06045350	Godfrey Creek near Belgrade	6.32	1952-53	--	--	--	--	--	--	--
06045400	Baker Creek near Manhattan	--	1952-53	--	--	--	--	--	--	--
06045500	Gallatin River near Belgrade	965	1950-54	--	--	--	--	1949	--	--
06046000	Gallatin River near Manhattan	970	1950-54	--	--	--	--	1949	--	--
06046100	Ridgley Creek near Manhattan	--	1952-53	--	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06046200	Gallatin River above Camp Creek, near Manhattan	--	--	--	--	--	--	1949	--	--
06046300	Camp Creek near Belgrade	34.5	1952-53	--	--	--	--	--	--	--
06046400	Randall Creek near Manhattan	--	1952-53	--	--	--	--	--	--	--
06046500	Rocky Creek near Bozeman	50.5	1951-53	1952-53, 1959-91	--	--	--	1949	--	--
06046520	Unnamed Creek near Bozeman	2.63	--	1997	--	--	--	--	--	--
06046700	Pitcher Creek near Bozeman	2.33	--	1960-75, 1981	--	--	--	--	--	--
06047000	Bear Canyon near Bozeman	17.0	1951-53	1952-53, 1959-73, 1975,1981	--	--	--	--	--	--
06047500	Sourdough Creek near Bozeman	28.2	1951-53	--	--	--	--	--	--	--
06048000	East Gallatin River at Bozeman	148	1939-61	1940-61, 1981	--	--	--	1949,1951	--	--
06048500	Bridger Creek near Bozeman	62.5	1946-69, 1971-72, 1987	1946-69, 1971-72, 1981,1987	--	--	--	1949	--	--
06048600	Lyman Creek near Bozeman	1.75	1952-53	--	--	--	--	1949	--	--
06048700	**East Gallatin River below Bridger Creek, near Bozeman**	226	**2002**	**2002**	--	**2002**	--	--	--	--
06048800	Deer Creek near Bozeman	--	1953	--	--	--	--	--	--	--
06048900	East Gallatin River near Belgrade	--	1952-53	--	--	--	--	--	--	--
06049000	Middle Cottonwood Creek near Bozeman	4.25	1951-53	--	--	--	--	--	--	--
06050000	Hyalite Creek at Hyalite Ranger Station, near Bozeman	48.2	1895-96, 1898-1900, 1902,1904, 1935-95	1898-1899, 1902, 1935-95	--	--	--	1949	--	--
06050100	Hyalite Creek near Belgrade	--	1952	--	--	--	--	--	--	--
06050200	Bostwick Creek near Belgrade	5.04	1952-53	--	--	--	--	1949	--	--
06050400	Thompson Creek near Belgrade	--	1952-53	--	--	--	--	--	--	--
06050450	Ben Hart Creek near Belgrade	--	1952-53	--	--	--	--	--	--	--
06050500	Ross Creek near Belgrade	1.25	1951-53	--	--	--	--	1949,1951	--	--
06050700	Truman Creek near Belgrade	2.94	1952-53	--	--	--	--	--	--	--
06051000	Reese Creek near Belgrade	21.5	1951-53	--	--	--	--	--	--	--
06051200	Bear Creek near Belgrade	4.30	1952-53	--	--	--	--	--	--	--
06051300	Foster Creek near Belgrade	--	1953	--	--	--	--	--	--	--
06051500	Dry Creek at Andrus Ranch, near Manhattan	96.2	1952-53	--	--	--	--	--	--	--
06051700	Reynolds (Quagle) Creek near Manhattan	--	1953	--	--	--	--	--	--	--
06052000	Dry Creek at Brownell Ranch, near Manhattan	104	1951	--	--	--	--	--	--	--
06052050	Story Creek near Manhattan	--	1952-53	--	--	--	--	--	--	--
06052100	Cowan Creek near Manhattan	--	1952-53	--	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06052200	Gibson Creek near Manhattan	--	1952-53	--	--	--	--	1949,1951	--	--
06052300	Bull Run Creek near Manhattan	--	1952-53	--	--	--	--	--	--	--
06052500	**Gallatin River at Logan**	1,795	**1893-1905, 1928-P**	**1895-1900, 1902-1905, 1929-33, 1935-P**	--	**1979-85, 2001-P**	--	**1949,1951, 1957,1986, 1999-P**	**1965, 1999-P**	--
06053000	Sixteenmile Creek at Ringling	79.0	1950-55	1951-55	--	--	--	--	--	--
06053050	**Lost Creek near Ringling**	9.59	--	**1974-P**	--	--	--	--	--	--
06053400	Sixteenmile Creek near Toston	--	--	--	--	--	--	1986	--	--
06053500	Broadwater East Canal near Toston	--	1941-49	--	--	--	--	--	--	--
06054000	Broadwater West Canal near Toston	--	1941-49	--	--	--	--	--	--	--
06054500	**Missouri River at Toston**	14,669	**1890-91, 1910-16, 1941-P**	**1890, 1910-16, 1941-P**	1973-81	**1949-53 1973-P**	1949-53	**1949-51, 1972-95, 1999-P**	**1965, 1973-95, 1999-P**	1972-94
06055000	Crow Creek near Townsend	48.6	1912-13	--	--	--	--	1950,1986, 1988-91	1989-90	--
06055500	Crow Creek near Radersburg	76.6	1901, 1919-29, 1966-72, 1989-90	1901, 1920-29, 1966-72, 1975,1981, 1989-90	--	--	--	--	--	--
06056200	Castle Creek tributary near Ringling	2.51	--	1960-74, 1981, 1989-90	--	--	--	--	--	--
06056300	**Cabin Creek near Townsend**	11.8	--	**1960-P**	--	--	--	--	--	--
06056500	Deep Creek near Townsend	65.4	1910-15	--	--	--	--	--	--	--
06056600	Deep Creek below North Fork Deep Creek, near Townsend	87.7	--	1959-73, 1975,1981, 1989-90	--	--	--	--	--	--
06057000	Missouri River near Townsend	15,343	1891-1904	1892-1903, 1964	--	--	--	--	--	--
06057400	Beaver Creek above Weasel Creek, near Winston	21.5	--	--	--	--	--	1950, 1988-91	1989-90	--
06057500	Lake Sewell near Helena	15,894	1936-53	--	--	--	--	--	--	--
06058000	Missouri River at Canyon Ferry	15,894	1889	--	--	--	--	--	--	--
06058500	**Canyon Ferry Lake near Helena**	15,904	**1953-P**	--	--	--	--	--	--	--
06058502	Missouri River below Canyon Ferry Dam, near Helena	15,904	--	--	1968-87	--	--	1968-87	--	--
06058700	**Mitchell Gulch near East Helena**	8.09	--	**1959-2002**	--	--	--	--	--	--
06058900	Prickly Pear Creek below Anderson Gulch, near Jefferson City	14.0	--	1989-90	--	--	--	1988-90	1989-90	--
06059000	Dutchman Creek near Alhambra	9.78	1921-24	--	--	--	--	--	--	--
06059500	Warm Springs Creek at Alhambra	20.6	1921-24	--	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06060000	Clancy Creek at Clancy	33.1	1921-23	--	--	--	--	--	--	--
06060500	Lump Gulch at Foley's Ranch, near Clancy	33.0	1921-24	--	--	--	--	--	--	--
06061000	Lump Gulch at Zastrow's Ranch, near Clancy	43.4	1908-13	1909-13, 1981	--	--	--	--	--	--
06061500	**Prickly Pear Creek near Clancy**	192	**1908-16, 1921-33, 1945-69, 1978-P**	**1911-16, 1923-33, 1946-53, 1955-69, 1975, 1979-P**	--	--	--	**1950, 1999-P**	**1999-P**	--
06061700	Jackson Creek near East Helena	3.44	--	1961-75, 1981, 1989-90	--	--	--	--	--	--
06061800	Crystal Creek near East Helena	3.77	--	1961-75, 1981, 1989-90	--	--	--	--	--	--
06061900	McClellan Creek near East Helena	33.2	--	1961-75, 1981, 1989-90	--	--	--	1988-90	1989-90	--
06062000	Prickly Pear Creek at East Helena	251	1908-13	--	--	--	--	1995	--	--
06062010	Prickly Pear Creek below East Helena	--	--	--	--	--	--	1971	--	--
06062500	**Tenmile Creek near Rimini**	30.9	**1914-94, 1997-P**	**1915-94, 1997-P**	--	--	--	1981, 1997-99	1997-99	--
06062700	Little Porcupine Creek tributary near Helena	0.39	--	1959-73, 1981,1989	--	--	--	--	--	--
06062750	**Tenmile Creek at Tenmile Water Treatment Plant, near Rimini**	51.1	**1997-P**	**1997-P**	--	--	--	**1999-P**	**1999-P**	--
06063000	**Tenmile Creek near Helena**	96.5	1908-54, 1997-98	1909-54, 1975,1981, 1997-98	--	--	--	**1950-51, 1997-98 2002**	**1997-98 2002**	--
06063500	Sevenmile Creek at Birdseye	31.9	1908-13	--	--	--	--	--	--	--
06064000	Sevenmile Creek near Helena	--	1908	--	--	--	--	--	--	--
06064100	**Tenmile Creek at Green Meadow Drive, at Helena**	161	1997-98	1997-98	--	--	--	**2002**	**2002**	--
06064150	Tenmile Creek above Prickly Pear Creek, near Helena	188	1997-98	1997-98	--	--	--	--	--	--
06064500	**Lake Helena near Helena**	610	**1945-P**	--	--	--	--	--	--	--
06065000	**Hauser Lake near Helena**	16,876	**1936-P**	--	--	--	--	--	--	--
06065500	**Missouri River below Hauser Dam, near Helena**	16,876	**1923-42 1995-P**	**1923-42, 1995-P**	--	--	--	--	--	--
06066000	**Holter Lake near Wolf Creek**	17,149	**1936-P**	--	--	--	--	--	--	--
06066500	**Missouri River below Holter Dam, near Wolf Creek**	17,149	**1945-P**	**1946-P**	--	**2000-P**	--	--	--	--
06067000	Little Prickly Pear Creek above Deadman Creek, near Marysville	20.1	1909-11	--	--	--	--	--	--	--
06067500	Deadman Creek near Marysville	9.52	1909-11	--	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06068000	Lost Horse Creek near Marysville	13.1	1909-11	--	--	--	--	--	--	--
06068500	Little Prickly Pear Creek near Marysville	44.4	1913-33	1913-32	--	--	--	--	--	--
06069000	Marsh Creek near Marysville	6.07	1909-12	--	--	--	--	--	--	--
06070000	Canyon Creek near Canyon Creek	73.8	1921-23	--	--	--	--	--	--	--
06070500	Cottonwood Creek near Canyon Creek	16.5	1921-22	--	--	--	--	--	--	--
06071000	Little Prickly Pear Creek near Canyon Creek	183	1909-11, 1913-24	1909-11, 1913-24	--	--	--	--	--	--
06071080	Sieben Ranch ditch below Clark Creek, near Wolf Creek	--	--	--	--	--	--	--	1964-67	--
06071100	Little Prickly Pear Creek at Sieben Ranch, near Wolf Creek	270	1962-67	1962-67	--	--	1962-67	1964	1966	--
06071130	Little Prickly Pear Creek above Medicine Rock Creek, near Wolf Creek	--	--	--	--	--	--	--	1964-67	--
06071180	Medicine Rock Creek near Wolf Creek	--	--	--	--	--	--	--	1964-67	--
06071200	Lyons Creek near Wolf Creek	29.9	--	1959-73, 1975	--	--	--	--	1964-67	--
06071220	Little Prickly Pear Creek below Lyons Creek, near Wolf Creek	--	--	--	--	--	--	--	1965-67	--
06071230	Little Prickly Pear Creek above Sheep Creek, near Wolf Creek	--	--	--	--	--	--	--	1964	--
06071240	Sheep Creek near Wolf Creek	--	--	--	--	--	--	--	1964-67	--
06071290	Wolf Creek at Wolf Creek	--	--	--	--	--	--	--	1964-64	--
06071300	**Little Prickly Pear Creek at Wolf Creek**	381	**1962-67, 1992-P**	**1962-65, 1967,1975, 1992-P**	--	**2001-P**	1962-67	1964	1964-67	--
06071400	Dog Creek near Craig	15.7	--	1960-75	--	--	--	--	--	--
06071500	Missouri River at Craig	17,739	1890-92	--	--	--	--	--	--	--
06071600	Wegner Creek at Craig	35.7	--	1960-91	--	--	--	--	--	--
06072000	Dearborn River above Falls Creek, near Clemons	69.6	1908-12	--	--	--	--	--	--	--
06072500	Falls Creek near Clemons	37.6	1908-12	--	--	--	--	--	--	--
06073000	Dearborn River near Clemons	123	1921-23, 1929-53	1921-23 1929-53, 1964,1975	--	--	--	--	--	--
06073500	**Dearborn River near Craig**	325	**1946-69, 1994-P**	**1946-69, 1975, 1994-P**	--	**1993-P**	--	**1991, 1999-P**	**1999-P**	--
06073600	**Black Rock Creek near Augusta**	5.54	--	**1974-P**	--	--	--	--	--	--
06074000	Missouri River at Cascade	18,493	1902-15, 1953	1903-15	--	--	--	--	--	--
06074500	Smith River near White Sulphur Springs	30.7	1923-31, 1934-36	1923-31, 1934-36	--	--	--	--	--	--
06075500	Smith River above Fivemile Creek, near White Sulphur Springs	73.2	1934-43	1934-43	--	--	--	--	--	--
06075600	Fivemile Creek near White Sulphur Springs	6.42	--	1960-74	--	--	--	--	--	--
06075700	North Fork Smith River near mouth, near White Sulphur Springs	185	--	--	--	--	--	1993-95	1993-95	1993-95

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06075800	South Fork Smith River at mouth, near White Sulphur Springs	174	--	--	--	--	--	1993-95	1993-95	1993-95
06075900	Big Birch Creek at mouth, near White Sulphur Springs	49.6	--	--	--	--	--	1993-95	1993-95	1993-95
06076000	Newlan Creek near White Sulphur Springs	7.27	1946-54	1946-53, 1960-73	--	--	--	--	--	--
06076500	Newlan Creek near damsite, near White Sulphur Springs	44.8	1950-57	1951-57	--	--	--	--	--	--
06076550	Newlan Creek at mouth, near White Sulphur Springs	--	--	--	--	--	--	1993-95	1993-95	1993-95
06076600	Camas Creek at mouth, near White Sulphur Springs	--	--	--	--	--	--	1993-95	1993-95	1992-95
06076650	Benton Gulch at mouth, near White Sulphur Springs	57.6	--	--	--	--	--	1993-95	1993-95	1993-95
06076690	Smith River near Fort Logan	846	1978-96	1978-96	--	--	--	1993-95	1993-95	1993-95
06076700	Sheep Creek near Neihart	5.22	--	1960-91	--	--	--	--	--	--
06076800	Nugget Creek near Neihart	1.50	--	1959-73	--	--	--	--	--	--
06077000	Sheep Creek near White Sulphur Springs	42.8	1941-72	1942-72, 1975,1981	--	--	--	1956,1980	1980	--
06077090	Sheep Creek near mouth, near White Sulphur Springs	192	--	--	--	--	--	1993-95	1993-95	1991, 1993-95
06077200	**Smith River below Eagle Creek, near Fort Logan**	1,088	**1996-P**	**1997-P**	--	**1997-P**	--	--	--	--
06077300	Trout Creek near Eden	13.2	--	1974-84	--	--	--	--	--	--
06077500	Smith River near Eden	1,594	1951-69	1951-69, 1975,1981	--	--	--	--	--	--
06077700	Smith River tributary near Eden	1.44	--	1960-73, 1975	--	--	--	--	--	--
06077800	Goodman Coulee near Eden	22.1	--	1959-82	--	--	--	--	--	--
06078000	Smith River at Truly	2,006	1905-07, 1929-32	1905-07, 1929-32, 1953	--	--	--	1991	--	--
06078200	**Missouri River near Ulm**	20,941	**1957-P**	**1948,1953, 1958-P**	--	--	--	--	--	--
06078230	Sand Coulee Creek above Cottonwood Creek, at Centerville	78.8	1995-96	1995-96	--	--	--	1994-96	--	--
06078250	Cottonwood Creek near Stockett	--	1995-96	1995-96	--	--	--	1994-96	--	--
06078260	Number Five Coulee below Giffen Spring, near Stockett	16.7	1995-96	1995-96	--	--	--	1994-96	--	--
06078270	Sand Coulee at Sand Coulee	6.36	1995-96	1995-96	--	--	--	1994-96	--	--
06078500	North Fork Sun River near Augusta	258	1911-12, 1946-68, 1989-93	1911-12, 1946-68, 1989-93	--	--	--	--	1989-93	--
06079000	South Fork Sun River near Augusta	252	1911-12	--	--	--	--	--	--	--
06079500	**Gibson Reservoir near Augusta**	575	**1930-P**	--	--	--	--	1951	--	--
06079600	Beaver Creek at Gibson Dam, near Augusta	20.8	--	1959-73	--	--	--	--	--	--
06080000	Sun River near Augusta	609	1889-91, 1904-40	1890, 1905-29, 1964	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06080500	Pishkun Reservoir near Augusta	--	1936-95	--	--	--	--	1951	--	--
06080700	Spring Valley Canal below Spring Valley drop, near Fairfield	--	1967-68	--	--	--	--	--	--	--
06080800	Spring Valley Canal above Upper Turnbull drop, near Fairfield	--	1967-68	--	--	--	--	--	--	--
06080900	Sun River below diversion dam, near Augusta	609	1967-80	1964, 1968-80	1968-79	--	--	1968-79	--	--
06081000	Floweree Big Canal near Augusta	--	1912	--	--	--	--	--	--	--
06081500	Willow Creek near Augusta	96.1	1905-25	1905-1910, 1912-25	--	--	--	--	--	--
06082000	Willow Creek Reservoir near Augusta	--	1936-95	--	--	--	--	--	--	--
06082200	Sun River below Willow Creek, near Augusta	827	1967-74	1964, 1968-75	--	--	--	--	--	--
06082500	Smith Creek near Augusta	25.0	1906-13	1906-12	--	--	--	--	--	--
06083000	Nilan Reservoir near Augusta	--	1951-95	--	--	--	--	--	--	--
06083500	Ford Creek near Augusta	19.4	1906-13	1906-12, 1964	--	--	--	--	--	--
06084000	Smith Creek below Ford Creek, near Augusta	74.0	1946-52	1946-52, 1964,1975	--	--	--	1951	--	--
06084500	Elk Creek at Augusta	157	1905-25	1905-24, 1964,1975	--	--	--	--	--	--
06085000	Crown Butte Canal at Riebling	--	1912	--	--	--	--	--	--	--
06085500	Crown Butte Canal near Simms	--	1912	--	--	--	--	--	--	--
06085800	**Sun River at Simms**	1,320	**1953, 1966-79. 1997-P**	**1964, 1966-79, 1997-P**	--	--	--	1996-98	1996-98	--
06086000	Sun River at Fort Shaw	1,417	1912-28	1913-28	--	--	--	--	--	--
06086500	Sun River Canal at Sun River	--	1912	--	--	--	--	--	--	--
06087000	Sun River Canal at Vaughn	--	1912	--	--	--	--	--	--	--
06087500	Sun River at Sun River	1,454	1905-12	1906-12	--	--	--	--	--	--
06087900	Muddy Creek tributary near Power	3.15	--	1963-78, 1986	--	--	--	--	--	--
06088000	Muddy Creek near Power	137	1935-40, 1982-83	1982-83	--	--	--	1992	--	--
06088100	Spring Coulee near Power	30.4	1982-83	1982	--	--	--	1992	--	--
06088200	Tank Coulee near Power	31.0	1982-83	1982	--	--	--	1992	--	--
06088300	**Muddy Creek near Vaughn**	282	**1968-87, 1996-P**	**1968-87, 1996-P**	1968-82	1968-79	1968-82	**1968-82, 1992-P**	**1971-82, 1996-P**	--
06088500	**Muddy Creek at Vaughn**	314	**1925-26. 1934-68, 1971-P**	**1925, 1934-37, 1939-68, 1971-P**	1968, 1972-82	1968, 1971-79	1971-82	**1968, 1972-82, 1992-P**	**1968, 1971-81, 1993-P**	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year): Discharge or contents: Daily or monthly	Discharge or contents: Annual peak	Water quality: Daily: Specific conductance	Water quality: Daily: Water temperature	Water quality: Daily: Sediment	Water quality: Periodic: Chemistry	Water quality: Periodic: Sediment	Water quality: Periodic: Biology
	Part 6--Missouri River Basin--Continued									
06089000	**Sun River near Vaughn**	1,854	**1897, 1934-P**	**1934-P**	**1969-P**	**1969-79 1999-P**	--	**1969-P**	**1987-94 1996-P**	1987-94
06089300	Sun River tributary near Great Falls	21.0	--	1956-73, 1975, 1979-80	--	--	--	--	--	--
06090100	Missouri River at Black Eagle Dam, at Great Falls	--	--	--	--	--	--	1951	--	--
06090130	Missouri River below Rainbow Dam, near Great Falls	--	--	--	--	--	--	1971	--	--
06090300	**Missouri River near Great Falls**	23,292	**1953, 1956-P**	**1952-P**	--	--	--	1994-95	1994-95	--
06090500	Belt Creek near Monarch	368	1951-82	1952-82	--	1977-81	--	--	--	--
06090550	**Little Otter Creek near Raynesford**	39.5	--	**1974-P**	--	--	--	--	--	--
06090570	Big Otter Creek near Belt	197	1994-98	1994-98	--	--	--	--	--	--
06090590	Anaconda Drain at Belt	0.05	1995-96	1995-96	--	--	--	94-96	--	--
06090600	Belt Creek near Belt	700	1905-07	--	--	--	--	--	--	--
06090610	Belt Creek near Portage	799	1980-83	1981-83	--	1981-83	--	1981-83	1981-83	--
06090650	**Lake Creek near Power**	83.8	**1990-P**	**1990-P**	1992-96	1992-95	1992-95	1990-96	--	--
06090700	Highwood Creek near Highwood	57.8	1905-06	--	--	--	--	--	--	--
06090720	Highwood Creek near Portage	122	1980-83	1981-83	--	1981-83	--	1981-83	1981-83	1981
06090800	**Missouri River at Fort Benton**	24,749	**1890-P**	**1891-1899, 1901-P**	--	1981-82	1980	1969-73 1981-86	1965, 1980-86	1969-73 1981-86
06090810	Ninemile Coulee near Fort Benton	16.9	--	1972-73, 1975-90	--	--	--	--	--	--
06091000	Two Medicine River near East Glacier	51.1	1912-13, 1918-24, 1962-64	1912, 1918-21, 1923-24, 1963-64	--	--	--	--	--	--
06091500	Two Medicine River at Midvale	--	1902-03	--	--	--	--	--	--	--
06091700	**Two Medicine River below South Fork, near Browning**	250	**1977-P**	**1977-P**	--	--	--	1988-89	--	--
06091850	Two Medicine Canal wasteway to Mission Lake, near Blackfoot	--	--	--	--	--	--	1971	--	--
06091852	Mission Lake near Blackfoot	--	--	--	--	--	--	1971-75	--	--
06091853	Spring Creek at Mission Lake outlet, near Cut Bank	--	--	--	--	--	--	1971	--	--
06091900	Two Medicine Canal near Cut Bank	--	--	--	--	--	--	1956	--	--
06092000	Two Medicine River near Browning	317	1907-25, 1951-77	1907, 1909-12, 1914-24, 1951-77	--	--	--	1956	--	--
06092500	Badger Creek near Browning	133	1951-73	1951-73	--	--	--	--	--	--
06093200	**Badger Creek below Four Horns Canal, near Browning**	152	**1973-P**	**1974-P**	--	--	--	1988-89	--	--
06093300	Badger Canal near Dupuyer	--	--	--	--	--	--	1956	--	--
06093500	Badger Creek near Family	239	1907-25	1910-13, 1915-24	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06093600	Two Medicine River near Cut Bank	--	--	--	--	--	--	1982-84	--	--
06094000	Swift Reservoir near Dupuyer	75.3	1916, 1936-64, 1967-95	--	--	--	--	--	--	--
06094500	Birch Creek at Swift Dam, near Dupuyer	75.3	1913-29	1913-26, 1929	--	--	--	--	--	--
06095000	Birch Creek near Dupuyer	105	1907-37	1909-37, 1964	--	--	--	--	--	--
06095500	Lake Frances near Valier	--	1936-95	--	--	--	--	--	--	--
06096000	Birch Creek at Nelson's Ranch, near Dupuyer	111	1914-26	1914-15, 1917-21, 1923-26	--	--	--	--	--	--
06096500	Birch Creek at Hall's Ranch, near Dupuyer	122	1913-20	1913-15, 1917-20	--	--	--	--	--	--
06097000	Birch Creek at Robare	128	1914-26	1915, 1917-23, 1925-26	--	--	--	--	--	--
06097100	Blacktail Creek near Heart Butte	16.4	--	1975-91	--	--	--	--	--	--
06097200	Blacktail Creek near Dupuyer	--	--	--	--	--	--	1982-84	--	--
06097500	Dupuyer Creek at Dupuyer	65.7	1908-13	--	--	--	--	--	--	--
06098000	Dupuyer Creek near Valier	137	1912-37	1913-29, 1932-37, 1948,1964	--	--	--	--	--	--
06098100	Birch Creek near Valier	471	1978-83	1978-83	--	--	--	1955, 1978-83	--	--
06098500	**Cut Bank Creek near Browning**	123	**1918-25, 1991-P**	**1918, 1920-24, 1991-P**	--	--	--	1991-92	--	--
06098700	**Powell Coulee near Browning**	12.7	--	**1974-P**	--	--	--	--	--	--
06098900	Big Rock Coulee near Santa Rita	185	--	--	--	--	--	1982-84, 1991-92	--	--
06099000	**Cut Bank Creek at Cut Bank**	1,041	**1905-20, 1922-24, 1951-73, 1982-P**	**1906-12, 1914-17, 1919-20, 1922-24, 1951-73, 1975, 1982-P**	--	--	--	1951, 1982-89, 1991-92	--	--
06099100	Spring Creek near Cut Bank	91	--	--	--	--	--	1982-84, 1991-92	--	--
06099300	Cut Bank Creek at mouth, near Cut Bank	1,213	--	--	--	--	--	1991-92	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06099500	**Marias River near Shelby**	3,242	**1902-08, 1911-P**	**1902-04, 1906-07, 1911-46, 1948-P**	--	1950-51	1950-51	--	--	--
06099700	Middle Fork Dry Fork Marias River near Dupuyer	20.2	--	1960-74, 1986	--	--	--	--	--	--
06100000	Dry Fork Marias River near Valier	131	1911-15	--	--	--	--	--	1980	--
06100200	Heines Coulee tributary near Valier	0.60	--	1960-75, 1986	--	--	--	--	--	--
06100300	**Lone Man Coulee near Valier**	14.1	--	**1960-P**	--	--	--	--	--	--
06100500	Dry Fork Marias River at Fowler	314	1921-31	1920-31	--	--	--	--	--	--
06101000	Willow Creek near Devon	310	1921-25	--	--	--	--	--	--	--
06101200	Willow Creek near Galata	839	1977-82	1978-82	--	--	--	--	--	--
06101300	Lake Elwell near Chester	4,923	1956-95	--	--	--	--	--	--	--
06101500	**Marias River near Chester**	4,927	**1921, 1945-47, 1955-P**	**1921,1946, 1956-P**	--	**1994-P**	--	1964-72, 1978-86, 1991	1978-86	1978-86
06101520	**Favot Coulee tributary near Ledger**	0.86	--	**1974-P**	--	--	--	--	--	--
06101560	Pondera Coulee near Chester	598	1976-85	1964, 1976-85	--	--	--	--	--	--
06101600	Marias River tributary No. 3 near Chester	0.26	--	1962-76, 1978	--	--	--	--	--	--
06101700	Fey Coulee tributary near Chester	2.47	--	1963-91	--	--	--	--	--	--
06101800	Sixmile Coulee near Chester	30.3	--	1963-77, 1979,1986	--	--	--	--	--	--
06101900	Dead Indian Coulee near Fort Benton	2.73	--	1963-77, 1986	--	--	--	--	--	--
06102000	Marias River near Brinkman	6,425	1922-56	1908, 1922-56	--	--	--	--	--	--
06102050	**Marias River near Loma**	7,137	**1960-72 2001-P**	1960-72	--	--	--	--	1965	--
06102100	Dry Fork Coulee tributary near Loma	0.84	--	1959-73	--	--	--	--	--	--
06102200	Marias River tributary at Loma	1.62	--	1956-60, 1962-73	--	--	--	--	--	--
06102300	Maris River tributary No. 2 at Loma	0.25	--	1956-60, 1962-73	--	--	--	--	--	--
06102500	**Teton River below South Fork, near Choteau**	105	**1947-55 1998-P**	**1948-54, 1964, 1998-P**	--	--	--	**1998-P**	**1998-P**	--
06103000	Teton River at Strabane	128	1904-06, 1908-25	1908-25	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06103500	McDonald Creek near Strabane	5.17	1913-14, 1917-20	--	--	--	--	--	--	--
06104000	McDonald Creek near Choteau	10.4	1917-20	--	--	--	--	--	--	--
06104500	Teton River near Choteau	221	1906, 1913-19	--	--	--	--	--	--	--
06105000	Deep Creek at Frazer's Ranch, near Choteau	37.7	1912	--	--	--	--	--	--	--
06105500	Willow Creek near Choteau	88.2	1912-17	--	--	--	--	--	--	--
06105800	**Bruce Coulee tributary near Choteau**	1.70	--	**1963-2002**	--	--	--	--	--	--
06106000	Deep Creek near Choteau	223	1911-25	1911-24, 1964	--	--	--	--	--	--
06106500	Muddy Creek near Bynum	71.1	1912-25	1913-18, 1920, 1922-24	--	--	--	--	--	--
06107000	North Fork Muddy Creek near Bynum	61.3	1912-24	1913-17, 1919-24	--	--	--	--	--	--
06107500	Muddy Creek near Agawam	274	1917	--	--	--	--	--	--	--
06108000	**Teton River near Dutton**	1,307	**1954-P**	**1955-P**	--	--	--	**1998-P**	**1998-P**	--
06108200	Kinley Coulee near Dutton	9.67	--	1963-78	--	--	--	--	--	--
06108300	Kinley Coulee tributary near Dutton	2.65	--	1963-78	--	--	--	--	--	--
06108500	Teton River near Fort Benton	1,989	1929-32	--	--	--	--	1991	--	--
06108800	**Teton River at Loma**	2,010	**1998-P**	**1999-P**	--	**2000-P**	--	**1998-P**	**1965, 1998-P**	--
06109000	Missouri River at Loma	34,221	1935-53	--	--	--	--	--	--	--
06109500	**Missouri River at Virgelle**	34,379	**1935-P**	**1935-P**	--	--	--	1975-85 1991	1975-85, 1991	1975-85
06109530	**Little Sandy Creek tributary near Virgelle**	0.80	--	**1972, 1974-2002**	--	--	--	--	--	--
06109560	**Alkali Coulee tributary near Virgelle**	0.96	--	**1974-P**	--	--	--	--	--	--
06109750	Middle Fork Judith River below Lost Fork, near Utica	108	1972-75	1972-75	--	--	--	--	--	--
06109775	Middle Fork Judith River at Ranger Station, near Utica	--	--	--	--	--	--	1964	--	--
06109780	Middle Fork Judith River near Utica	160	1972-79	1972-79	--	--	--	--	--	--
06109800	South Fork Judith River near Utica	58.7	1958-79	1959-79	--	--	--	--	--	--
06109900	Judith River tributary near Utica	7.15	--	1960-74	--	--	--	--	--	--
06109950	Judith River tributary No. 2, near Utica	6.97		1959-67	--	--	--	--	--	--
06110000	Judith River near Utica	328	1920-75	1920-32, 1934-75	--	--	--	--	--	--
06110500	Ackley Lake near Hobson	--	1938-95	--	--	--	--	--	--	--
06111000	Ross Fork Creek near Hobson	337	1946-54, 1955-62	1947-53, 1955-62, 1975	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06111500	Big Spring Creek near Lewistown	20.9	1932-57	1932-40	--	--	--	--	--	--
06111700	Mill Creek near Lewistown	3.14	--	1960-91	--	--	--	--	--	--
06112000	Cottonwood Creek near Lewistown	45.6	1946-51	--	--	--	--	--	--	--
06112100	Cottonwood Creek near Moore	47.9	1957-63	1958-73, 1975,1978	--	--	--	--	--	--
06112500	Sage Creek at Windham	58.6	1920-22	--	--	--	--	--	--	--
06112800	**Bull Creek tributary near Hilger**	0.99	--	**1974-P**	--	--	--	--	--	--
06113000	Judith River near Lewistown	1,939	1910-11	--	--	--	--	--	--	--
06113500	Judith River near Winifred	2,160	1929-32	--	--	--	--	1991	--	--
06114000	Wolf Creek at Neubert Ranch, near Stanford	79.2	1920-26	1920-26	--	--	--	--	--	--
06114500	Wolf Creek near Stanford	112	1950-53, 1955-62	1950-53, 1955-58, 1960-62, 1975,1978	--	--	--	--	--	--
06114550	**Wolf Creek tributary near Coffee Creek**	1.73	--	**1974-P**	--	--	--	--	--	--
06114700	**Judith River near mouth, near Winifred**	2,731	**2001-P**	**2001-P**	--	**2001-P**	--	**2001-P**	**2001-P**	--
06114900	**Taffy Creek tributary near Winifred**	2.95	--	**1974-2002**	--	--	--	--	--	--
06115000	Missouri River at Power Plant Ferry, near Zortman	40,763	1934-68	1934-67	--	--	--	--	--	--
06115200	**Missouri River near Landusky**	40,987	**1934-P**	**1934-P**	--	--	**1972-P**	1976-94	**1972-P**	1979-94
06115270	**Armells Creek near Landusky**		**2000-P**	**2000-P**	--	--	--	--	--	--
06115300	**Duval Creek near Landusky**	3.31	**2000-P**	**1963-P**	--	--	--	--	--	--
06115350	**Rock Creek near Landusky**		**2000-P**	**2000-P**						
06115500	North Fork Musselshell River near Delpine	31.4	1940-79	1941-79	--	--	--	--	--	--
06116000	North Fork Musselshell River at Delpine	48.6	1909-12, 1922-32	1909-11, 1922-32	--	--	--	--	--	--
06116500	Bair Reservoir near Delpine	48.6	1939-95	--	--	--	--	--	--	--
06116900	Checkerboard Creek near Delpine	21.1	1909-15	--	--	--	--	--	--	--
06117000	Checkerboard Creek at Delpine	23.9	1922-32	1922-30, 1932	--	--	--	--	--	--
06117500	Spring Creek near Martinsdale	32.5	1922-24	--	--	--	--	--	--	--
06117800	**Big Coulee near Martinsdale**	2.86	--	**1972, 1974-2002**	--	--	--	--	--	--
06118000	North Fork Musselshell River near Martinsdale	233	1907-14	1908-14	--	--	--	--	--	--
06118500	South Fork Musselshell River above Martinsdale	287	1942-79	1942-79	--	--	--	--	--	--
06119000	Martinsdale Reservoir near Martinsdale	--	1939-95	--	--	--	--	--	--	--
06119500	South Fork Musselshell River near Martinsdale	300	1907-15, 1930-32	1908-14, 1930,1932	--	--	--	--	--	--
06120000	Big Elk Creek at Twodot	89.1	1953-56	--	--	--	--	--	--	--
06120500	**Musselshell River at Harlowton**	1,125	**1907-P**	**1909-P**	--	**2001-P**	--	1988-91	1988-91	--
06120600	Antelope Creek tributary near Harlowton	0.47	--	1956-73	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06120700	Antelope Creek tributary near mouth, near Harlowton	1.92	--	1956-73	--	--	--	--	--	--
06120800	Alkali Creek near Harlowton	21.2	--	1956-91	--	--	--	--	--	--
06120900	Antelope Creek at Harlowton	88.7	--	1950, 1954-73, 1976, 1978-80	--	--	--	--	--	--
06121000	American Fork near Harlowton	94.6	1907-14, 1924-32	1908-11, 1913, 1924-30, 1932	--	--	--	--	--	--
06121500	Lebo Creek near Harlowton	59.1	1907-14, 1924-32	1910,1913, 1924-32	--	--	--	--	--	--
06122000	American Fork below Lebo Creek, near Harlowton	166	1946-67	1947-67, 1975	--	--	--	--	--	--
06122500	Deadmans Basin Reservoir near Shawmut	--	1941-95	--	--	--	--	--	--	--
06122800	Musselshell River near Shawmut	1,479	1986-98	1986-97	--	--	--	--	--	--
06123000	Musselshell River at Shawmut	1,496	1902-07	--	--	--	--	--	--	--
06123030	**Musselshell River above Mud Creek, near Shawmut**	--	**1998-P**	**1998-P**	--	--	--	--	--	--
06123200	**Sadie Creek near Harlowton**	2.10	--	**1971, 1973-P**	--	--	--	--	--	--
06123500	Musselshell River near Ryegate	1,979	1946-79	1947-79	--	--	--	--	--	--
06124000	Careless Creek near Living Springs	21.2	1920-23	--	--	--	--	--	--	--
06124500	West Careless Creek near Living Springs	23.5	1920-21	--	--	--	--	--	--	--
06124600	**East Fork Roberts Creek tributary near Judith Gap**	0.74	--	**1974-P**	--	--	--	--	--	--
06125000	Roberts Creek at Hedgesville	322	1920-23	--	--	--	--	--	--	--
06125500	Careless Creek at Wallum	471	1934-42	1934-37, 1939-42	--	--	--	--	--	--
06125520	**Swimming Woman Creek tributary near Living Springs**	1.27	--	**1974-P**	--	--	--	--	--	--
06125680	**Big Coulee Creek tributary near Cushman**	1.23	--	**1974-P**	--	--	--	--	--	--
06125700	Big Coulee Creek near Lavina	232	1957-72	1958-72	--	--	--	--	--	--
06126000	Musselshell River at Lavina	2,928	1906	--	--	--	--	--	--	--
06126050	**Musselshell River near Lavina**	2,970	**1992-P**	**1992-P**	--	--	--	--	--	--
06126300	Currant Creek near Roundup	220	--	1958-59, 1961-73	--	--	--	--	--	--
06126470	Halfbreed Creek near Klein	53.2	1978-91	1978-91	--	--	--	1978-81, 1984	1978-81, 1984	--
06126500	**Musselshell River near Roundup**	4,023	**1946-P**	**1946-48, 1950-P**	--	--	--	1978-81	1978-81	--
06127000	**South Willow Creek near Roundup**	--	1922-23	--	--	--	--	--	--	--
06127020	**Willow Creek above LMGA Reservoir, near Roundup**	124	**1995-P**	**1996-P**	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06127060	**Willow Creek at U.S. Canal, near Roundup**	141	**1995-P**	**1996-P**	--	--	--	--	--	--
06127100	South Willow Creek tributary near Roundup	1.38	--	1962-76	--	--	--	--	--	--
06127150	East Parrot Creek near Roundup	20.2	--	--	--	--	--	1979-80	1979-80	--
06127160	West Parrot Creek near Roundup	20.5	--	--	--	--	--	1978-81	1978-81	--
06127200	Musselshell River tributary near Musselshell	10.8	--	1963-77, 1991	--	--	--	--	--	--
06127300	Fattig Creek near Delphia	22.9	--	--	--	--	--	1978-81	1978-81	--
06127500	**Musselshell River at Musselshell**	4,568	**1928-32, 1945-79, 1983-P**	**1929-30, 1932, 1946-79, 1983-P**	--	--	--	1988-91	1988-91	--
06127505	**Fishel Creek near Musselshell**	16.5	--	**1974-P**	--	--	--	--	--	--
06127520	**Home Creek near Sumatra**	1.98	--	**1973-P**	--	--	--	--	--	--
06127570	**Butts Coulee near Melstone**	6.71	--	**1963-P**	--	--	--	--	--	--
06127585	**Little Wall Creek tributary near Flatwillow**	9.77	--	**1974-P**	--	--	--	--	--	--
06127600	Musselshell River near Mosby	5,941	1963-66	--	--	--	1963-66	1963-66	1964-66	--
06127900	Flatwillow Creek near Flatwillow	188	1911-32, 1934-56	1911-32, 1934-36, 1938-56	--	--	--	--	--	--
06128200	Flatwillow Creek near Winnett	642	1921-32, 1948-51	1923-29, 1931-32, 1948-51	--	--	--	--	--	--
06128400	South Fork Bear Creek near Roy	39.6	--	1962-76	--	--	--	--	--	--
06128500	**South Fork Bear Creek tributary near Roy**	5.40	--	**1962-P**	--	--	--	--	--	--
06128900	Box Elder Creek tributary near Winnett	16.2	--	1955-73	--	--	--	--	--	--
06129000	Box Elder Creek near Winnett	684	1930-33, 1934-38, 1958-72	1931-32, 1934-38, 1959-71, 1978	--	--	--	--	--	--
06129100	North Fork McDonald Creek tributary near Heath	2.24	--	1960-75	--	--	--	--	--	--
06129200	Alkali Creek near Heath	3.76	--	1960-74	--	--	--	--	--	--
06129400	South Fork McDonald Creek tributary near Grassrange	0.51	--	1963-77	--	--	--	--	--	--
06129500	McDonald Creek at Winnett	421	1930-32, 1934-45, 1953-56	1931-32, 1934-45, 1953-73, 1975	--	--	--	--	--	--
06129700	**Gorman Coulee near Cat Creek**	2.32	--	**1955-59, 1962-73, 1977,1980, 1991-P**	--	--	--	--	--	--
06129800	**Gorman Coulee tributary near Cat Creek**	0.81	--	**1955-2002**	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06130000	Flatwillow Creek near Mosby	1,855	1964-66	--	--	--	1964-66	1964-66	1964-66	--
06130500	**Musselshell River at Mosby**	7,846	**1929-35, 1934-P**	**1929, 1931-32, 1934-P**	--	**2000-P**	1983-95	**1975-95, 1999-P**	**1975-1997, 1999-P**	1975-95
06130600	Cat Creek near Cat Creek	36.5	--	1958-73, 1977,1980	--	--	--	--	--	--
06130610	**Bair Coulee near Mosby**	1.79	--	**1974-P**	--	--	--	--	--	--
06130620	**Blood Creek tributary near Valentine**	1.97	--	**1974-P**	--	--	--	--	--	--
06130650	**Hell Creek near Jordan**	70.6	**2000-P**	**2000-P**	--	--	--	--	--	--
06130680	Big Dry Creek at Jordan	521	--	--	--	--	--	1976-77	1976-77	--
06130700	Sand Creek near Jordan	317	1957-67	1958-67, 1986	--	--	--	--	--	--
06130800	Second Creek tributary near Jordan	0.52	--	1954, 1958-73	--	--	--	--	--	--
06130850	Second Creek tributary No. 2 near Jordan	2.08	--	1958-90	--	--	--	--	--	--
06130900	Second Creek tributary No. 3 near Jordan	0.72	--	1958-72	--	--	--	--	--	--
06130915	**Russian Coulee near Jordan**	3.45	--	**1974-P**	--	--	--	--	--	--
06130925	Thompson Creek tributary near Cohagen	1.23	--	1974-95	--	--	--	--	--	--
06130935	Crow Rock Creek near Cohagen	213	--	--	--	--	--	1978-80	1978-80	1978-80
06130940	**Spring Creek tributary near Van Norman**	1.39	--	**1974-P**	--	--	--	--	--	--
06130950	Little Dry Creek near Van Norman	1,224	1980	1958-75, 1986,1995	--	--	--	1976-77	1976-77	--
06131000	**Big Dry Creek near Van Norman**	2,554	**1939-P**	**1940-P**	--	--	--	1978,1981	1978	--
06131100	**Terry Coulee near Van Norman**	0.48	--	**1974-P**	--	--	--	--	--	--
06131120	Timber Creek near Van Norman	287	1982-85, 1988	1982-85, 1988	--	--	--	1976-79	1976-80	--
06131200	**Nelson Creek near Van Norman**	100	**1976-85, 2000-P**	**1976-85, 1991, 2000-P**	--	--	--	1976-79	1976-79	--
06131300	**McGuire Creek tributary near Van Norman**	0.79	--	**1974-P**	--	--	--	--	--	--
06131500	**Fort Peck Lake at Fort Peck**	57,500	**1938-P**	--	--	--	--	--	--	--
06132000	**Missouri River below Fork Peck Dam, at Fort Peck**	57,556	**1936-P**	**1934-P**	--	**2002**	--	**1964, 1975-87, 2002**	**1975-87, 2002**	1975-86
06132200	**South Fork Milk River near Babb**	70.4	**1961-P**	**1961-P**	--	--	--	1990-92	--	--
06132250	Livermore Creek near Babb	25.0	--	1962-67	--	--	--	--	--	--
06132400	Dry Fork Milk River near Babb	17.9	--	1962-91	--	--	--	--	--	--
06132500	South Fork Milk River near international boundary, near Browning	287	1905-31	--	--	--	--	1964	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06132700	Milk River near Del Bonita	325	1962-65	1906-08, 1911, 1913-17, 1919, 1923-24, 1927, 1929-30, 1962-67	--	--	--	--	--	--
06133000	**Milk River at western crossing of international boundary**	401	**1931-P**	**1931-38, 1940-P**	--	--	--	1960,1973, 1984-86, 1993	--	--
06133500	**North Fork Milk River above St. Mary Canal, near Browning**	60.2	**1911-12, 1919-P**	**1911-12, 1924, 1926-27, 1937, 1941-42, 1944-45, 1948, 1950-51, 1953-P**	--	--	--	1960,1965, 1973-74, 1982-83, 1990-92	--	--
06134000	**North Milk River near international boundary**	91.8	**1909-P**	**1911, 1913-P**	--	--	--	1960,1965, 1973-74, 1981, 1984-86, 1993	--	--
06134500	**Milk River at Milk River, Alberta**	1,050	**1909-P**	**1909, 1913-P**	--	--	--	1960,1965	--	--
06134600	Red River at international boundary	138	--	--	--	--	--	1995	--	--
06134700	**Verdigris Coulee near the mouth, near Milk River, Alberta**	137	**1985-P**	**1985-P**	--	--	--	--	--	--
06134800	Van Cleeve Coulee tributary near Sunburst	10.8	--	1963-91	--	--	--	--	--	--
06134850	Milk River near Writing-on-Stone Provincial Park, Alberta	1,690	1978-83	1978-82	--	--	--	--	--	--
06134890	Miners Coulee near international boundary	--	1966-94	--	--	--	--	--	--	--
06134930	Bear Creek near international boundary	--	1966-94	--	--	--	--	--	--	--
06134950	Milk River near Pendant D'Oreille	2,330	1978-83	1978-82	--	--	--	--	--	--
06135000	**Milk River at eastern crossing of international boundary**	2,525	**1910-P**	**1910-11, 1913-15, 1917, 1919-P**	--	--	--	1960,1965, 1974, 1984-86, 1993-94	--	--
06135500	Sage Creek at Q Ranch, near Wild Horse, Alberta	175	1935-83	1936-41, 1943, 1946-83	--	--	--	1965	--	--
06136000	Sage Creek at international boundary	220	1946-84	1946-83	--	--	--	1965	--	--
06136400	**Spring Coulee tributary near Simpson**	2.49	--	**1972, 1974-2002**	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06136500	**Fresno Reservoir near Havre**	3,766	**1940-P**	--	--	--	--	--	--	--
06136700	Milk River below Fresno Dam, near Havre	3,400	1952-53	--	--	--	--	1950-53	--	--
06137000	Milk River above Havre	3,826	1928-33	--	--	--	--	--	--	--
06137400	**Big Sandy Creek at reservation boundary, near Rocky Boy**	24.7	**1982-P**	**1982-P**	--	--	--	1982-84, 1987-89	--	--
06137500	Big Sandy Creek near Big Sandy	83.3	1946-51	--	--	--	--	--	--	--
06137540	Duck Creek near Box Elder	--	--	--	--	--	--	1982-84	--	--
06137550	Camp Creek near Box Elder	7.2	--	--	--	--	--	1983-84	--	--
06137570	Boxelder Creek near Rocky Boy	48.2	1975-97	1976-97	--	--	--	1977-81 1983-84, 1993	1977-81, 1993	1977-81
06137575	Boxelder Creek at Box Elder	67.1	--	--	--	--	--	1983	--	--
06137580	Sage Creek near Whitlash	7.26	1976-82, 1985-90	1977-82, 1985-90	--	--	--	--	--	--
06137600	**Sage Creek tributary No. 2 near Joplin**	2.21	--	**1974-P**	--	--	--	--	--	--
06137900	England Coulee at Hingham	0.93	--	1960-74	--	--	--	--	--	--
06138000	Sage Creek near Kremlin	914	1946-51	1946-48, 1950-52	--	--	--	--	--	--
06138500	Big Sandy Creek near Box Elder	1,629	1927-39	1927-32, 1934-36, 1938	--	--	--	--	--	--
06138570	Big Sandy Creek above Gravel Coulee, near Laredo	1,639	--	--	--	--	--	1982-84	--	--
06138700	**South Fork Spring Coulee near Havre**	6.47	--	**1960-P**	--	--	--	--	--	--
06138800	Spring Coulee near Havre	17.8	--	1959-73	--	--	--	--	--	--
06139000	Big Sandy Creek near Laredo	1,752	1918-20	--	--	--	--	--	--	--
06139500	**Big Sandy Creek near Havre**	1,805	**1946-53, 1984-P**	**1946-53, 1955-67, 1969,1978, 1984-P**	--	--	--	1986-90	1986-90	--
06139800	**West Fork Beaver Creek near Rocky Boy**	2.92	**2001-P**	--	--	--	--	--	--	--
06139850	**Beaver Creek above Elk Creek, near Rocky Boy**	7.63	**2001-P**	--	--	--	--	--	--	--
06139900	**Beaver Creek at reservation boundary, near Rocky Boy**	16.1	**2001-P**	--	--	--	--	1982-84	--	--
06140000	Beaver Creek near Havre	87.4	1918-21	1919-21, 1966-86	--	--	--	--	--	--
06140400	Bullhook Creek near Havre	39.6	--	1960-71, 1973-75, 1986	--	--	--	--	--	--
06140500	**Milk River at Havre**	5,785	**1898-1923, 1954-P**	**1899-1922, 1952-53, 1955-P**	--	--	--	1964-72	--	--
06141000	Boxelder Creek near Havre	23.7	1919-22	--	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06141500	Boxelder Creek at P.X. Ranch, near Havre	33.3	1918	--	--	--	--	--	--	--
06141600	Little Boxelder Creek at mouth, near Havre	95.9	1986-92, 1994-96	1986-92, 1994-96	--	--	--	--	--	--
06141900	Milk River tributary near Lohman	0.11	--	1960-74	--	--	--	--	--	--
06142000	Clear Creek near Bearpaw	69.6	1918-22	--	--	--	--	--	--	--
06142400	**Clear Creek near Chinook**	135	**1984-P**	**1984-P**	--	--	--	--	--	--
06142500	Fort Belknap Canal near Chinook	--	1903-21	--	--	--	--	--	--	--
06143000	Milk River at Lohman	6,166	1918-26, 1934-51	1919,1923, 1925, 1934-48, 1950-52	--	--	--	--	--	--
06144000	Paradise Valley Canal near headgate, near Chinook	--	1906-08, 1920-21	--	--	--	--	--	--	--
06144100	Walburger Coulee below diversion, near Govenlock, Sask.	32.6	1963-79	1963-78	--	--	--	--	--	--
06144250	Lodge Creek at Alberta boundary	342	1951, 1963-67	--	--	--	--	1960	--	--
06144260	**Altawan Reservoir near Govenlock, Saskatchewan**	373	**1966-P**	--	--	--	--	--	--	--
06144270	**Spangler Ditch near Govenlock, Saskatchewan**	--	**1966-P**	--	--	--	--	--	--	--
06144300	Lodge Creek below Spangler Project, near Govenlock, Sask.	--	1963-66	--	--	--	--	--	--	--
06144350	**Middle Creek near Saskatchewan boundary**	118	**1963-P**	**1952, 1963-P**	--	--	--	--	--	--
06144360	Middle Creek Reservoir near Govenlock	130	1966-95	--	--	--	--	--	--	--
06144395	**Middle Creek below Middle Creek Reservoir, near Govenlock, Saskatchewan**	149	**1972-P**	1974-78, 1983, 1986-87	--	--	--	--	--	--
06144400	Middle Creek near Battle Creek, Saskatchewan	177	1963-72	1963-71, 1994	--	--	--	--	--	--
06144440	**Middle Creek near Govenlock, Saskatchewan**	253	**1986-P**	**1986-P**	--	--	--	--	--	--
06144450	**Middle Creek above Lodge Creek, near Govenlock, Sask.**	276	**1962-66, 1986-P**	**1986-P**	--	--	--	--	--	--
06144500	Lodge Creek at international boundary	753	1910-52	1911-15, 1917-52	--	--	--	--	--	--
06145000	McRae Creek at international boundary	59.0	1927-52	1927-28, 1930-33, 1935-47, 1950-52	--	--	--	--	--	--
06145500	**Lodge Creek below McRae Creek, at international boundary**	825	**1951-P**	**1952-P**	--	--	--	1960,1964, 1973, 1977-80, 1987-89	--	--
06146000	North Chinook Canal near Havre	--	1921-24, 1928-68	--	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06146500	Reser Ditch near Chinook	--	1905-06	--	--	--	--	--	--	--
06147000	West Fork Ditch near Chinook	--	1905-07	--	--	--	--	--	--	--
06147500	Lodge Creek at Chinook	1,175	1906-08	--	--	--	--	--	--	--
06147950	**Gaff Ditch near Merryflat, Saskatchewan**	--	**1972-P**	--	--	--	--	--	--	--
06148000	Battle Creek above Cypress Lake west inflow canal, near West Plains, Saskatchewan	270	1939-66	1939-66	--	--	--	1960	--	--
06148500	**Cypress Lake west inflow canal near West Plains, Sask.**	--	**1939-P**	--	--	--	--	--	--	--
06148700	**Cypress Lake west inflow canal drain near Oxarat, Sask.**	--	**1963-P**	--	--	--	--	--	--	--
06149000	**Cypress Lake west outflow near West Plains, Sask.**	--	**1940-P**	--	--	--	--	1960	--	--
06149100	**Vidora Ditch near Consul, Saskatchewan**	--	**1963-P**	--	--	--	--	--	--	--
06149200	**Richardson Ditch near Consul, Saskatchewan**	--	**1963-P**	--	---	--	--	--	--	--
06149300	**McKinnon Ditch near Consul Saskatchewan**	--	**1963-P**	--	--	--	--	--	--	--
06149400	**Nashlyn Canal near Consul, Saskatchewan**	--	**1963-P**	--	--	--	--	--	--	--
06149500	**Battle Creek at international boundary**	997	**1917-P**	**1917-P**	--	--	--	1960,1964, 1972-74, 1987-89	--	1972
06150000	Woodpile Coulee near international boundary	60.2	1927-77	1927-30, 1932-47, 1950-63, 1965-76, 1986	--	--	--	--	--	--
06150500	East Fork Battle Creek near international boundary	89.5	1927-76	1927-33, 1935-63, 1965-67, 1969, 1971-76, 1986	--	--	--	--	--	--
06151000	Lyons Creek at international boundary	66.7	1927-94	1927-30, 1932, 1934-47, 1950-52, 1954-63, 1965-94	--	--	--	--	--	--
06151500	**Battle Creek near Chinook**	1,623	**1905-21, 1984-P**	**1905-14, 1917-21, 1952, 1984-P**	--	--	--	--	--	--
06152000	Cook Canal near Chinook	--	1905-19	--	--	--	--	--	--	--
06152500	Matheson Canal near Chinook	--	1905-21, 1928-49, 1951-56	--	--	--	--	--	--	--
06153000	Paradise Valley Canal near Chinook	--	1903-19	--	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06153400	**Fifteenmile Creek tributary near Zurich**	1.60	--	**1974-P**	--	--	--	--	--	--
06153500	Harlem Canal near Zurich	--	1904-21	--	--	--	--	--	--	--
06154000	Milk River Canal A near Harlem	--	1905, 1910-20, 1986-87	--	--	--	--	--	--	--
06154100	**Milk River near Harlem**	9,822	**1959-69, 1983-P**	**1952, 1960-69, 1978, 1983-P**	--	--	--	1959-69 1994	--	--
06154140	Fifteenmile Creek tributary near Harlem	2.31	1983-92	1983-92	--	--	--	--	--	--
06154150	White Bear Creek below Fifteenmile Creek, near Dodson	--	--	--	--	--	--	1982-84	--	--
06154350	**Peoples Creek tributary near Lloyd**	2.51	--	**1974-P**	--	--	--	--	--	--
06154390	Peoples Creek near Cleveland	--	--	--	--	--	--	1982-84	--	--
06154400	**Peoples Creek near Hays**	220	**1966-P**	**1967-P**	--	--	--	1960-61, 1963,1994	--	--
06154410	**Little Peoples Creek near Hays**	13	**1973-P**	**1973-P**	--	--	--	**1977-P**	**1977-85 1988-P**	1977-85
06154430	Lodge Pole Creek at Lodge Pole	19.5	1987-2000	1987-2000	--	--	--	1982-84, 1988-92, 1994	1988-92	--
06154490	Willow Creek near Dodson	5.16	1983-92	1983-92	--	--	--	--	--	--
06154500	Peoples Creek near Dodson	670	1918-22, 1951-73, 1982-88	1952-66, 1968-73, 1982-88	--	--	--	1982-88	--	--
06154510	**Kuhr Coulee tributary near Dodson**	1.25	1983-92	**1983-P**	--	--	--	--	--	--
06154550	**Peoples Creek below Kuhr Coulee, near Dodson**	675	**1918-21, 1951-73, 1982-P**	**1989-P**	--	--	--	**1989-92, 1994, 1999-P**	--	--
06155000	**Nelson Reservoir near Saco**	--	**1928-95**	--	--	--	--	--	--	--
06155005	Dodson North Canal near Dodson	--	--	--	--	1973	--	--	--	--
06155030	**Milk River near Dodson**	11,192	**1983-P**	**1983-P**	--	--	--	1994	--	--
06155100	Black Coulee near Malta	6.64	--	1956-67, 1986	--	--	--	--	--	--
06155200	Alkali Creek near Malta	162	--	1956-59, 1961-73, 1986	--	--	--	--	--	--
06155300	**Disjardin Coulee near Malta**	4.84	--	**1956-2002**	--	--	--	--	--	--
06155400	South Fork Taylor Coulee near Malta	5.08	--	1956-73, 1986	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06155500	Milk River at Malta	11,762	1902-22, 1952	1903-09, 1911-13, 1915-22, 1952	--	--	--	--	--	--
06155600	**Murphy Coulee tributary near Hogeland**	2.62	--	**1974-P**	--	--	--	--	--	--
06155900	**Milk River at Cree Crossing, near Saco**	13,118	**2000-P**	**2000-P**	--	--	--	--	--	--
06156000	Whitewater Creek near international boundary	458	1927-80	1927-33, 1935-79	--	--	--	1965, 1977-80	--	--
06156100	**Lush Coulee near Whitewater**	9.58	--	**1972, 1974-P**	--	--	--	--	--	--
06156500	**Belanger Creek diversion canal near Vidora, Saskatchewan**	--	**1946-P**	--	--	--	--	--	--	--
06157000	**Cypress Lake near Vidora, Saskatchewan**	107	**1939-P**	--	--	--	--	--	--	--
06157500	**Cypress Lake east outflow canal near Vidora, Saskatchewan**	--	**1940, 1943-P**	--	--	--	--	--	--	--
06158000	Frenchman River above Eastend Reservoir, near Ravenscrag, Saskatchewan	601	1912-18, 1937-67	1913-15, 1917, 1937-66	--	--	--	1960	--	--
06158500	**Eastend Canal at Eastend, Saskatchewan**	--	**1937-P**	--	--	--	--	--	--	--
06159000	**Eastend Reservoir at Eastend, Saskatchewan**	619	**1937-P**	--	--	--	--	--	--	--
06159500	Frenchman River below Eastend Reservoir, near Eastend, Saskatchewan	619	1909-16, 1918-31, 1935-36, 1939-91	1909, 1911-15, 1918-31, 1940-91	--	--	--	--	--	--
06160500	Frenchman River at Morrison's, near Eastend, Saskatchewan	800	1937-55	1939-52	--	--	--	1960	--	--
06160600	Frenchman River below Eastern Irrigation Project, near Eastend, Saskatchewan	835	1937-55, 1962-75	1939-52, 1962-75	--	--	--	--	--	--
06161000	Frenchman River at 50-mile, near Bracken, Saskatchewan	1,248	1914-31, 1935-55	1914-17, 1919-31, 1936-52	--	--	--	--	--	--
06161300	**Huff Lake pumping canal near Val Marie, Saskatchewan**	--	**1963-P**	--	--	--	--	--	--	--
06161500	**Huff Lake gravity canal near Val Marie, Saskatchewan**	--	**1946-P**	--	--	--	--	--	--	--
06162000	**Huff Lake near Val Marie, Saskatchewan**	1,274	**1940-P**	--	--	--	--	--	--	--
06162500	**Newton Lake main canal near Val Marie, Saskatchewan**	--	**1937-P**	--	--	--	--	--	--	--
06163000	**Newton Lake near Val Marie, Saskatchewan**	1,349	**1937-P**	--	--	--	--	--	--	--
06163050	Frenchman River below Newton Lake, near Val Marie, Sask.	1,349	1976-94	--	--	--	--	--	--	--
06163400	Denniel Creek near Val Marie, Saskatchewan	251	1963-77	1963-76	--	--	--	--	--	--
06163500	Frenchman River below Val Marie, Saskatchewan	1,725	1937-53, 1963-76	1937-52, 1962-67, 1969-75	--	--	--	1960	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06164000	**Frenchman River at international boundary**	2,120	**1917-P**	**1917-P**	--	--	--	1960,1964 1973, 1987-89	--	--
06164500	Frenchman Canal near Saco	--	1921, 1928-68	--	--	--	--	--	--	--
06164510	**Milk River at Juneburg Bridge, near Saco**	17,670	**1978-P**	**1978-P**	--	--	--	1978-96	--	--
06164590	Beaver Creek near Zortman	10.1	1983-92	1984-92	--	--	--	1984,1994	--	--
06164600	**Beaver Creek tributary near Zortman**	3.89	--	**1974-P**	--	--	--	--	--	--
06164615	Little Warm Creek at reservation boundary, near Zortman	6.31	1983-92	1983-92	--	--	--	1983-90	--	--
06164620	Little Warm Creek near Lodge Pole	--	--	--	--	--	--	1982-83	--	--
06164623	**Little Warm Creek tributary near Lodge Pole**	2.42	1983-92	**1983-P**	--	--	--	1994	--	--
06164630	Big Warm Creek near Zortman	8.58	1983-87	1983-87	--	--	--	1983-84	--	--
06164640	Big Warm Creek near Lodge Pole	--	--	--	--	--	--	1982-83	--	--
06164800	Beaver Creek above Dix Creek, near Malta	929	1967-69, 1976-82	1967-69, 1974, 1976-82, 1986	--	--	--	--	--	--
06165000	Beaver Creek near Malta	1,010	1917-21	--	--	--	--	--	--	--
06165200	**Guston Coulee near Malta**	2.06	--	**1974-P**	--	--	--	--	--	--
06165500	Beaver Creek overflow near Bowdoin	--	1903-13	1903-06, 1909, 1912	--	--	--	--	--	--
06166000	**Beaver Creek below Guston Coulee, near Saco (Beaver Creek near Bowdoin)**	1,208	**1920-21, 1981-P**	**1982-93, 1995-P**	--	--	--	1980-85	--	--
06166500	Beaver Creek near Saco	1,224	1903-06, 1908-13	--	--	--	--	--	--	--
06167000	Beaver Creek near Brady's Ranch, at Ashfield	1,327	1918	--	--	--	--	--	--	--
06167100	Beaver Creek above dam, near Saco	1,338	--	--	--	--	--	1982-83, 1985	--	--
06167500	Beaver Creek near Hinsdale	1,785	1918-21, 1952	--	--	--	--	--	--	--
06168000	Bowray Ditch near Barnard	--	1914	--	--	--	--	--	--	--
06168500	Rock Creek at international boundary	241	1914-16, 1927-62	1927-61	--	--	--	--	--	--
06169000	Horse Creek at international boundary	73.5	1914-62	1915-33, 1935-61	--	--	--	--	--	--
06169500	**Rock Creek below Horse Creek, near international boundary**	328	**1916-26, 1956-P**	**1917, 1919-26, 1952, 1957-P**	--	--	--	1964,1965, 1977-96	1979-96	1979-96
06169600	South Creek tributary near Opheim	2.15	1983-87	1983-87	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06169700	South Creek tributary No. 2 near Opheim	1.62	1983-87	1983-87	--	--	--	--	--	--
06169800	South Creek tributary No. 3 near international boundary	.32	1983-87	1983-87	--	--	--	--	--	--
06170000	McEachern Creek at international boundary	182	1924-77	1924-76	--	--	--	1965, 1978-80	--	--
06170050	Rock Creek below McEachern Creek, near international boundary	650	1983-87	1983-87	--	--	--	--	--	--
06170080	Starbuck Coulee near international boundary	4.16	1983-87	1983-87	--	--	--	--	--	--
06170200	Willow Creek near Hinsdale	283	1965-73	1965-73, 1979	--	--	--	--	--	--
06170500	Rock Creek Canal near Hinsdale	--	1918-20	--	--	--	--	--	--	--
06171000	Rock Creek near Hinsdale	1,313	1906-07, 1912-20	1906-07, 1912, 1914-20, 1952	--	--	--	--	--	--
06171500	Milk River at Hinsdale	20,897	1908-14, 1952	--	--	--	--	--	--	--
06172000	Milk River near Vandalia	20,926	1915-25, 1928-39, 1952	1915, 1917-25, 1929-39, 1952	--	--	--	1970-73	--	--
06172000	Milk River at Vandalia	20,944	1970-73, 1983-86	1970-73, 1983-87	--	--	--	--	--	--
06172200	Buggy Creek near Tampico	105	1958-67	1958-67, 1972, 1982	--	--	--	--	--	--
06172300	**Unger Coulee near Vandalia**	11.1	--	**1958-P**	--	--	--	--	--	--
06172310	**Milk River at Tampico**	21,078	**1973-77, 1987-P**	**1974-77, 1988-P**	--	--	--	1974-77	--	--
06172350	Mooney Coulee near Tampico	14.3	--	1961-75, 1982	--	--	--	--	--	--
06172400	Milk River tributary No. 2 near Glasgow	1.79	--	1958-60	--	--	--	--	--	--
06172500	Sheepshed Reservoir	11.3	1955-67	--	--	--	--	--	--	--
06173000	Halfway Reservoir	16.2	1955-62	--	--	--	--	--	--	--
06173300	Willow Creek tributary near Fort Peck	0.86	--	1972, 1974-91	--	--	--	--	--	--
06173500	Burnett Northwest Reservoir	5.0	1954-59, 1960-67	--	--	--	--	--	--	--
06174000	Willow Creek near Glasgow	538	1954-87	1954-87, 1993	--	--	--	--	1960-64	--
06174200	Milk River near Glasgow	21,965	1952	--	--	--	--	1969-73	--	1969-73
06174300	**Milk River tributary No. 3 near Glasgow**	1.82	--	**1974-P**	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year): Discharge or contents: Daily or monthly	Discharge or contents: Annual peak	Water quality: Daily: Specific conductance	Water quality: Daily: Water temperature	Water quality: Daily: Sediment	Water quality: Periodic: Chemistry	Water quality: Periodic: Sediment	Water quality: Periodic: Biology
	Part 6--Missouri River Basin--Continued									
06174500	**Milk River at Nashua**	22,332	**1939-P**	**1940-P**	--	**2000-P**	--	**1950-53, 1959-94, 1999-P**	**1974-94, 1999-P**	1974-94
06174550	Middle Fork Porcupine Creek near Baylor	--	--	--	--	--	--	1982-83	--	--
06174600	**Snow Coulee at Opheim**	3.11	--	**1972, 1974-P**	--	--	--	--	--	--
06174700	West Fork Porcupine Creek near Baylor	--	--	--	--	--	--	1982-83	--	--
06175000	Porcupine Creek at Nashua	725	1908-24, 1982-92	1909, 1912-21, 1923-24, 1939, 1982-93	--	--	--	1982-89	--	--
06175400	Frazer Reservoir outlet near Frazer	--	--	--	--	--	--	1960-63 1966-97, 1969-72	--	--
06175500	Little Porcupine Creek at Frazer	280	1909-16, 1918-19	--	--	--	--	--	--	--
06175505	Little Porcupine Creek below diversion, at Frazer	--	--	--	--	--	--	1982-83	--	--
06175540	Prairie Elk Creek near Oswego	352	1975-85	1976-85	--	--	--	1976-79	1976-79	--
06175550	East Fork Sand Creek near Vida	8.51	--	1963-77	--	--	--	--	--	--
06175580	Sand Creek near Wolf Point	201	--	--	--	--	--	1976-77	1976-77	--
06175600	West Fork Wolf Creek near Lustre	6.57	--	1956-67	--	--	--	--	--	--
06175700	**East Fork Wolf Creek near Lustre**	9.61	--	**1956-2002**	--	--	--	--	--	--
06175800	Wolf Creek tributary near Wolf Point	2.46	--	1955-67	--	--	--	--	--	--
06175900	Wolf Creek tributary No. 2 near Wolf Point	6.10	--	1955-84	--	--	--	--	--	--
06176000	Wolf Point ditch at Wolf Point	--	1909-10	--	--	--	--	--	--	--
06176500	Wolf Creek near Wolf Point	251	1908-14, 1950-53, 1982-92	1910-12, 1950-54, 1956-70, 1972-73, 1982-93	--	--	--	1982-84	--	--
06176950	Missouri River tributary No. 6 near Wolf Point	0.53	--	1973-91	--	--	--	--	--	--
06177000	**Missouri River near Wolf Point**	82,290	**1928-P**	**1929-P**	--	**1979-85 2002**	--	**1949-51, 1961-62, 1965-68, 1970-73 2002**	**2002**	--
06177020	**Tule Creek tributary near Wolf Point**	1.91	--	**1974-P**	--	--	--	--	--	--
06177025	Tule Creek near Poplar	--	--	--	--	--	--	1982	--	--
06177050	**East Fork Duck Creek near Brockway**	12.4	--	**1955-2002**	--	--	--	--	--	--
06177100	Duck Creek near Brockway	54.0	--	1957-73	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06177150	Redwater River at Brockway	216	--	1957-73, 1986	--	--	--	1980-83	--	--
06177200	Tusler Creek near Brockway	90.2	--	1957-72	--	--	--	--	--	--
06177250	Tusler Creek tributary near Brockway	3.17	--	1957-73, 1986	--	--	--	--	--	--
06177300	Redwater River tributary near Brockway	0.29	--	1954,1957, 1959-73	--	--	--	--	--	--
06177350	South Fork Dry Ash Creek near Circle	5.74	--	1955-60, 1962-72, 1986	--	--	--	--	--	--
06177400	McCune Creek near Circle	29.9	1982-85	1955-58, 1960-73, 1982-86	--	--	--	--	--	--
06177500	**Redwater River at Circle**	547	**1929-72, 1974-P**	**1929-30, 1932-72, 1975-P**	--	--	--	1975-85	1975-85	--
06177520	Horse Creek near Circle	101	--	--	--	--	--	1977-79, 1982	1977-79	--
06177650	Redwater River near Richey	1,071	1982-86	1983-85	1982-85	--	--	1982-85	1982-84	--
06177700	**Cow Creek tributary near Vida**	1.71	1982-85	**1963-P**	--	--	--	--	--	--
06177720	West Fork Sullivan Creek near Richey	14.8	--	1972, 1974-92	--	--	--	--	--	--
06177800	Gady Coulee near Vida	0.91	--	1962-91	--	--	--	--	--	--
06177820	**Horse Creek tributary near Richey**	0.63	--	**1974-P**	--	--	--	--	--	--
06177825	Redwater River near Vida	1,974	1975-85	1976-85	--	--	--	1976-85	1976-85	--
06178000	**Poplar River at international boundary**	358	**1931-P**	**1931, 1933-P**	--	--	--	**1964-65, 1976-P**	**1977-P**	1977-78
06178150	Poplar River near Scobey	572	--	--	--	--	--	1975-80	1977-79	1977-78
06178500	**East Poplar River at international boundary**	541	**1931-P**	**1931-32, 1935-43, 1945-P**	**1982-2002**	--	--	**1964-65, 1975-2002**	**1975-2002**	1977-81
06179000	East Fork Poplar River near Scobey	722	1935-40, 1975-79	1975-79	--	--	--	1975-95	1977-95	1977-78
06179100	**Butte Creek tributary near Four Buttes**	1.60	--	**1972, 1974-P**	--	--	--	--	--	--
06179200	Poplar River above West Fork, near Bredette	1,745	--	--	--	--	--	1976-81, 1985-93	1977-81	1977-78
06179500	West Fork Poplar River at international boundary	139	1931-53	1931-33, 1935-37, 1939-52	--	--	--	1976-83	1977-79	1977-78
06180000	West Fork Poplar River near Richland	428	1935-49	1935-49, 1990,1994	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06180200	West Fork Poplar River near Four Buttes	732	--	--	--	--	--	1975-76	--	--
06180400	West Fork Poplar River near Bredette	1,010	--	--	--	--	--	1976-93	1977-84	1977-78
06180500	Poplar River near Bredette	2,940	1934-47	1934-47	--	--	--	--	--	--
06180600	Poplar River above Slims Coulee, near Poplar	--	--	--	--	--	--	1991-93	--	--
06181000	**Poplar River near Poplar**	3,174	**1908-24, 1947-69, 1975-79, 1982-P**	**1909,1915, 1921,1923, 1946, 1948-63, 1965-69, 1975-79, 1982-P**	--	**2000-P**	--	**1975-81, 1987-94, 1999-P**	**1975-81, 1987-94, 1999-P**	1975-78, 1987-94
06181200	Missouri River tributary No. 2 near Brockton	1.60	--	1962-76	--	--	--	--	--	--
06181500	Big Muddy Creek at international boundary	29.0	1949-52	--	--	--	--	--	--	--
06181995	Beaver Creek at international boundary	149	1977-94	1978-94	--	--	--	1977-91	1977-91	1977-78
06182000	Beaver Creek near international boundary	224	1949-53	--	--	--	--	--	--	--
06182500	Big Muddy Creek at Daleview	279	1947-72	1948-72, 1975	--	--	--	--	--	--
06182700	Middle Fork Big Muddy Creek near Flaxville	3.12	--	1972, 1974-83	--	--	--	--	--	--
06183000	Big Muddy Creek at Plentywood	850	1948-53	1948-53, 1955-67	--	--	--	--	--	--
06183100	Box Elder Creek near Plentywood	9.40	--	1956-73, 1976	--	--	--	--	--	--
06183200	Box Elder Creek at dam site, near Plentywood	19.9	--	1953,1955, 1957-63	--	--	--	--	--	--
06183300	**Marron Creek tributary near Plentywood**	6.08	--	**1955-2002**	--	--	--	--	--	--
06183400	Spring Creek at Highway 16, near Plentywood	16.9	--	1956-73, 1976	--	--	--	--	--	--
06183450	**Big Muddy Creek near Antelope**	967	**1979-P**	**1979-P**	--	--	--	1979-93	1979-87	--
06183500	Big Muddy Creek at Reserve	1,044	1920-25, 1950-53	1920-21, 1923-24, 1950-53	--	--	--	--	--	--
06183700	**Big Muddy Creek diversion canal near Medicine Lake**	--	**1985-P**	--	--	--	--	--	--	--
06183750	**Lake Creek near Dagmar**	101	**1985-89, 1995-P**	**1986-89, 1996-P**	--	--	--	--	--	--
06183800	**Cottonwood Creek near Dagmar**	126	**1985-89, 1995-P**	**1986-89, 1996-P**	--	--	--	--	--	--
06183850	**Sand Creek near Dagmar**	122	**1985-89, 1995-P**	**1986-89, 1995-P**	--	--	--	--	--	--
06183900	Wolf Creek near Reserve	--	--	--	--	--	--	1982-84	--	--
06184000	Wolf Creek near Medicine Lake	165	1918-19	--	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Missouri River Basin--Continued									
06184200	**Lost Creek tributary near Homestead**	1.90	--	**1972, 1974-P**	--	--	--	--	--	--
06184400	Smoke Creek near Flaxville	--	--	--	--	--	--	1982	--	--
06184500	Smoke Creek near Poplar	283	1918	--	--	--	--	--	--	--
06185000	Big Muddy Creek near Culbertson	2,447	1908-21	1909-14, 1916-21	--	--	--	--	--	--
06185100	Big Muddy Creek tributary near Culbertson	7.38	--	1963-77	--	--	--	--	--	--
06185110	Big Muddy Creek near mouth, near Culbertson	2,684	1982-92	1982-92	--	--	--	1982-89	--	--
06185150	Hardscrabble Creek near Culbertson	121	--	--	--	--	--	1981-83	1981-83	--
06185200	Missouri River tributary No. 3 near Culbertson	1.23	--	1963-77	--	--	--	--	--	--
06185300	Missouri River tributary No. 4 near Bainville	11.6	--	1963-77	--	--	--	--	--	--
06185400	**Missouri River tributary No. 5 at Culbertson**	3.67	--	**1963-P**	--	--	--	--	--	--
06185500	**Missouri River near Culbertson**	91,557	**1941-51, 1958-P**	**1942-51, 1959-P**	--	**2002**	1972-76	**1965-86, 1992-94, 1997-P**	**1972-86, 1997-P**	**1969-86**
	Part 6--Yellowstone River Basin									
06186000	Yellowstone Lake at Bridge Bay, Yellowstone National Park	1,006	1921-86	--	--	--	--	--	--	--
06186500	**Yellowstone River at Yellowstone Lake outlet, Yellowstone National Park**	1,006	**1922-82, 1984-86, 1989-P**	**1923-86, 1989-P**	1984-85	1984-85	--	--	--	--
06187000	Yellowstone River near Canyon Hotel, Yellowstone National Park	1,157	1913-51	1913-18, 1821-51	--	--	--	--	--	--
06187500	Tower Creek at Tower Falls, Yellowstone National Park	50.4	1922-43	1923-43	--	--	--	--	--	--
06187550	Yellowstone River at Tower Junction, Yellowstone National Park	1,342	1984-86	1984-86	1984-85	1984-85	--	--	--	--
06187915	**Soda Butte Creek at park boundary, at Silver Gate**	31.2	**1999-P**	**1999-P**	--	--	--	1999-2001	1999-2001	2000-2001
06187950	**Soda Butte Creek near Lamar Ranger Station,Yellowstone National Park**	99	**1989-P**	**1989-P**	--	--	--	1989	--	--
06188000	**Lamar River near Tower Falls Ranger Station, Yellowstone National Park**	660	**1922-69, 1985-86, 1988-P**	**1923-69, 1985-86, 1989-P**	--	--	1985-86, 1989-92	1989	1985-86, 1988-92,	--
06188500	East Fork Blacktail Deer Creek near Mammoth, Yellowstone National Park	10.3	1938-41	--	--	--	--	--	--	--
06189000	Blacktail Deer Creek near Mammoth, Yellowstone National Park	15	1938-45, 1989-93	1938-45, 1989-93	--	--	--	1989	--	--
06189500	Bear Creek at Jardine	40.8	1946-49	--	--	--	--	--	--	--
06190000	Lupine Creek near Mammoth, Yellowstone National Park	4.67	1938-41	--	--	--	--	--	--	--
06190370	Gardner River above Mammoth Springs Outflow, near Mammoth, Yellowstone National Park	--	--	--	--	--	--	1988-93	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Yellowstone River Basin--Continued									
06190415	Mammoth Springs Outflow at Mammoth, Yellowstone National Park	--	--	--	--	--	--	1988-94	--	--
06190500	Gardner River at Mammoth, Yellowstone National Park	200	1922-39	1923-38	--	--	--	--	--	--
06190525	Gardner River Sinkhole Diversion at Mammoth, Yellowstone National Park	--	--	--	--	--	--	1989-92	--	--
06190530	Clematis Creek at Mammoth, Yellowstone National Park	2.71	--	--	--	--	--	1990-92	--	--
06190540	Hot River at Mammoth, Yellowstone National Park	--	1989-94	1989-95	1989-90	1989-90	--	1967, 1988-94	--	--
06191000	**Gardner River near Mammoth, Yellowstone National Park**	202	**1938-72, 1984-P**	**1939-72, 1984-P**	1985	1985	--	1988-93	1989	--
06191400	LaDuke Hot Springs near Corwin Springs	--	--	--	--	--	--	1988-94	--	--
06191500	**Yellowstone River at Corwin Springs**	2,623	**1889-93, 1910-P**	**1890-93, 1911-P**	1984-85	**1977-81, 1984-85 2002**	1985-92	1956-57, 1969-74, 1988-90 1999-2001	1965, 1985-92 1999-2001	1969-74 2000-2001
06191800	Big Creek near Emigrant	60.9	1973-79, 1983-85	1974-79, 1983-85	--	--	--	--	--	--
06192000	Mill Creek near Pray	148	1951-56	1951-56	--	--	--	--	--	--
06192500	**Yellowstone River near Livingston**	3,551	**1897-1905, 1928-32, 1937-P**	**1897-1905, 1929-32, 1938-P**	--	**2000-P**	1985-86	**1970-94, 1999-P**	**1965, 1979-94, 1999-P**	1979-94
06193000	Shields River near Wilsall	87.8	1935-57	1936-57	--	--	--	--	--	--
06193500	Shields River at Clyde Park	543	1921-23, 1929-32, 1934-67	1921-23, 1929-32, 1934-67	--	--	--	--	1965	--
06194000	Brackett Creek near Clyde Park	57.9	1921-23, 1934-57	1921-23, 1934-57	--	--	--	--	--	--
06194500	Canyon Creek near Chadbourn	21.5	1923	--	--	--	--	--	--	--
06195000	Bangtail Creek at Chadbourn	13.3	1923	--	--	--	--	--	--	--
06195500	Willow Creek near Chadbourn	29.7	1923	--	--	--	--	--	--	--
06195600	**Shields River near Livingston**	852	**1979-P**	**1979-P**	--	**2000-P**	--	**1999-P**	**1999-P**	--
06196000	North Fork Big Timber Creek near Big Timber	36.6	1907-12	--	--	--	--	--	--	--
06196500	South Fork Big Timber Creek near Big Timber	28.1	1907-11	--	--	--	--	--	--	--
06197000	Big Timber Creek near Big Timber	74.9	1912-24	1912-16, 1918-24, 1971	--	--	--	--	--	--
06197020	Big Timber Creek near mouth, near Big Timber	--	--	--	--	--	--	--	1965	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Yellowstone River Basin--Continued									
06197500	Boulder River near Contact	226	1910-16, 1929, 1950-69, 1970-74, 1981-83	1910-16, 1929, 1951-69, 1971-75, 1982-83	--	--	1972	1971-73	1971-73 1981-83	--
06197800	East Boulder River below Dry Fork Creek, near McLeod	--	--	--	--	--	--	--	1981-83	--
06198000	East Fork Boulder River near McLeod	85.6	1907-10, 1981-83	1908-09, 1982-83	--	--	--	--	1981-83	1982-83
06198450	West Fork Boulder River at West Boulder Reservoir near McLeod	--	--	--	--	--	--	--	1981-83	--
06198500	West Fork Boulder River near Bruffeys	91.6	1904-10	1904-1908, 1910	--	--	--	--	--	--
06199000	West Boulder River at McLeod	135	1907-14	1907-14	--	--	--	--	1981-83	--
06199500	Boulder River near McLeod	476	1912-14	--	--	--	--	--	--	--
06200000	**Boulder River at Big Timber**	523	**1947-53, 1955-P**	**1947-53, 1955-P**	--	**2000-P**	--	**1965, 1999-P**	**1965, 1981-83, 1999-P**	--
06200400	Sweet Grass Creek near Melville	46.3	1907-12	--	--	--	--	--	--	--
06200500	Sweet Grass Creek above Melville	63.8	1913-25, 1937-69	1914-24, 1937-69, 1971,1975	--	--	--	--	--	--
06201000	Sweet Grass Creek below Melville	143	1907-24, 1937-43, 1946-52	1907-16, 1918-24, 1937-42, 1946-52	--	--	--	--	--	--
06201500	Sweet Grass Creek near Greycliff	368	1941-42	--	--	--	--	--	--	--
06201550	Yellowstone River tributary near Greycliff	2.72	--	1960-74	--	--	--	--	--	--
06201600	Bridger Creek near Greycliff	61.5	--	1960-75	--	--	--	--	--	--
06201650	Work Creek near Reed Point	32.5	--	1959-73, 1978	--	--	--	--	--	--
06201700	**Hump Creek near Reed Point**	7.61	--	**1960-P**	--	--	--	--	--	--
06201750	Berry Creek near Columbus	23.5	--	1958-73, 1978	--	--	--	--	--	--
06201800	Stillwater River above Woodbine Creek, near Nye	160	1924-27	--	--	--	--	--	--	--
06202000	Woodbine Creek near Nye	19.4	1924-27	--	--	--	--	--	--	--
06202500	Stillwater River near Nye	180	1929-32	--	--	--	--	--	--	--
06202510	Stillwater River above Nye Creek, near Nye	193	1980-91	1980-91	--	--	--	--	1981-83	1982-83
06202530	Stillwater River above West Fork, at Nye	193	--	--	--	--	--	--	1971-73	--
06202590	West Fork Stillwater River above Cathedral Creek, near Nye	--	--	--	--	--	--	--	1981-83	--
06202597	Castle Creek near Nye	--	--	--	--	--	--	--	1973	--
06202598	West Fork Stillwater River below Castle Creek, near Nye	122	--	--	--	--	--	--	1971-73 1981-83	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Yellowstone River Basin--Continued									
06202600	Stillwater River at Nye	337	1969-77	1970-76	--	--	--	--	--	--
06202610	Stillwater River at Beehive	371	--	--	--	--	1972-73	1971-73, 1982-83	1973, 1982-83	1982-83
06203000	East Rosebud Creek near Roscoe	105	1920-21	--	--	--	--	--	--	--
06203500	East Rosebud Creek at Roscoe	125	1921-24	--	--	--	--	--	--	--
06204000	**Mystic Lake near Roscoe**	46.9	**1936-P**	--	--	--	--	--	--	--
06204050	**West Rosebud Creek near Roscoe**	52.1	**1965-P**	**1966-P**	--	--	--	--	--	--
06204150	Fishtail Creek near Dean	--	--	--	--	--	--	--	1981-83	--
06204220	Butcher Creek near Luther	9.69	--	--	--	--	--	1960	1960-61	--
06204240	Butcher Creek near Roscoe	--	--	--	--	--	--	--	1960-61	--
06204260	Butcher Creek near Fishtail	--	--	--	--	--	--	--	1960-61	--
06204300	Butcher Creek near Absarokee	39.6	1960-62	--	--	--	--	1960	--	--
06204500	Rosebud Creek near Absarokee	394	1935-69	1935-69	--	--	--	--	--	--
06204700	Rosebud Creek at Absarokee	401	1910-14	--	--	--	--	--	--	--
06205000	**Stillwater River near Absarokee**	975	**1910-14, 1935-P**	**1911-14, 1935-P**	--	**2001-P**	--	**1999-P**	**1965,1981, 1999-P**	--
06205050	Stillwater River near Columbus	--	--	--	--	--	--	--	1982-83	--
06205100	**Allen Creek near Park City**	7.17	--	**1961-2002**	--	--	--	--	--	--
06205200	Yellowstone River at Laurel	8,189	--	--	--	--	--	1951-52, 1974-79	1975-78	1974-79
06207500	**Clarks Fork Yellowstone River near Belfry**	1,154	**1921-P**	**1922-P**	--	--	1984	1966-88	1965,1971 1984	--
06207510	Big Sand Coulee at Wyoming-Montana State line	134	1973-81	1973-80	--	--	1973-81	--	--	--
06207520	Silver Tip Creek below Amoco dam, near Belfry	--	--	--	--	--	--	1972	--	--
06207523	Silver Tip Creek below Sinclair oil field, near Belfry	--	--	--	--	--	--	1972	--	--
06207530	Silver Tip Creek above Gobblers Draw, near Belfry	--	--	--	--	--	--	1971	--	--
06207540	Silver Tip Creek near Belfry	88.0	1968-75	1968-75	--	--	1969-72, 1974	1969-75	1970-75	--
06207600	Jack Creek tributary near Belfry	0.85	--	1975-91	--	--	--	--	--	--
06207700	North Fork Bluewater Creek near Bridger	8.1	--	--	--	--	--	--	1960-61, 1964-68	--
06207800	Bluewater Creek near Bridger	28.1	1960-70	1960-70, 1978	--	--	1962-70	1960	1964-65	--
06207850	Bluewater Creek at Sanford Ranch	43.9	--	--	--	--	1964-70	--	1960-61 1964-70	--
06207870	Bluewater Creek near Fromberg	46.6	--	--	--	--	1964-70	1960	1960-61, 1964-68	--
06207900	Bluewater Creek at Fromberg	53.2	1961-64	--	--	--	1962-64	1960,1980	1960-761, 1964-68, 1970,1980	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Yellowstone River Basin--Continued									
06208000	Clarks Fork Yellowstone River at Fromberg	1,940	1905-14	1905-13	--	--	--	--	--	--
06208400	Elbow Creek near Joliet	48.6	1984	1984	--	--	--	1984	1984	--
06208500	**Clarks Fork Yellowstone River at Edgar**	2,032	**1921-69, 1987-P**	**1922-32, 1934-69, 1987-P**	--	**2000-P**	1972-73	**1964-65, 1999-P**	**1965,1973, 1999-P**	**2000-P**
06208800	Clarks Fork Yellowstone River near Silesia	2,093	1970-87	1970-86	--	--	1984	1984	1984	--
06209000	Glacier Lake near Red Lodge	3.77	1939-47, 1960-64	--	--	--	--	--	--	--
06209010	Rock Creek below Glacier Lake, near Red Lodge	3.89	1960-64	--	--	--	--	--	--	--
06209500	**Rock Creek near Red Lodge**	105	**1932-82, 1985-86, 2000-P**	**1932, 1934-82, 1985-86, 2000-P**	--	**2001-P**	--	--	--	--
06210000	West Fork Rock Creek below Basin Creek, near Red Lodge	63.1	1937-57	1938-56	--	--	--	--	--	--
06210500	West Fork Rock Creek near Red Lodge	66.9	1932-44	1932, 1934-44	--	--	--	--	--	--
06211000	**Red Lodge Creek above Cooney Reservoir, near Boyd**	143	**1937-P**	**1937-P**	--	--	--	--	--	--
06211500	**Willow Creek near Boyd**	53.3	**1937-P**	**1937-P**	--	--	--	--	--	--
06212000	**Cooney Reservoir near Boyd**	206	**1937-95**	--	--	--	--	--	--	--
06212500	**Red Lodge Creek below Cooney Reservoir, near Boyd**	210	**1937-P**	**1938-P**	--	--	--	--	--	--
06213000	Red Lodge Creek near Boyd	234	1932-37	--	--	--	--	--	--	--
06213500	Rock Creek at Joliet	539	1946-53	1946-53	--	--	--	--	--	--
06214000	Rock Creek at Rockvale	569	1920-22, 1952-40, 1984-90	1921-22, 1932,1934, 1935-40, 1985-90	--	--	--	--	--	--
06214050	Clarks Fork Yellowstone River near Laurel	2,783	--	--	--	--	--	1969-73	--	1969-73
06214100	Yellowstone River near Laurel	11,036	--	--	--	--	--	1969-72	--	1969-72
06214150	**Mills Creek at Rapelje**	3.32	--	**1974-2002**	--	--	--	--	--	--
06214500	**Yellowstone River at Billings**	11,795	**1904-05, 1928-P**	**1904-05, 1918, 1929-P**	--	**2001-P**	1977-81	**1963-93 1999-P**	**1965, 1975-93 1999-P**	**1975-93 2000-P**
06215000	Pryor Creek above Pryor	39.6	1921-24, 1967-74	1921-24, 1967-74	--	--	--	1987-90	--	--
06215500	Lost Creek near Pryor	9.72	1921-24	1922-24	--	--	--	--	--	--
06216000	**Pryor Creek at Pryor**	117	**1921-24, 1966-P**	**1922-24, 1967-P**	--	--	--	--	--	--
06216200	**West Wets Creek near Billings**	8.80	--	**1955-P**	--	--	--	--	--	--
06216300	West Buckeye Creek near Billings	2.64	--	1955-73, 1978	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Yellowstone River Basin--Continued									
06216500	Pryor Creek near Billings	440	1911-24, 1938-54	1912-24, 1938-53, 1955-73, 1978	--	--	--	--	--	--
06216900	Pryor Creek near Huntley	582	1979-99	1978-99	--	--	--	--	--	--
06217000	Pryor Creek at Huntley	606	1904-17	1905-06, 1908, 1910-15, 1978	--	--	--	--	--	--
06217300	**Twelvemile Creek near Shepherd**	9.05	--	**1973-P**	--	--	--	--	--	--
06217500	Yellowstone River at Huntley	12,840	1908-16	1908-16	--	--	--	1951-52, 1971-81	1975-81	1972-81
06217700	**North Fork Crooked Creek tributary near Shepherd**	6.85	--	**1962-P**	--	--	--	--	--	--
06217750	Fly Creek at Pompeys Pillar	285	1969-81	1969-81	--	--	--	1969-81	--	--
06217800	Yellowstone River tributary No. 2 near Pompeys Pillar	0.70	--	1962-73	--	--	--	--	--	--
06217950	Buffalo Creek near Custer	221	1980-83	1980-83	--	--	--	--	--	--
06218000	Yellowstone River at Junction (at Custer)	14,427	1906-08	--	--	--	--	1969-70	--	1969-70
06286258	Big Coulee near Lovell, Wyoming	30.1	1970-78	--	--	--	--	--	--	--
06286270	Porcupine Creek near Lovell, Wyoming	135	1964-67	--	--	--	--	--	--	--
06286340	Dry Head Creek near Pryor	58.0	1965-66	--	--	--	--	--	--	--
06286350	Dry Head Creek above Hoodoo Creek, near Pryor	80.0	1966-68	1966-67	--	--	--	--	--	--
06286370	Big Bull Elk Creek near St. Xavier	35.0	1965-68	--	--	--	--	--	--	--
06286390	Black Canyon Creek near St. Xavier	52.0	1965-66	1965-66	--	--	--	--	--	--
06286395	Black Canyon Creek below Three Springs Creek, near St. Xavier	75.0	1966-68	1966-67	--	--	--	--	--	--
06286400	**Bighorn Lake near St. Xavier**	19,626	**1965-P**	--	---	--	--	--	--	--
06286490	**Bighorn Canal near St. Xavier**	--	**1966-P**	--	--	--	--	--	--	--
06286500	Bighorn Canal below wasteway, near St. Xavier	--	1947-52	--	--	--	--	--	--	--
06287000	**Bighorn River near St. Xavier**	19,667	**1934-P**	**1935-P**	--	1970-79	--	1967-81		1969-70
06287500	Soap Creek near St. Xavier	98.3	1911-14, 1939-53, 1968-72	1939-53, 1963, 1968-72, 1978	--	--	--	--	--	--
06287700	Soap Creek near mouth, near St. Xavier	111	1914-24	1914-18, 1920-24	--	--	--	--	--	--
06288000	Rotten Grass Creek near St. Xavier	147	1911-22, 1968-73	1914-17, 1968-72, 1978	--	--	--	--	--	--
06288200	Beauvais Creek near St. Xavier	100	1967-77	1968-78	--	--	--	1967-78	1968-78	1969-78
06288500	Bighorn River near Hardin	20,722	1904-25, 1928-33	1904-24, 1929-33	--	1968-74	--	1951, 1969-73, 1987-89	--	1970-73

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Yellowstone River Basin--Continued									
06288960	Little Bighorn River near Parkman, Wyoming	137	1970-72	1972	--	--	--	--	--	--
06288990	West Fork Little Bighorn River near Parkman, Wyoming	38.2	1970-72, 1983-87	--	--	--	--	--	--	--
06289000	**Little Bighorn River at State line, near Wyola**	193	**1939-P**	**1939-P**	--	--	--	1993-2001	1993-2001	1993-2001
06289500	Little Bighorn River near Wyola	251	1912-24	1912-24	--	--	--	1993-2001	1993-2001	1993-2001
06290000	**Pass Creek near Wyola**	111	**1935-56, 1983-P**	**1935-56, 1978, 1983-P**	--	--	--	--	--	--
06290200	Little Bighorn River tributary near Wyola	4.43	--	1973-86	--	--	--	--	--	--
06290500	**Little Bighorn River below Pass Creek, near Wyola**	428	**1939-75, 1977-P**	**1939-P**	--	--	1970-73	1970-75, 1977	1970-73	--
06291000	Owl Creek near Lodge Grass	163	1939-45, 1980-92	1939-42, 1944-45, 1980-92	--	--	--	--	--	--
06291200	Lodge Grass Creek at State Line, near Wyola	16.7	1983-84	1983-89	--	--	--	--	--	--
06291500	**Lodge Grass Creek above Willow Creek Diversion, near Wyola**	80.7	**1939-74, 1983-P**	**1939-74, 1978, 1983-P**	--	--	--	--	--	--
06292000	Lodge Grass Creek near Wyola	88.9	1921-24	--	--	--	--	--	--	--
06292500	Lodge Grass Creek near Lodge Grass	143	1912-16, 1921-24	1912-15, 1921-24	--	--	--	--	--	--
06293000	Lodge Grass Creek at Lodge Grass	170	1916-20	--	--	--	--	--	--	--
06293300	**Long Otter Creek near Lodge Grass**	11.7	--	**1973-P**	--	--	--	--	--	--
06293500	Little Bighorn River near Crow Agency	1,181	1912-24, 1928-33, 1938-60	1912, 1914-24, 1929-32, 1938-60	--	--	--	--	--	--
06293900	Little Bighorn River at Crow Agency	1,190	1905-06	--	--	--	--	--	--	--
06294000	**Little Bighorn River near Hardin**	1,294	**1953-P**	**1953-P**	--	--	1970-77	1970-79, 1987-89, 1993-2001	1971-75, 1977, 1993-2001	1993-2001
06294400	**Andresen Coulee near Custer**	2.35	--	**1963-P**	--	--	--	--	--	--
06294500	**Bighorn River above Tullock Creek, near Bighorn**	22,414	**1982-P**	**1982-P**	--	**2000-P**	--	**1999-P**	**1999-P**	--
06294600	**East Cabin Creek tributary near Hardin**	8.63	1982-85	**1973-P**	--	--	--	--	--	--
06294690	Tullock Creek near Bighorn	446	1975-82	1975-82	--	--	--	--	--	--
06294700	Bighorn River at Bighorn	22,885	1945-81	1945-81	--	--	1960-72	1960-92	1960-72, 1975-92	1975-92
06294800	Unknown Creek near Bighorn	14.6	--	1962-76, 1979,1991	--	--	--	--	--	--
06294840	Yellowstone River at Myers	37,674	--	--	--	--	--	1974-77	--	1975-77

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Yellowstone River Basin--Continued									
06294850	Buckingham Coulee near Myers	2.63	--	1962-76, 1979,1991	--	--	--	--	--	--
06294900	Middle Fork Froze to Death Creek tributary near Ingomar	1.36	--	1962-76	--	--	--	--	--	--
06294920	East Fork Sarpy Creek near Colstrip	79.2	--	--	--	--	--	1981-83	1981-83	--
06294930	**Sarpy Creek tributary near Colstrip**	4.44	--	**1972-P**	--	--	--	--	--	--
06294940	Sarpy Creek near Hysham	453	1973-84	1974-84	--	--	--	1975-84	1975-84	--
06294950	Starved to Death Creek near Sanders	36.9	1980-85	1980-85	--	--	--	--	--	--
06294960	Anderson Creek at Vananda	5.71	--	1973-84, 1991	--	--	--	--	--	--
06294980	East Fork Armells Creek near Colstrip	97.3	--	--	--	--	--	1975-85	1975-85	--
06294985	**East Fork Armells Creek tributary near Colstrip**	1.87	--	**1973-P**	--	--	--	--	--	--
06294991	West Fork Armells Creek near Forsyth	148	--	--	--	--	--	1975-77	1975-77	--
06294995	Armells Creek near Forsyth	370	1974-84, 1988-95	1975-84, 1988-95	--	--	--	1975-86, 1988-95	1975-86, 1988-95	--
06295000	**Yellowstone River at Forsyth**	40,339	**1921-23, 1977-P**	**1921-23, 1978-P**	--	--	1978-81	1974-82 1999-2001	1975-82 1999-2001	1975,1978, 1979, 2000-2001
06295020	**Short Creek near Forsyth**	3.23	--	**1962-P**	--	--	--	--	--	--
06295050	Little Porcupine Creek near Forsyth	614	--	1958-73, 1975,1978, 1986,1993	--	--	--	--	--	--
06295100	**Rosebud Creek near Kirby**	35.5	1982-85, 1988	**1960-74, 1982-2002**	--	--	--	--	--	--
06295110	Rosebud Creek at Kirby	--	--	--	--	--	--	1978-79	1978-79	--
06295113	**Rosebud Creek at reservation boundary, near Kirby**	123	**1980-P**	**1980-P**	--	--	--	1980-84	1980-84	--
06295130	Rosebud Creek tributary near Busby	1.14	--	1963-77	--	--	--	--	--	--
06295200	Whitedirt Creek near Lame Deer	1.58	--	1959-73	--	--	--	--	--	--
06295250	**Rosebud Creek near Colstrip**	799	**1974-P**	**1975-P**	--	--	--	1975-85	1975-84	--
06295350	Greenleaf Creek near Colstrip	30.5	--	--	--	--	--	1975	1975	--
06295380	Cow Creek near Colstrip	27.2	--	--	--	--	--	1980-85	1980-85	--
06295400	Rosebud Creek above Pony Creek, near Colstrip	961	--	--	--	--	--	1975-78	1975-77	--
06295420	Snider Creek near Brandenberg	11.9	--	--	--	--	--	1978	1978	--
06295500	Rosebud Creek near Rosebud	1,193	1938-43	1938-43	--	--	--	1975-77	1975-77	--
06296000	Rosebud Creek near Forsyth	1,279	1947-54	1948-53, 1655-57, 1959, 1961-67, 1969,1978	--	--	--	--	--	--
06296003	**Rosebud Creek at mouth, near Rosebud**	1,302	**1974-P**	**1975-P**	--	--	--	**1975-86, 1988-93, 1999-P**	**1975-86, 1988-93, 1999-P**	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Yellowstone River Basin--Continued									
06296100	**Snell Creek near Hathaway**	10.5	1982-85	**1963-77, 1979, 1982-P**	--	--	--	--	--	--
06296115	**Reservation Creek near Miles City**	6.29	--	**1973-P**	--	--	--	--	--	--
06296120	Yellowstone River near Miles City	42,847	--	--	1969-84	--	--	1969-84	1975-84	1974-81
06306000	Tongue River near Acme, Wyoming	894	1939-57	--	--	--	--	--	--	--
06306100	Squirrel Creek near Decker	33.6	1975-85	1976-85	--	--	--	1976-85	1976-85	--
06306250	Prairie Dog Creek near Acme, Wyoming	358	1971-79	--	--	--	--	--	--	--
06306300	**Tongue River at State line, near Decker**	1,477	**1960-P**	**1961-P**	**1983-87 2001-P**	**1966-76 2001-P**	--	**1966-P**	--	1986-88
06306500	Tongue River near Decker	1,585	1928-38	1928-38	--	--	--	--	--	--
06306800	Deer Creek near Decker	47.7	--	--	--	--	--	1975-77	1975-76	--
06306900	Spring Creek near Decker	34.7	--	1958-86	--	--	--	1978,1980	1978,1980	--
06306950	South Fork Leaf Rock Creek near Kirby (Leaf Rock Creek near Kirby)	4.53	1982-85	1958, 1960-96	--	--	--	--	--	--
06307000	**Tongue River Reservoir near Decker**	1,770	**1938-P**	--	--	--	--	--	--	--
06307500	**Tongue River at Tongue River Dam, near Decker**	1,770	**1939-P**	**1939-P**	1981-87	--	--	1951, 1976-95	1976-96	--
06307510	Fourmile Creek near Birney	22.3	--	--	--	--	--	1975	1975	--
06307520	Canyon Creek near Birney	50.2	--	1972-91	--	--	--	--	--	--
06307525	Prairie Dog Creek above Jack Creek, near Birney	6.57	1979-83	1979-83	--	--	--	1978-81, 1983	1978-83	--
06307528	Prairie Dog Creek near Birney	19.6	1979-84	1979-84	--	--	--	1978-80, 1983	1978-83	--
06307530	Bull Creek near Birney	45.8	--	--	--	--	--	1975	1975	--
06307540	Hanging Woman Creek at State line, near Otter	90.2	--	--	--	--	--	1980, 1982-83	1980, 1982-83	--
06307560	East Trail Creek near Otter	31.3	1976-81	1977-81	--	--	--	1977-80	1977-78, 1980	--
06307563	Corral Creek near Otter	26.5	--	--	--	--	--	1980-83	1980-83	--
06307567	Horse Creek near Birney	16.0	--	--	--	--	--	1983	1983	--
06307570	Hanging Woman Creek below Horse Creek, near Birney	321	--	--	--	--	--	1978-83, 1986-87	1978-83, 1986-87	--
06307600	Hanging Woman Creek near Birney	470	1974-84, 1986-95	1974-84, 1986-95	1981-83, 1986-87	--	--	1975-95	1975-95	--
06307610	Tongue River below Hanging Woman Creek, near Birney	2,533	--	--	--	--	--	1974-79	1975-79	1975-79
06307615	Cook Creek near Birney	62.6	--	--	--	--	--	1975-77	1975-77	--
06307616	**Tongue River at Birney Day School, near Birney**	2,621	**1980-P**	**1980-P**	--	--	--	1980-93	1980-86	--
06307620	Tie Creek near Birney	18.7	--	1973-84, 1991	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Yellowstone River Basin--Continued									
06307640	Spring Creek near Ashland	1.56	--	1962-76	--	--	--	--	--	--
06307660	Walking Horse Creek near Ashland	3.33	--	1963-78	--	--	--	--	--	--
06307665	Otter Creek near Otter	40.9	--	--	--	--	--	1978-84	1978-84	--
06307670	Bear Creek at Otter	90.4	--	--	--	--	--	1975-76	1975-76	--
06307700	**Cow Creek near Fort Howes Ranger Station, near Otter**	8.37	--	**1972-P**	--	--	--	--	--	--
06307717	Otter Creek below Fifteenmile Creek, near Otter	453	1982-86	1982-85	1983-85	--	--	1982-85	1982-85	--
06307720	**Brian Creek near Ashland**	8.03	--	**1973-P**	--	--	--	--	--	--
06307725	Otter Creek above Tenmile Creek, near Ashland	466	--	--	--	--	--	1978-81	1978-81	--
06307730	Threemile Creek near Ashland	51.5	--	--	--	--	--	1975	1975	--
06307735	Home Creek near Ashland	58.7	--	--	--	--	--	1977-84	1977-84	--
06307740	Otter Creek at Ashland	707	1973-85, 1988-95	1973-85, 1988-95	1981-85	--	--	1975-85, 1988-95	1975-85, 1988-95	--
06307760	Stebbins Creek near Ashland	5.41	--	1963-77	--	--	--	--	--	--
06307780	Stebbins Creek at mouth, near Ashland	20.8	--	1963-91	--	--	--	--	--	--
06307800	Tongue River near Ashland	3,830	1956-73	1967-72	--	--	--	--	--	--
06307810	Beaver Creek near Ashland	92.3	--	--	--	--	--	1975-76	1975-76	--
06307830	**Tongue River below Brandenberg Bridge, near Ashland**	3,948	**1973-84, 2000-P**	**1974-84, 2000-P**	**2001-P**	**2001-P**	1975-81	**1974-81, 2000-P**	**1975, 1978-81, 2000-P**	--
06307840	Liscom Creek near Ashland	47.6	--	--	--	--	--	1975,1977	1975,1977	--
06307890	Foster Creek near Volborg	116	--	--	--	--	--	1975-77	1975-77	--
06307930	**Jack Creek near Volborg**	5.47	--	**1973-2002**	--	--	--	--	--	--
06308000	Tongue River near Miles City	4,539	1929-33	--	--	--	--	--	--	--
06308100	Sixmile Creek tributary near Epsie	0.80	--	1972-91	--	--	--	--	--	--
06308160	Pumpkin Creek near Loesch	102	--	--	--	--	--	1976-79	1976-79	--
06308170	Little Pumpkin Creek near Volborg	101	--	--	--	--	--	1976-77	1976-77	--
06308190	Pumpkin Creek near Volborg	386	--	--	--	--	--	1976-77	1976-77	--
06308200	**Basin Creek tributary near Volborg**	0.14	--	**1955-P**	--	--	--	--	--	--
06308300	Basin Creek near Volborg	11.1	--	1955-73	--	--	--	--	--	--
06308330	**Deer Creek tributary near Volberg**	1.65	--	**1973-P**	--	--	--	--	--	--
06308340	**LaGrange Creek near Volberg**	3.66	--	**1973-P**	--	--	--	--	--	--
06308400	Pumpkin Creek near Miles City	697	1972-85	1973-85	--	--	--	1976-85	1976-85	--
06308500	**Tongue River at Miles City**	5,379	**1938-42, 1946-P**	**1938-41, 1946-P**	--	**2000-P**	1978-86	**1949-94, 1999-P**	**1975-94, 1999-P**	1975-94
06309000	**Yellowstone River at Miles City**	48,253	**1922-23, 1928-P**	**1923, 1929-P**	--	--	--	1948-52, 1965	1965	--
06309020	Rock Springs Creek tributary at Rock Springs	0.96	--	1963-78, 1987	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Yellowstone River Basin--Continued									
06309040	Dry House Creek near Angela	38.6	--	1963-77, 1987	--	--	--	--	--	--
06309060	North Fork Sunday Creek tributary No. 2 near Angela	0.22	--	1962-91	--	--	--	--	--	--
06309075	Sunday Creek near Miles City	714	1975-84	1975-84	--	--	--	--	--	--
06309078	**Tree Coulee near Kinsey**	4.13	--	**1972, 1974-2002**	--	--	--	--	--	--
06309079	Muster Creek near Kinsey	28.5	--	--	--	--	--	1978-80	1978-80	1978-80
06309080	**Deep Creek near Kinsey**	11.5	--	**1962-P**	--	--	--	--	--	--
06309090	Ash Creek near Locate	6.23	--	1962-76	--	--	--	--	--	--
06309145	Custer Creek near Kinsey	151	--	--	--	--	--	1978-80	1978-80	1978-80
06324500	**Powder River at Moorhead**	8,088	**1929-72, 1974-P**	**1923, 1929-72, 1975-P**	**1986-89 2001-P**	--	1975-96	**1949, 1951-53, 1956-57, 1969-72, 1975-92 2001-P**	**1975-1997 2001-P**	1969-72
06324700	Sand Creek near Broadus	10.2	--	1955-84	--	--	--	--	--	--
06324710	Powder River at Broadus	8,748	1975-92	1976-92	--	--	1976-92	1979, 1988-90	1976-92, 1995	--
06324995	**Badger Creek at Biddle**	6.06	--	**1972-P**	--	--	--	--	--	--
06325000	Little Powder River at Biddle	1,541	1938-43	--	--	--	--	--	--	--
06325400	East Fork Little Powder River tributary near Hammond	3.45	--	1974-84	--	--	--	--	--	--
06325500	**Little Powder River near Broadus**	1,974	1947-53, 1957-72	1947-53, 1956-72, 1978	--	--	--	**2002**	**2002**	--
06325550	**Little Powder River at mouth, near Broadus**	--	--	--	--	--	--	**1978-79, 1988-90 2001-2002**	**1988-89 2001-2002**	--
06325650	Powder River near Powderville	--	--	--	--	--	--	1978-90	1988	--
06325700	**Deep Creek tributary near Powderville**	3.00	--	**1973-P**	--	--	--	--	--	--
06325950	**Cut Coulee near Mizpah**	2.23	--	**1973-P**	--	--	--	--	--	--
06326000	Powder River near Mizpah	12,132	1928-33	--	--	--	--	1989	--	--
06326050	Mizpah Creek at Olive	129	--	--	--	--	--	1976-79	1976-79	--
06326200	Mizpah Creek near Volberg	510	--	--	--	--	--	1976-79	1976-77	--
06326300	Mizpah Creek near Mizpah	797	1975-86	1975-86	--	--	--	1976-84, 1989-90	1976-84	--
06326400	Meyers Creek near Locate	9.42	--	1962-76, 1982	--	--	--	--	--	--
06326500	**Powder River near Locate**	13,189	**1938-P**	**1938-P**	1951-62, 1975-81, 1988-90	--	1975-84	**1948-63, 1975-94, 1999-P**	**1965, 1974-94 1999-P**	1975-94

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Yellowstone River Basin--Continued									
06326507	Locate Creek near Ismay	--	--	--	--	--	--	1982-83	1982-83	--
06326510	Locate Creek tributary near Locate	0.91	--	1973-91	--	--	--	--	--	--
06326520	Powder River at mouth, near Terry	13,512	--	--	--	--	--	1978,1989	--	--
06326530	Yellowstone River near Terry	63,447	--	--	--	--	--	1974-83	1975-83	1975-80
06326550	Cherry Creek tributary near Terry	2.52	--	1973-91	--	--	--	--	--	--
06326555	Cherry Creek near Terry	358	1980-81, 1990-94	1980-81, 1990-94	1990-94	--	1990-94	1978-81	1978-81, 1990-94	--
06326580	**Lame Jones Creek tributary near Willard**	0.51	--	**1974-P**	--	--	--	--	--	--
06326600	O'Fallon Creek near Ismay	669	1978-92	1962-92	--	--	--	1978-84	1978-84	1978-80
06326650	O'Fallon Creek tributary near Ismay	0.16	--	1962-76	--	--	--	--	--	--
06326700	Deep Creek near Baker	3.79	--	1962-76, 1978	--	--	--	--	--	--
06326800	Pennel Creek tributary near Baker	0.86	--	1962-91	--	--	--	--	--	--
06326850	O'Fallon Creek at Mildred	1,396	1975-78	1976-78	--	--	--	--	--	--
06326900	Yellowstone River tributary No. 4 near Fallon	0.67	--	1962-76	--	--	--	--	--	--
06326940	**Spring Creek tributary near Fallon**	3.10	--	**1972-P**	--	--	--	--	--	--
06326950	**Yellowstone River tributary No. 5 near Marsh**	0.87	--	**1962-P**	--	--	--	--	--	--
06326952	Clear Creek near Lindsay	101	1982-85, 1988	1982-86	--	--	--	--	--	--
06326953	Clear Creek near Hoyt	138	--	1980	--	--	--	1978-80	1978-80	1978-80
06326960	**Timber Fork Upper Sevenmile Creek tributary near Lindsay**	1.13	--	**1974-P**	--	--	--	--	--	--
06326995	Upper Sevenmile Creek near Lindsay	137	--	--	--	--	--	1978-80	1978-80	1978-80
06327000	Upper Sevenmile Creek near Glendive	--	1921-22	--	--	--	--	--	--	--
06327450	**Cains Coulee at Glendive**	3.72	--	**1991-P**	--	--	--	--	--	--
06327500	Yellowstone River at Glendive	66,788	1898-1911, 1932-34	1903-10, 1932-34	--	--	--	1950	--	--
06327550	**South Fork Horse Creek tributary near Wibaux**	1.34	--	**1973-P**	--	--	--	--	--	--
06327700	Griffith Creek near Glendive	15.5	--	1955-63, 1965-67	--	--	--	--	--	--
06327720	**Griffith Creek tributary near Glendive**	3.48	--	**1965, 1974-P**	--	--	--	--	--	--
06327790	**Krug Creek tributary No. 2 near Wibaux**	0.44	--	**1974-P**	--	--	--	--	--	--
06327800	Krug Creek tributary near Wibaux	1.74	--	1955-61	--	--	--	--	--	--
06327850	Glendive Creek near Glendive	300	--	--	--	--	--	1978-81	1978-81	--
06328000	Deer Creek near Glendive	198	1921-22	--	--	--	--	1978-80	1978-80	1978-80
06328100	**Yellowstone River tributary No. 6 near Glendive**	2.93	--	**1974-P**	--	--	--	--	--	--
06328200	Lower Sevenmile Creek near Bloomfield	25.2	1982-85	1983-87	--	--	--	--	--	--
06328400	Thirteenmile Creek tributary near Bloomfield	0.67	--	1972, 1974-91	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 6--Yellowstone River Basin--Continued									
06328700	Linden Creek at Intake	4.20	--	1958-73, 1980	--	--	--	--	--	--
06328800	Indian Creek at Intake	0.46	--	1958-73	--	--	--	--	--	--
06328900	War Dance Creek near Intake	3.69	--	1958-73, 1980	--	--	--	--	--	--
06329000	Cottonwood Creek near Intake	85.3	--	--	--	--	--	1978-81	1978-81	--
06329200	Burns Creek near Savage	233	1958-67, 1975-84, 1986	1958-67, 1975-84, 1986	--	--	--	1976-79, 1984,1986	1976-79, 1984,1986	--
06329350	**Alkali Creek near Sidney**	0.49	--	**1974-P**	--	--	--	--	--	--
06329500	**Yellowstone River near Sidney**	69,103	**1910-31, 1933-P**	**1911-31, 1934-P**	--	--	**1972-81, 1983-P**	**1948-P**	**1965, 1972-P**	1970-95
06329510	Fox Creek tributary near Lambert	5.01	--	1972, 1974-96	--	--	--	--	--	--
06329520	Fox Creek near Lambert	183	--	--	--	--	--	1981-83	1981-83	--
06329540	Lone Tree Creek near Sidney	39.4	--	--	--	--	--	1981-83	1981-83	--
06329570	**First Hay Creek near Sidney**	29.1	--	**1963-P**	--	--	--	--	--	--
06333500	Little Missouri River at Alzada	671	1904-07	--	--	--	--	1949-51	--	--
06333850	North Creek near Alzada	1.25	1951	1951-52, 1956-77	--	--	--	--	--	--
06333900	North Creek spreader diversion near Alzada	1.29	1952-56	--	--	--	--	--	--	--
06334000	Little Missouri River near Alzada	904	1911-25, 1928-32, 1935-69	1912-25, 1929-32, 1935-69	--	--	--	--	--	--
06334100	**Wolf Creek near Hammond**	10.1	--	**1955-2002**	--	--	--	--	--	--
06334200	Willow Creek near Alzada	122	--	1958-73	--	--	--	--	--	--
06334330	**Little Missouri River tributary near Albion**	1.49	--	**1972-P**	--	--	--	--	--	--
06334610	**Hawks Nest Creek tributary near Albion**	0.92	--	**1973-2002**	--	--	--	--	--	--
06334625	**Coal Creek tributary near Mill Iron**	0.64	--	**1974-P**	--	--	--	--	--	--
06334630	Boxelder Creek at Webster	1,092	1959-73	1960-73, 1975	--	--	--	1972-73	--	--
06334640	North Fork Coal Bank Creek near Mill Iron	15.6	--	1962-76	--	--	--	--	--	--
06334720	Soda Creek tributary near Webster	2.22	--	1962-91	--	--	--	--	--	--
06336447	Duck Creek near Wibaux	46.5	1978-85	1978-85	--	--	--	1979	1978-79	--
06336450	Spring Creek near Wibaux	4.00	1955-73	1956-73	--	--	--	--	--	--
06336500	Beaver Creek at Wibaux	351	1938-69, 1979-83	1872,1921, 1929, 1938-69, 1979-83	--	--	--	1979-84	1979-84	--
06336510	Upper Hay Creek tributary No. 2 near Wibaux	4.1	1978-82	1978-82	--	--	--	--	--	--
06336515	Hay Creek near Wibaux	11.4	1978-82	1978-82	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 12--Kootenai River Basin									
06336545	Little Beaver Creek near Wibaux	96.2	1978-81	1978-81	--	--	--	1979-80	1979-80	--
06336550	Beaver Creek near Wibaux	--	1958-64	--	--	--	--	--	--	--
12300000	Kootenay River at Newgate, British Columbia	7,660	1931-72	1931-71	--	--	--	1949,1965	--	--
12300110	**Lake Koocanusa at international boundary**	--	--	--	--	--	--	**1972-P**	--	1972-82
12300200	Young Creek near Rexford	36.0	1973-75	1974-75	--	--	--	--	--	--
12300400	Cayuse Creek near Trego	5.29	--	1972-84	--	--	--	--	--	--
12300500	Fortine Creek near Trego	110	1947-53	1947-54, 1958, 1960-73	--	--	--	--	--	--
12300800	Deep Creek near Fortine	18.9	--	1954-91	--	--	--	--	--	--
12301000	Grave Creek near Fortine	54.9	1923-24	--	--	--	--	--	--	--
12301300	**Tobacco River near Eureka**	440	**1958-P**	**1948, 1959-P**	--	1971-85	--	1971-76	--	1974-76
12301500	Kootenai River near Rexford	8,420	1929-40, 1968-71	1929-40, 1948, 1968-71	--	--	1968-71	1967-72	1968-71	--
12301550	Pinkham Creek near Rexford	75.7	1973-81	1973-81	--	--	--	--	--	--
12301600	Lake Koocanusa below Pinkham Creek, near Rexford	--	--	--	--	--	--	1972-76	--	1972-76
12301700	Kootenai River tributary near Rexford	0.86	--	1959-70	--	--	--	--	--	--
12301800	Gold Creek near Rexford	6.12	--	1959-69	--	--	--	--	--	--
12301810	Big Creek near Rexford	137	1972-81	1973-82	--	--	--	--	--	--
12301830	**Lake Koocanusa at Tenmile Creek, near Libby**	--	--	--	--	--	--	**1972-P**	--	**1972-P**
12301850	Kootenai River at Worland Bridge, near Libby	8,892	1961-71	1961-71	--	--	--	--	--	--
12301900	Little Jackson Creek near Libby	2.60	--	1961-69	--	--	--	--	--	--
12301919	**Lake Koocanusa at Forebay, near Libby**	--	--	--	--	--	--	**1972-P**	--	1972-82
12301920	**Lake Koocanusa near Libby**	8,985	**1972-P**	--	--	--	--	--	--	--
12301921	Libby Dam near Libby	--	--	--	--	--	--	1964	--	--
12301933	**Kootenai River below Libby Dam, near Libby**	8,985	**1972-P**	**1972-P**	--	**2001-P**	1968-76	**1967-P**	1968-71	1973-82
12301990	Fisher River above Wolf Creek, near Libby	768	--	--	--	--	--	1967-70	1968-70	--
12301993	Wolf Creek tributary near Libby	2.76	--	1974-84	--	--	--	--	--	--
12301997	Richards Creek near Libby	9.50	--	1973-91	--	--	--	--	--	--
12301999	Wolf Creek near Libby	216	1967-77	1967-77	--	--	1968-70	1967-70	1969-70	--
12302000	Fisher River near Jennings	780	1951-69	1948, 1951-69, 1974	--	-	--	--	--	--
12302050	Peoples Creek near Libby	2.54	--	1961-67, 1976	--	--	--	--	--	--
12302055	**Fisher River near Libby**	838	**1967-P**	**1948, 1969-P**	--	1968-85	1968-76	**1967-76, 1999-P**	**1969-72, 1974-76, 1999-P**	1974-76

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
			Part 12--Kootenai River Basin--Continued							
12302400	Shaughnessy Creek near Libby	1.16	--	1959-91	--	--	--	--	--	--
12302500	Granite Creek near Libby	23.6	1933-34, 1936-44, 1960-69	1933, 1937-44, 1948,1954, 1959-69, 1974	--	--	--	--	--	--
12303000	Kootenai River at Libby	10,240	1911-91	1911-91	--	--	--	1969-72, 1978	--	1969-73
12303100	Flower Creek near Libby	11.1	1960-92	1960-92	--	--	--	--	--	--
12303400	Ross Creek near Troy	23.8	--	1972-91	--	--	--	1971, 1976-78	1976-78	--
12303430	Stanley Creek near Troy	12.8	--	--	--	--	--	1976-78	1976-78	--
12303440	Camp Creek near Troy	11.3	--	1972-91	--	--	--	--	--	--
12303490	Lake Creek near Troy	179	--	--	--	--	--	1976-78	1976-78	--
12303500	Lake Creek at Troy	210	1945-57, 1983-95	1945-57, 1974, 1983-96	--	--	--	--	--	--
12304000	Callahan Creek at Troy	85.8	1911-12, 1914-16	--	--	--	--	--	--	--
12304040	Basin Creek near Yaak	27.4	1990-2000	1990-2000	--	--	--	--	--	--
12304060	Blacktail Creek near Yaak	8.66	--	1964, 1972-84	--	--	--	--	--	--
12304120	Zulu Creek near Yaak	5.27	--	1972-84	--	--	--	--	--	--
12304200	Yaak River near Yaak	493	1957-62	1956-62	--	--	--	--	--	--
12304250	Whitetail Creek near Yaak	2.48	--	1960-74	--	--	--	--	--	--
12304300	Cyclone Creek near Yaak	5.73	--	1960-91	--	--	--	--	--	--
12304400	Fourth of July Creek near Yaak	7.84	--	1960-74	--	--	--	--	--	--
12304500	**Yaak River near Troy**	766	**1910-16, 1956-P**	**1948,1954, 1956-P**	--	**1963-85 2000-P**	--	**1999-P**	**1999-P**	--
			Part 12--Pend Oreille River Basin							
12323170	Silver Bow Creek above Blacktail Creek, at Butte	--	1984-94	1984-94	--	--	--	--	--	--
12323200	Blacktail Creek near Butte	14.7	1984-88	1984-88	--	--	--	--	--	--
12323220	Basin Creek near Butte	37.6	1984-86	--	--	--	--	--	--	--
12323230	**Blacktail Creek at Harrison Avenue, at Butte**	--	--	--	--	--	--	**1993-95, 1997-P**	**1993-95, 1997-P**	--
12323240	**Blacktail Creek at Butte**	95.4	**1988-P**	**1989-P**	--	--	--	--	--	--
12323248	**Silver Bow Creek above Wastewater Plant Outflow, at Butte**	--	**1999-P**	**2000-P**	--	--	--	--	--	--
12323250	**Silver Bow Creek below Blacktail Creek, at Butte**	105	**1984-P**	**1984-P**	--	--	--	**1993-95, 1997-P**	**1993-95, 1997-P**	--
12323300	**Smith Gulch near Silver Bow**	4.36	--	**1959-2002**	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 12--Pend Oreille River Basin--Continued									
12323500	German Gulch Creek near Ramsay	40.6	1955-69	1955-69, 1975	--	--	--	--	--	--
12323600	**Silver Bow Creek at Opportunity**	284	**1988-P**	**1989-P**	--	--	1993-95	**1993-95, 1997-P**	**1993-95, 1997-P**	--
12323750	**Silver Bow Creek at Warm Springs**	394	**1972-79, 1994-P**	**1972-79, 1989, 1993-P**	--	--	1993-95	**1971, 1993-P**	**1993-P**	--
12323760	**Warm Springs Creek near Anaconda**	157	**1998-P**	**1998-P**	--	--	--	--	--	--
12323770	**Warm Springs Creek at Warm Springs**	163	**1984-P**	**1984-P**	--	**2000-P**	--	**1993-P**	**1993-P**	--
12323800	**Clark Fork near Galen**	572	**1988-P**	**1989-P**	--	**1991-P**	--	**1971-74 1988-P**	**1988-P**	1971-74
12324000	Racetrack Creek near Anaconda	39.5	1911-13	--	--	--	--	--	--	--
12324100	Racetrack Creek below Granite Creek, near Anaconda	39.5	1914-17, 1957-73	1958-73, 1975	--	--	--	--	--	--
12324200	**Clark Fork at Deer Lodge**	916	**1979-P**	**1979-P**	--	**1979-83, 1992-98, 2001-P**	**1985-P**	**1963, 1969-71, 1985-P**	**1985-P**	1969-71
12324250	Cottonwood Creek at Deer Lodge	45.4	--	1964, 1975-91	--	--	--	--	--	--
12324300	Clark Fork near Garrison	1,139	1961-62	--	--	--	--	--	--	--
12324590	**Little Blackfoot River near Garrison**	407	**1973-P**	**1973-P**	--	**2000-P**	--	**1963, 1985-P**	**1985-P**	--
12324600	Clark Fork at Garrison	1,550	--	--	--	--	--	1963, 1969-71	--	1970-71
12324660	Gold Creek at Goldcreek	64.1	1964-66	--	--	--	--	--	--	--
12324680	**Clark Fork at Goldcreek**	1,704	**1978-P**	**1978-P**	--	1992-98	--	**1992-P**	**1993-P**	--
12324700	Clark Fork tributary near Drummond	4.61	--	1958-95	--	--	--	--	--	--
12324800	Morris Creek near Drummond	12.6	--	1960-74, 1980	--	--	--	--	--	--
12325000	Georgetown Lake near Philipsburg	50.1	1939-97	--	--	--	--	--	--	--
12325500	**Flint Creek near Southern Cross**	52.6	**1940-98, 2000-P**	1941-98	--	--	--	--	--	--
12326000	Trout Creek above main canal, near Philipsburg	4.09	1946-49	--	--	--	--	--	--	--
12326500	Trout Creek near Southern Cross	36.1	1946-51	--	--	--	--	--	--	--
12327000	Trout Creek near Philipsburg	34.9	1939-43, 1945-46	--	--	--	--	--	--	--
12327090	Flint Creek above Fred Burr Creek, near Philipsburg	108	1994-98	1994-98	--	--	--	--	--	--
12327100	Fred Burr Creek near Philipsburg	15.7	1994-96	1994-96	--	--	--	--	--	--
12327500	Marshall Creek near Philipsburg	22.8	1942-43	--	--	--	--	--	--	--
12328000	Marshall Creek at mouth, near Philipsburg	23.2	1939-42	--	--	--	--	--	--	--
12328500	Flint Creek near Philipsburg	192	1939-41	--	--	--	--	1972-73	--	1972-73

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Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 12--Pend Oreille River Basin--Continued									
12329000	Flint Creek above Maxville Siding, at Maxville	207	1939-41	--	--	--	--	--	--	--
12329500	**Flint Creek at Maxville**	208	**1941-P**	**1942-P**	--	--	--	--	--	--
12330000	**Boulder Creek at Maxville**	71.3	**1939-P**	**1940-P**	--	--	--	--	--	--
12330100	Flint Creek below Boulder Creek, near Maxville	--	--	--	--	--	--	1971	--	--
12330500	Flint Creek near Maxville	325	1946-49	--	--	--	--	--	--	--
12331000	Flint Creek near Hall	325	1939	--	--	--	--	--	--	--
12331100	Flint Creek below Douglas Creek, near Hall	339	1994-98	1995-98	--	--	--	--	--	--
12331500	**Flint Creek near Drummond**	490	**1990-P**	**1991-P**	--	--	--	**1972-73, 1985-P**	**1985-P**	1972-73
12331600	Clark Fork at Drummond	2,378	1967-68, 1973-83	1967, 1973-83	--	--	--	1971-74	--	1971-74
12331700	**Edwards Gulch at Drummond**	4.69	--	**1960-62, 1974-91, 1996-2002**	--	--	--	--	--	--
12331800	**Clark Fork near Drummond**	2,501	**1993-P**	**1993-P**	--	--	--	**1993-P**	**1993-P**	--
12331900	Clark Fork near Clinton	2,629	1979-90, 1992-94	1980-90, 1992-94	--	--	--	1963	--	--
12332000	**Middle Fork Rock Creek near Philipsburg**	123	**1937-P**	**1938-P**	--	--	--	--	--	--
12332500	East Fork Rock Creek Reservoir near Philipsburg	30.3	1939-95	--	--	--	--	--	--	--
12333000	East Fork Rock Creek near Philipsburg	30.3	1935-43	--	--	--	--	--	--	--
12333500	Rock Creek near Quigley	749	1922-27	1922	--	--	--	--	--	--
12334000	Ranch Creek near Quigley	42.7	1922-27	1922-27	--	--	--	--	--	--
12334500	Rock Creek below Ranch Creek, near Quigley	794	1911-12	--	--	--	--	--	--	--
12334510	**Rock Creek near Clinton**	885	**1972-P**	**1972-P**	--	**1979-83, 1995-P**	--	**1985-P**	**1985-P**	--
12334550	**Clark Fork at Turah Bridge, near Bonner**	3,641	**1985-P**	**1986-P**	--	1992-98	**1985-P**	**1985-P**	**1985-P**	--
12334600	Blackfoot River near Lincoln	15.1	1969-70	1969-70, 1975	--	--	--	1969-70	--	--
12334620	Blackfoot River below First Gulch, near Lincoln	25.9	--	--	--	--	--	1995-97	1995-97	--
12334650	Blackfoot River below Alice Creek, near Lincoln	96.9	1971-75	1971-75	--	--	--	1971-74, 1995-97	1971-73, 1995-97	1973
12334680	Landers Fork near Lincoln	130	--	--	--	--	--	1995-97	1995-97	--
12334700	Blackfoot River below Seven-up Pete Creek, near Lincoln	255	--	--	--	--	--	1973, 1995-97	1995-97	1973, 1995-97
12334800	Blackfoot River at Dalton Mountain Road Bridge, near Lincoln	399	--	--	--	--	--	1973, 1995-97	1995-97	1973, 1995-97
12334900	Blackfoot River at Blackfoot Canyon Campground, near Lincoln	437	--	--	--	--	--	1973	--	1973 1995-97
12335000	Blackfoot River near Helmville	481	1940-54	1941-53, 1964, 1974-75	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year): Discharge or contents: Daily or monthly	Discharge or contents: Annual peak	Water quality: Daily: Specific conductance	Water quality: Daily: Water temperature	Water quality: Daily: Sediment	Water quality: Periodic: Chemistry	Water quality: Periodic: Sediment	Water quality: Periodic: Biology
	Part 12--Pend Oreille River Basin--Continued									
12335100	**Blackfoot River above Nevada Creek, near Helmville**	494	**2000-P**	--	--	**2000-P**	--	1995-97	1995-97	--
12335500	**Nevada Creek above Reservoir, near Finn**	116	**1939-P**	**1940-P**	--	--	--	1980	**1980, 1994-2000**	--
12336000	Nevada Creek near Finn	144	1934-39	--	--	--	--	--	--	--
12336500	Nevada Creek Reservoir near Finn	142	1939-95	--	--	-	--	--	--	--
12337000	Nevada Creek near Helmville	165	1946-49	--	--	--	--	--	--	--
12337500	Douglas Creek near Helmville	84.8	1946-47	--	--	--	--	--	--	--
12337800	**Nevada Creek at mouth, near Helmville**		**2002**		--	--	--	**2002**	**2002**	--
12338000	North Fork Blackfoot River near Ovando	228	1921-23	--	--	--	--	--	--	--
12338100	Rock Creek above Salmon Creek, near Ovando	7.60	1998	1998	--	--	--	--	--	--
12338300	**North Fork Blackfoot River above Dry Gulch, near Ovando**	314	**1998-P**	**1998-P**	--	**2001-P**	--	1995-97	1995-97	--
12338500	Blackfoot River near Ovando	1,274	1940-63	1941-64, 1975	--	--	--	--	--	--
12338540	Monture Creek above Dunham Creek, near Ovando	64.7	--	1978-91	--	--	--	--	--	--
12338550	Dunham Creek at mouth, near Ovando	31.7	--	1978-91	--	--	--	--	--	--
12338600	Monture Creek at Forest Service boundary, near Ovando	105	--	1964, 1974-91	--	--	--	--	--	--
12338690	Monture Creek near Ovando	140	1973-83	1974-83	--	--	--	--	--	--
12338700	Blackfoot River at Scotty Brown Bridge, near Ovando	1,428	--	--	--	--	--	1995-97	1995-97	1995-97
12339000	Blackfoot River at Clearwater	1,550	1921-23	--	--	--	--	--	--	--
12339300	Deer Creek near Seeley Lake	19.8	--	1974-91	--	--	--	--	--	--
12339450	Clearwater River near Clearwater	345	1975-92	1975-92, 1997	--	--	--	1995-97	1995-97	--
12339500	Clearwater River at Clearwater	391	1921-23	--	--	--	--	--	--	--
12339800	Blackfoot River near Potomac	2,046	1957-65	1957-65	--	--	--	--	--	--
12339900	West Twin Creek near Bonner	7.33	--	1959-91	--	--	--	--	--	--
12340000	**Blackfoot River near Bonner**	2,290	**1898-99, 1901, 1903-05 1939-P**	**1899-1901, 1903-05, 1940-P**	--	**2000-P**	1986-95	**1963, 1985-P**	**1985-P**	--
12340200	Marshall Creek near Missoula	5.63	--	1959-73, 1980	--	--	--	--	--	--
12340500	**Clark Fork above Missoula**	5,999	**1929-P**	**1908, 1930-P**	--	1977-83	**1986-P**	**1969-71 1986-P**	**1986-P**	1969-71
12341000	Rattlesnake Creek at Missoula	79.7	1899-1901, 1958-67	1899,1948, 1958-59, 1961-64, 1966-67	--	--	--	--	--	--
12341500	Clark Fork at Missoula	6,084	1898-1907	1899-1907	--	--	--	1963	--	--
12342000	Painted Rocks Lake near Conner	317	1940-95	--	--	--	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 12--Pend Oreille River Basin--Continued									
12342500	**West Fork Bitterroot River near Conner**	317	**1941-P**	**1941-P**	--	--	--	**2001-P**	**2001-P**	--
12342950	Trapper Creek near Conner	28.5	--	1974-91	--	--	--	--	--	--
12343000	West Fork Bitterroot River near Darby	552	1910-17	1911-17	--	--	--	--	--	--
12343400	**East Fork Bitterroot River near Conner**	381	**1956-72 2001-P**	**1956-72 2001-P**	--	--	--	**2001-P**	**2001-P**	--
12343500	East Fork Bitterroot River at Conner	405	1910-16, 1937-57	1937-57	--	--	--	--	--	--
12344000	**Bitterroot River near Darby**	1,049	**1937-P**	**1938-P**	--	**2001-P**	--	**1956, 1997-98 2001-P**	**1997-98 2001-P**	--
12344300	Burke Gulch near Darby	6.50	--	1958-82	--	--	--	--	--	--
12344500	Lake Como near Darby	54.6	1939-99	--	--	--	--	1956	--	--
12345000	Rock Creek near Darby	55.4	1946-53, 1957-59	1948-53, 1958-59	--	--	--	--	--	--
12345500	Rock Creek Canal near Darby	--	1946, 1948-53	--	--	--	--	--	--	--
12345800	Camas Creek near Hamilton	5.05	--	1958-73	--	--	--	--	--	--
12345850	Sleeping Child Creek near Hamilton	65.2	1973-77	1972-91	--	--	--	1956	--	--
12346000	Bitterroot River near Grantsdale	1,414	1902-07	--	--	--	--	--	--	--
12346500	**Skalkaho Creek near Hamilton**	87.8	**1949-53, 1957-79, 2001-P**	**1948-54, 1958-79, 2001-P**	--	--	--	**1956,1980, 2001-P**	**1980, 2001-P**	--
12347000	Skalkaho Creek at Brennan's ranch, near Hamilton	96.2	1920-24	1920-24, 1948	--	--	--	--	--	--
12347360	Bitterroot River at Hamilton	--	--	--	--	--	--	1997-98	1997-98	--
12347500	Blodgett Creek near Corvallis	25.9	1947-69	1947-69, 1972	--	--	--	1956	--	--
12348000	Blodgett Creek near Hamilton	28.3	1938-43	1938-43	--	--	--	--	--	--
12348200	Bitterroot River near Corvallis	1,711	1959-63	--	--	--	--	--	--	--
12348500	Willow Creek near Corvallis	21.9	1920-24, 1957-66	1920-22, 1958-73	--	--	--	1956	--	--
12349000	Willow Creek at Anfinson Ranch, near Corvallis	23.2	1938-43	1938-43	--	--	--	--	--	--
12349500	Fred Burr Creek near Victor	17.7	1947-51	--	--	--	--	--	--	--
12350000	Bear Creek near Victor	26.8	1938-55, 1957-59	1938-54, 1958-59	--	--	--	1956	--	--
12350200	Gash Creek near Victor	3.37	--	1958-73	--	--	--	--	--	--
12350250	**Bitterroot River at Bell Crossing, near Victor**	1,963	**1987-P**	**1987-P**	--	--	--	1997-98	1997-98	--
12350300	Big Creek near Victor	--	--	--	--	--	--	1956	--	--
12350500	Kootenai Creek near Stevensville	28.9	1949-53, 1957-63	1948-53, 1958-73	--	--	--	1956	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year): Discharge or contents: Daily or monthly	Discharge or contents: Annual peak	Water quality: Daily: Specific conductance	Water quality: Daily: Water temperature	Water quality: Daily: Sediment	Water quality: Periodic: Chemistry	Water quality: Periodic: Sediment	Water quality: Periodic: Biology
	Part 12--Pend Oreille River Basin--Continued									
12351000	Burnt Fork Bitterroot River near Stevensville	73.2	1920, 1922-24, 1938-62	1920, 1922-24, 1938-73	--	--	--	1956	1965	--
12351200	Bitterroot River near Florence	2,354	1957-66	1958-66, 1974,1982	--	--	--	1956, 1997-98	1997-98	--
12351400	Eightmile Creek near Florence	19.5	1957-63	1958-73	--	--	--	1956	--	--
12351500	Lolo Creek near Lolo	231	1911-15	--	--	--	--	--	--	--
12352000	Lolo Creek above Sleeman Creek, near Lolo	250	1951-60	1951-60, 1972,1974	--	--	--	--	--	--
12352200	Hays Creek near Missoula	4.16	--	1959-66, 1968-74, 1980	--	--	--	--	--	--
12352500	**Bitterroot River near Missoula**	2,814	**1898-1901, 1903-04, 1989-P**	**1899-1901, 1903-04, 1990-P**	--	**2000-P**	--	**1997-P**	**1997-P**	--
12352980	Bitterroot River at Maclay Bridge, near Missoula	2,850	--	--	--	--	--	1970-73	--	1970-73
12353000	**Clark Fork below Missoula**	9,003	**1929-P**	**1930-P**	--	1977-82	--	1979-95	1979-95	1979-95
12353250	Ninemile Creek near Alberton	50.2	--	1972, 1974-82	--	--	--	--	--	--
12353280	Ninemile Creek near Huson	170	1973-83	1974-83	--	--	--	--	--	--
12353300	Clark Fork near Alberton	9,272	1959-63	--	--	--	--	1969-71	--	1970-71
12353400	Negro Gulch near Alberton	8.02	--	1959-73, 1984-91	--	--	--	--	--	--
12353450	Fish Creek below West Fork, near Tarkio	242	--	--	--	1985-91	--	--	--	--
12353500	Clark Fork at Tarkio	9,882	1945-49	--	--	--	--	--	--	--
12353650	Clark Fork at Superior	10,210	--	--	--	1985-91	--	--	--	--
12353800	Thompson Creek near Superior	12.2	--	1961-79, 1982	--	--	--	--	--	--
12353820	Dry Creek near Superior	46.3	1982-86	1982-91	--	--	--	--	--	--
12353850	East Fork Timber Creek near Haugan	2.72	--	1961-75, 1979	--	--	--	--	--	--
12353900	St. Regis River tributary near St. Regis	1.16	1959-61	--	--	--	--	--	--	--
12354000	**St. Regis River near St. Regis**	303	**1910-17, 1958-75, 2002**	**1911-17, 1934,1948, 1954, 1959-75, 2002**	--	1985-91	--	--	--	--
12354100	North Fork Little Joe Creek near St. Regis	14.7	--	1960-74	--	--	--	--	--	--
12354500	**Clark Fork at St. Regis**	10,709	**1910-P**	**1911-23, 1929-P**	--	**2002**	--	**1999-P**	--	--
12354700	Clark Fork near Paradise	10,794	--	--	--	1985-91	--	--	--	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 12--Pend Oreille River Basin--Continued									
12355000	**Flathead River at Flathead, British Columbia**	427	**1929-95, 1999-P**	**1929-94, 2000-P**	--	1975-91	1975-79, 1985-91,	**1949-50, 1965,1970, 1975-93, 1999-P**	**1965,1970, 1975-93 1999-P**	1970, 1975-93
12355100	Starvation Creek near Flathead, British Columbia	16.4	1986-87	1986-87	--	--	--	--	--	--
12355150	Tuchuck Creek near Flathead, British Columbia	10.1	1986-88	1986-88	--	--	--	--	--	--
12355350	Big Creek at Big Creek Ranger Station, near Columbia Falls	82.1	--	1964, 1973-91	--	--	--	1980	1980	--
12355500	**North Fork Flathead River near Columbia Falls**	1,548	**1910-17, 1929-P**	**1911-17, 1929-P**	1976-79	**1976-P**	1976-79	**1950,1970, 1976-79 1999-P**	**1976-79, 1999-P**	1970, 1976-79
12355600	Middle Fork Flathead River at Schafer Ranger Station, near Essex	--	--	--	--	--	--	1970	--	1970
12355700	Middle Fork Flathead River near Essex	408	1957-61	1942-43, 1945-53, 1956-61, 1964	--	--	--	--	--	--
12355900	Middle Fork Flathead River above Bear Creek, near Essex	--	--	--	--	--	--	1970	--	1970
12356000	Skyland Creek near Essex	8.09	1946-52	1946-52, 1954, 1959-75	--	--	--	--	--	--
12356500	Bear Creek near Essex	20.4	1946-52	1946-52, 1964, 1975-91	--	--	--	--	--	--
12357000	Middle Fork Flathead River at Essex	510	1940-53, 1956-64	1940-54, 1956-64	--	--	--	--	--	--
12357300	Moccasin Creek near West Glacier	2.38	--	1959-75	--	--	--	--	--	--
12357400	Middle Fork Flathead River tributary at West Glacier	0.14	--	1960-74	--	--	--	--	--	--
12357500	Middle Fork Flathead River at West Glacier	943	1911-23, 1929-33, 1943-48	1911-23, 1929-33, 1944-48	--	--	--	--	--	--
12358000	McDonald Creek at Apgar	175	1912-14	--	--	--	--	--	--	--
12358500	**Middle Fork Flathead River near West Glacier**	1,128	**1939-P**	**1940-P**	--	--	--	**1949-50, 1970, 1998-P**	**1999-P**	1970
12358900	South Fork Flathead River above Harrison Creek, near Swan Lake	--	--	--	--	--	--	1970	--	1970
12359000	South Fork Flathead River at Spotted Bear Ranger Station, near Hungry Horse	958	1948-57, 1959-67	1948-57, 1960-67	--	--	--	--	--	--
12359500	Spotted Bear River near Hungry Horse	184	1949-56	1948-56, 1964	--	--	--	--	--	--
12359800	**South Fork Flathead River above Twin Creek, near Hungry Horse**	1,160	**1964-82, 1985-P**	**1964-82, 1985-P**	--	--	--	1970	--	1970

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 12--Pend Oreille River Basin--Continued									
12360000	Twin Creek near Hungry Horse	47.0	1948-56, 1965-67	1948-56, 1964-67	--	--	--	--	--	--
12360500	Lower Twin Creek near Hungry Horse	22.4	1948-56	1948-56	--	--	--	--	--	--
12360600	Soldier Creek near Hungry Horse	4.77	1965-67	1965-66	--	--	--	--	--	--
12361000	Sullivan Creek near Hungry Horse	71.3	1948-56, 1959-76	1948-56, 1960-76	--	--	--	--	--	--
12361500	Graves Creek near Hungry Horse	27.0	1948-56, 1965-67	1948-56, 1964-67	--	--	--	--	--	--
12361600	Canyon Creek near Hungry Horse	5.8	1965-67	1965-66	--	--	--	--	--	--
12361700	Goldie Creek near Hungry Horse	3.29	1965-67	1966	--	--	--	--	--	--
12361880	Wounded Buck Creek near Hungry Horse	13.6	1965-67	1965-66	--	--	--	--	--	--
12361950	Hungry Horse Creek near Hungry Horse	23.3	1969-72	1970	--	--	--	--	--	--
12361960	Emery Creek near Hungry Horse	26.4	1965-67	1965-66	--	--	--	--	--	--
12362000	**Hungry Horse Reservoir near Hungry Horse**	1,654	**1951-P**	--	--	--	--	--	--	--
12362500	**South Fork Flathead River near Columbia Falls**	1,663	**1910-16, 1923-P**	**1911-P**	--	**1964-68, 1979-P**	--	1949-50	--	--
12363000	**Flathead River at Columbia Falls**	4,464	**1922-23, 1928-P**	**1894, 1922-23, 1928-P**	1996-67, 1979-81	**1949-50, 1963-67, 1979-P**	1965-67	1949-50, 1963-67, 1970, 1979-94	1965,1967, 1979-94	1979-94
12363500	Flathead River near Kalispell	4,500	--	--	--	--	1968-69	--	1968	--
12363900	Rock Creek near Olney	3.61	--	1961-75	--	--	--	--	--	--
12363920	Stillwater River at Olney	146	1973-82	1973-82	--	--	--	--	--	--
12364000	Logan Creek at Tally Lake, near Whitefish	183	1931-34, 1936-42, 1945-47	1936-42, 1945-47	--	--	--	--	--	--
12364500	Logan Creek near Whitefish	199	1931	--	--	--	--	--	--	--
12365000	**Stillwater River near Whitefish**	524	**1930-50, 1972-P**	**1931-50, 1964, 1973-P**	--	--	--	--	--	--
12365500	Stillwater River near Kalispell	338	1907,1922, 1928-31	--	--	--	--	--	--	--
12365800	Swift Creek near Whitefish	78.0	1973-81	1973-81	--	--	--	--	--	--
12366000	**Whitefish River near Kalispell**	170	**1928-50, 1972-P**	**1929-50, 1964, 1973-P**	--	--	--	**1999-P**	**1999-P**	--
12366100	**Trumbull Creek near Columbia Falls**	9.0	--	**1997-P**	--	--	--	--	--	--
12367000	Ashley Creek near Kila	44.2	1916	--	--	--	--	--	--	--
12367500	Ashley Creek near Kalispell	201	1931-50, 1972-74	1931-32, 1935-50, 1973-74	--	--	---	1969-70	--	1969-70

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

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					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 12--Pend Oreille River Basin--Continued									
12367800	Ashley Creek below Kalispell	--	--	--	--	--	--	1969-70	--	1969-70
12368500	Flathead River at Therriault Ferry, near Kalispell	--	1934-45	--	--	--	--	--	--	--
12369000	Flathead River near Bigfork	6,300	1909-12, 1928-37, 1939-45	--	--	--	--	--	--	1969-71
12369200	Swan River near Condon	69.1	1973-92	1973-92	--	--	--	--	--	--
12369250	Holland Creek near Condon	22.3	--	1974-91	--	--	--	--	--	--
12369650	North Fork Lost Creek near Swan Lake	13.0	--	1982-91	--	--	--	--	--	--
12370000	**Swan River near Bigfork**	671	**1910-11, 1922-P**	**1922-P**	--	**2000-P**	--	**1999-P**	**1999-P**	--
12370500	Dayton Creek near Proctor	18.5	--	1959-91	--	--	--	--	--	--
12370900	Teepee Creek near Polson	2.18	1983-87	1960-74, 1980, 1983-87	--	--	--	1983-85	1983-85	--
12371000	**Turtle Lake near Polson**	--	**1939-P**	--	--	--	--	--	--	--
12371100	Hell Roaring Creek near Polson	6.22	1917-32	1917-32, 1948, 1959-67, 1980	--	--	--	--	--	--
12371500	Flathead Lake at Somers	7,086	1900, 1908-98	--	--	--	--	--	--	--
12371550	**Flathead Lake at Polson**	7,086	**1999-P**	--	--	--	--	1969-71	--	1969-71
12372000	**Flathead River near Polson**	7,096	**1907-P**	**1894, 1908-P**	--	1977-83	--	--	--	--
12372500	**Little Bitterroot Lake near Marion**	31.8	**1939-P**	--	--	--	--	--	--	--
12373000	Little Bitterroot River near Marion	31.8	1910-16	--	--	--	--	--	--	--
12373500	**Hubbart Reservoir near Niarada**	114	**1939-P**	--	--	--	--	--	--	--
12374000	Little Bitterroot River near Hubbart	134	1909-16	--	--	--	--	--	--	--
12374250	**Mill Creek above Bassoo Creek, near Niarada**	19.6	**1983-P**	**1983-P**	--	--	--	1983-85	1983-85	--
12374300	Mill Creek near Niarada	28.2	--	1959-73	--	--	--	--	--	--
12374500	Little Bitterroot River near Niarada	223	1908-10, 1916-17	--	--	--	--	--	--	--
12374800	Cromwell Creek near Niarada	14.3	1983-89	1983-89	--	--	--	1983-85	1983-85	--
12374900	Garden Creek near Hot Springs	3.57	--	1959-73	--	--	--	--	--	--
12375000	**Upper Dry Fork Reservoir near Lonepine**	8.53	**1940-P**	--	--	--	--	--	--	--
12375500	**Dry Fork Reservoir near Lonepine**	17.8	**1939-P**	--	--	--	--	--	--	--
12375800	Little Bitterroot River near Perma	--	--	--	--	--	--	1987-92	1987-92	--
12375900	**South Crow Creek near Ronan**	7.57	**1982-P**	**1983-P**	--	--	--	1983-85	1983-85	--
12376000	Crow Creek near Ronan	46.1	1906-17	1907-11, 1913-17	--	--	--	--	--	--

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Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
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	Part 12--Pend Oreille River Basin--Continued									
12376500	Mud Creek near Ronan	30.4	1908-11	--	--	--	--	--	--	--
12376700	**Lower Crow Reservoir near Charlo**	--	**1939-P**	--	--	--	--	--	--	--
12376900	Crow Creek at mouth, near Ronan	--	--	--	--	--	--	1987-92	1987-92	--
12377000	Crow Creek at Lozeaus ranch, near Ronan	139	1911-16	--	--	--	--	--	--	--
12377150	**Mission Creek above reservoir, near St. Ignatius**	12.4	**1982-P**	**1982-P**	--	--	--	1983-85	1983-86	--
12377200	**Mission Reservoir near St. Ignatius**	--	**1939-P**	--	--	--	--	--	--	--
12377300	**St. Mary's Lake near St. Ignatius**	--	**1939-P**	--	--	--	--	--	--	--
12377500	Dry Creek near St. Ignatius	24.7	1908-16	1909-16	--	--	--	--	--	--
12377900	**Pablo Reservoir near Polson**	--	**1939-P**	--	--	--	--	--	--	--
12378000	Mission Creek near St. Ignatius	74.8	1906-17	1907-17	--	--	--	--	--	--
12378200	**McDonald Reservoir near Charlo**	--	**1939-P**	--	--	--	--	--	--	--
12378300	**Kicking Horse Reservoir near Charlo**	--	**1939-P**	--	--	--	--	--	--	--
12378400	**Ninepipe Reservoir near Charlo**	--	**1939-P**	--	--	--	--	--	--	--
12378500	Post Creek at Fitzpatrick's ranch, near Ronan	28.4	1906-11	--	--	--	--	--	--	--
12379000	Post Creek at Deschamp's ranch, near Ronan	29.7	1911	--	--	--	--	--	--	--
12379500	Post Creek near St. Ignatius	47.6	1911-17	--	--	--	--	--	--	--
12379600	Mission Creek at National Bison Range, at Moiese	236	--	--	--	--	--	1987-92	1987-92	--
12380000	**Upper Jocko Lake near Arlee**	2.99	**1968-P**	--	--	--	--	--	--	--
12380500	**Lower Jocko Lake near Arlee**	7.39	**1939-P**	--	--	--	--	--	--	--
12381000	Jocko River above South Fork, near Jocko	14.9	1912-16	--	--	--	--	--	--	--
12381400	**South Fork Jocko River near Arlee**	56.0	**1982-P**	**1983-P**	--	--	--	1983-86	1983-86	
12381500	Jocko River below South Fork, near Jocko	72.3	1912-16	--	--	--	--	--	--	--
12382000	Middle Fork Jocko River near Jocko	19.5	1912-16	--	--	--	--	--	--	--
12382500	Falls Creek near Jocko	3.57	1912-16	--	--	--	--	--	--	--
12383000	Jocko River near Jocko	140	1918-19	--	--	--	--	--	--	--
12383500	**Big Knife Creek near Arlee**	6.88	**1910-16, 1983-P**	**1982-P**	--	--	--	1983-85	1983-85	--
12384000	Big Knife Creek near Jocko	7.44	1909-11	--	--	--	--	--	--	--
12384500	Jocko River below Big Knife Creek, near Jocko	154	1909-16	--	--	--	--	--	--	--
12386000	East Finley Creek near Jocko	5.48	1909-16	--	--	--	--	--	-	--
12386500	Indian Ditch near Jocko	--	1909-16	--	--	--	--	--	--	--
12387000	Finley Creek near Jocko	36.7	1909-16	--	--	--	--	--	--	--
12387100	Agency Creek near Jocko	4.00	1909-16	--	--	--	--	--	--	--
12387200	Blodgett Creek near Jocko	5.48	1909	--	--	--	--	--	--	--
12387450	**Valley Creek near Arlee**	15.3	**1983-P**	**1983-P**	--	--	--	1983-85	1983-85	--
12387500	Valley Creek near Ravalli	64.1	1909-10	--	--	--	--	--	--	--
12388000	Jocko River at Ravalli	348	1907-11	--	--	--	--	--	--	--
12388200	**Jocko River at Dixon**	380	**1990-P**	**1990-P**	--	--		1987-92	1987-92	--

Table 11. Montana active and discontinued streamflow-gaging, water-quality, and crest-stage gage stations (active stations in bold print)--Continued

Station number	Station name	Drainage area (square miles)	Period of record (by water year)							
			Discharge or contents		Water quality					
					Daily			Periodic		
			Daily or monthly	Annual peak	Specific conduct-ance	Water tempera-ture	Sediment	Chemistry	Sediment	Biology
	Part 12--Pend Oreille River Basin--Continued									
12388400	**Revais Creek below West Fork, near Dixon**	23.4	**1983-P**	**1983-P**	--	--	--	1983-85, 1991-92	1983-85 1991-92	--
12388500	Revais Creek near Dixon	26.3	1911-19	1911-16, 1918-19	--	--	--	--	--	--
12388650	Camas Creek near Hot Springs	4.46	1983-87	1983-87	--	--	--	1983-85	1983-85	--
12388700	**Flathead River at Perma**	8,795	**1984-P**	**1984-P**	--	**2000-P**	--	**1971-73, 1984-92 1997-P**	**1984-92, 1999-P**	1971-73
12389000	**Clark Fork near Plains**	19,958	**1910-P**	**1912-P**	--	--	--	1969-70	--	1969-70
12389150	McGregor Creek tributary near Marion	2.55	--	1972-82	--	--	--	--	--	--
12389200	Thompson River near Marion	104	--	--	--	--	--	1975-76	1975-76	1975-76
12389300	Thompson River ab Little Thompson River, near Thompson Falls	321	--	--	--	--	--	1975-76	1975-76	1975-76
12389400	Little Thompson River near Thompson Falls	129	--	--	--	--	--	1975-76	1975-76	1975-76
12389450	West Fork Thompson River near Thompson Falls	35.7	--	--	--	--	--	1975-76	1975-76	1975-76
12389500	**Thompson River near Thompson Falls**	642	**1911-16, 1956-P**	**1948, 1956-P**	--	--	--	1975-76	1975-76	1975-76
12390000	**Thompson Falls Reservoir at Thompson Falls**	20,968	**1939-P**	--	--	--	--	--	--	--
12390500	Prospect Creek near Thompson Falls	145	1911	--	--	--	--	--	--	--
12390700	**Prospect Creek at Thompson Falls**	182	**1956-P**	**1956-P**	--	--	--	--	--	--
12391000	Clark Fork at Thompson Falls	21,113	1952-59	1952-59	--	--	--	1963, 1969-73	--	1970-73
12391100	White Pine Creek near Trout Creek	8.75	--	1974-84	--	--	--	--	--	--
12391200	Canyon Creek near Trout Creek	8.64	--	1972, 1974-91	--	--	--	--	--	--
12391300	**Noxon Rapids Reservoir near Noxon**	21,833	**1959-P**	--	--	--	--	--	--	--
12391400	**Clark Fork below Noxon Rapids Dam, near Noxon**	21,833	**1960-P**	**1960-P**	--	--	--	--	--	--
12391420	Rock Creek near Noxon	32	--	--	--	--	--	1998	1998	--
12391430	Skeleton Creek near Noxon	2.10	--	1973-84	--	--	--	--	--	--
12391500	Bull River near Heron	45.7	--	--	--	--	--	1971	--	--
12391525	Snake Creek near Noxon	3.11	--	1972-84	--	--	--	--	--	--
12391550	Bull River near Noxon	139	1973-82	1973-82	--	--	--	--	--	--

STATION RECORDS, SURFACE WATER AND WATER QUALITY
SASKATCHEWAN RIVER BASIN

05014500 SWIFTCURRENT CREEK AT MANY GLACIER, MT

(Hydrologic bench-mark station)

LOCATION.--Lat 48°47'57", long 113°39'21" (NAD 27), in SE$^1/_4$ sec.11, T.35 N., R.16 W., Glacier County, Hydrologic Unit 10010002, Glacier National Park, on right bank 100 ft upstream from outlet of Swiftcurrent Lake at Many Glacier, and 11 mi southwest of Babb.

DRAINAGE AREA.--30.9 mi^2.

PERIOD OF RECORD.--June 1912 to current year (records incomplete most years prior to 1959). Published as "at McDermott Lake" 1912-14. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1508: 1918(M), 1943. WDR MT-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,876.78 ft (NGVD 29). Prior to May 23, 1916, nonrecording gage on left bank of lake opposite present gage and at present datum, and May 23, 1916, to June 15, 1918, nonrecording gage at present site and datum.

REMARKS.--Records good. No regulation or diversion upstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	112	42	16	35	48	20	75	927	611	167	91
2	25	102	42	16	34	46	19	88	718	441	148	84
3	24	93	42	15	32	45	19	134	593	407	130	78
4	24	88	37	15	28	28	19	142	560	401	117	78
5	23	78	37	15	25	29	19	133	700	415	103	82
6	22	78	37	15	24	26	21	119	846	393	91	92
7	19	75	34	29	25	26	26	102	665	390	88	97
8	17	69	31	151	26	26	27	87	539	476	86	104
9	18	58	32	192	27	26	27	75	462	575	87	93
10	19	50	30	148	24	30	27	68	416	562	91	83
11	20	46	29	112	19	35	27	65	347	497	96	80
12	23	43	27	101	18	36	32	70	311	495	97	79
13	20	44	26	91	18	34	100	96	363	504	93	77
14	21	50	29	77	18	34	270	121	455	493	87	72
15	20	51	27	63	16	32	294	128	560	487	92	66
16	18	68	25	58	16	29	214	131	758	438	92	63
17	19	101	29	52	15	26	158	153	1000	372	87	59
18	19	129	29	46	15	25	130	197	929	357	79	60
19	18	125	30	39	15	25	108	242	882	344	73	63
20	19	121	29	42	15	24	102	478	712	322	69	50
21	19	101	28	43	15	22	102	690	668	296	65	50
22	23	87	25	43	40	22	109	691	716	248	64	50
23	31	80	22	40	84	22	110	485	864	216	61	48
24	32	72	20	31	102	21	98	341	1000	209	63	44
25	29	61	20	38	96	19	84	276	990	226	67	43
26	28	53	20	42	70	19	77	288	917	237	78	40
27	23	47	19	46	61	19	71	418	910	240	92	41
28	40	45	19	44	52	19	62	810	918	227	99	39
29	44	42	19	39	---	19	60	1090	919	204	93	34
30	44	45	17	35	---	20	68	1200	877	181	89	40
31	82	---	17	34	---	20	---	1120	---	176	93	---
TOTAL	811	2214	870	1728	965	852	2500	10113	21522	11440	2837	1980
MEAN	26.16	73.80	28.06	55.74	34.46	27.48	83.33	326.2	717.4	369.0	91.52	66.00
MAX	82	129	42	192	102	48	294	1200	1000	611	167	104
MIN	17	42	17	15	15	19	19	65	311	176	61	34
AC-FT	1610	4390	1730	3430	1910	1690	4960	20060	42690	22690	5630	3930
CFSM	0.85	2.39	0.91	1.80	1.12	0.89	2.70	10.6	23.2	11.9	2.96	2.14
IN.	0.98	2.67	1.05	2.08	1.16	1.03	3.01	12.17	25.91	13.77	3.42	2.38

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 2002, BY WATER YEAR (WY)*

MEAN	84.41	71.94	36.98	32.85	26.75	29.97	103.9	376.9	489.6	261.2	117.3	86.28
MAX	243	237	99.8	177	68.4	96.2	340	656	822	519	207	236
(WY)	1948	2000	1981	1918	1995	1986	1934	1928	1975	1916	1916	1968
MIN	19.5	13.0	13.6	10.1	6.93	9.71	16.9	205	193	114	57.4	32.5
(WY)	1988	1988	1979	1979	1985	1975	1975	1955	1926	1944	1988	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1912 - 2002**	
ANNUAL TOTAL	32070.7		57832			
ANNUAL MEAN	87.86		158.4		141.2	
HIGHEST ANNUAL MEAN					184	1991
LOWEST ANNUAL MEAN					86.4	2001
HIGHEST DAILY MEAN	706	May 14	1200	May 30	4130	Jun 8 1964
LOWEST DAILY MEAN	7.2	Mar 2	15	Jan 3	a0.00	Nov 14 1976
ANNUAL SEVEN-DAY MINIMUM	8.0	Mar 1	15	Feb 15	4.6	Nov 13 1976
MAXIMUM PEAK FLOW			1250	May 30	b6700	Jun 8 1964
MAXIMUM PEAK STAGE			5.10	May 30	c10.00	Jun 8 1964
ANNUAL RUNOFF (AC-FT)	63610		114700		102300	
ANNUAL RUNOFF (CFSM)	2.84		5.13		4.57	
ANNUAL RUNOFF (INCHES)	38.61		69.62		62.09	
10 PERCENT EXCEEDS	269		494		390	
50 PERCENT EXCEEDS	32		63		65	
90 PERCENT EXCEEDS	10		19		17	

*--Only for complete months of operation (records incomplete most years prior to 1959).
**--For complete water years only.
a--Result of pumping operations, Nov. 14-16, 1976.
b--From rating curve extended above 1,100 ft^3/s, on basis of flow-over-dam computation.
c--From floodmarks.

SASKATCHEWAN RIVER BASIN

05015500 LAKE SHERBURNE AT SHERBURNE, MT

(International gaging station)

LOCATION.--Lat 48°49'42", long 113°31'16" (NAD 27), in SE$^1/_4$SE$^1/_4$SE$^1/_4$ sec.35, T.36 N., R.15 W., Glacier County, Hydrologic Unit 10010002, Blackfeet Indian Reservation, in gatehouse at dam on Swiftcurrent Creek, 4.5 mi southwest of Babb.

DRAINAGE AREA.--64.1 mi^2.

PERIOD OF RECORD.--May 1915 to September 1923 (fragmentary), May 1924 to September 1925, November 1925 to June 1926 September 1926 to March 1936 (no winter records some years), May 1936 to September 1952 (monthend contents and daily elevations). October 1952 to current year (monthend contents only). Monthend contents for some periods, published in WSP 1308. Published as Sherburne Lake Reservoir at Sherburne 1915, 1917-28, 1931-52, and as Sherburne Lake Reservoir near Babb 1929-30.

REVISED RECORDS.--W 1983: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,709.45 ft (NGVD 29). Prior to May 7, 1931, nonrecording gage at present site, and May 8, 1931, to Sept. 30, 1974, water-stage recorder at present site, all at datum 9.45 ft lower.

REMARKS.--Reservoir is formed on a natural lake by earthfill dam completed in 1921. Prior to 1919, flashboards on a temporary dam provided limited storage. Storage behind main dam began in l9l9. The following capacity figures are from capacity table effective Jan. 1, 1983; see previous reports for superseded figures. Usable capacity, 64,790 acre-ft between gage height 29.3 ft, 9.3 ft, above lowest outlet gage sill, and 88.00 ft, spillway crest. Streambed above gates prevents withdrawal of storage to sill elevation. Dead storage, 3,060 acre-ft below gage height, 29.30 ft. Figures given herein represent usable contents. Water is used for irrigation on Milk River project of Bureau of Reclamation. Bureau of Reclamation satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by the United States and Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 65,480 acre-ft, June 30, 1986, gage height, 88.40 ft; no usable contents at times.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 64,110 acre-ft, July 28, gage height, 87.60 ft; minimum, 2,060 acre-ft, Oct. 1, gage height, 32.77 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in Contents (acre-feet)
Sept. 30	32.80	2,080	--
Oct. 31	35.20	3,700	+1,620
Nov. 30	42.41	9,210	+5,510
Dec. 31	45.56	11,920	+2,710
CAL YR 2001			+2,710
Jan. 31	50.68	16,640	+4,720
Feb. 28	53.60	19,520	+2,880
Mar. 31	52.67	18,590	-930
Apr. 30	41.12	8,160	-10,430
May 31	48.26	14,360	+6,200
June 30	57.25	23,320	+8,960
July 31	86.10	61,590	+38,270
Aug. 31	69.74	37,730	-23,860
Sept. 30	41.07	8,120	-29,610
WTR YR 2002			+6,040

SASKATCHEWAN RIVER BASIN

05016000 SWIFTCURRENT CREEK AT SHERBURNE, MT

LOCATION.--Lat 48°49'49", long 113°30'59" (NAD 27), in NW$^1/_4$SW$^1/_4$SW$^1/_4$ sec.36, T.36 N., R.15 W., Glacier County, Hydrologic Unit 10010002, Blackfeet Indian Reservation, on left bank 1,200 ft downstream from outlet of Lake Sherburne Dam at Sherburne and 4.2 mi southwest of Babb.
DRAINAGE AREA.--64.6 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1912 to November 1915 (no winter records), March 1916 to October 1923, May 1924 to September 1981 (no winter records), March 1984 to current year (seasonal records only). Monthly discharge only for some periods, published in WSP 1308, 1728. Published as "at Sherburne Lake" 1912-14.
REVISED RECORDS.--WSP 1388: Drainage area. WSP 1508: 1935.
GAGE.--Water-stage recorder. Datum of gage is 4,730.26 ft (NGVD 29). Prior to Aug. 10, 1920, nonrecording gages at two sites within 1,000 ft of present site at different datums. Aug. 10, 1920, to May 17, 1921, nonrecording gage at present site and May 18, 1921, to Sept. 30, 1975, water-stage recorder at present site, all at datum 9.45 ft lower.
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow regulated by Lake Sherburne (see preceding page). U.S. Geological Survey satellite telemeter at station.
AVERAGE DISCHARGE.--7 years (1916-23), 199 ft^3/s, 144,200 acre-ft/yr, unadjusted.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.50	e90	449	31	1410	322	798	470		
2			e0.50	e90	441	31	1270	293	787	456		
3			e0.50	e90	433	31	1030	276	709	438		
4			e0.50	e90	397	32	846	276	594	420		
5			e0.50	e100	375	32	679	276	555	404		
6			e0.50	e150	345	33	428	277	550	385		
7			e0.50	222	289	33	334	277	546	291		
8			e0.50	274	270	34	242	277	540	173		
9			e0.50	350	266	36	182	357	536	141		
10			e0.75	394	237	38	183	474	530	138		
11			e1.0	436	213	37	188	451	524	135		
12			e1.0	456	212	38	360	450	519	134		
13			e1.0	454	255	38	405	481	562	131		
14			e1.0	410	273	39	485	578	583	113		
15			e1.0	372	303	39	602	627	574	63		
16			e80	373	333	40	632	623	565	17		
17			155	372	374	40	633	621	557	15		
18			155	369	446	211	606	617	547	13		
19			154	348	440	534	535	614	539	13		
20			153	335	477	693	439	611	586	13		
21			150	332	577	712	360	607	613	e2.0		
22			149	330	611	713	287	603	600	e1.0		
23			148	435	627	825	162	654	587	e1.0		
24			150	538	428	1170	70	726	572	e0.50		
25			153	529	193	1450	50	719	559	e0.50		
26			e150	519	59	1440	60	713	545	e0.50		
27			e150	505	29	1430	182	707	531	e0.50		
28			e110	479	31	1420	222	783	518	e0.50		
29			e90	469	33	1420	293	829	500	e0.50		
30			e90	459	34	1410	323	820	485	e0.50		
31			e90	---	31	---	322	810	---	e0.50		
TOTAL			2137.25	10370	9481	14030	13820	16749	17211	3971.00		
MEAN			68.94	345.7	305.8	467.7	445.8	540.3	573.7	128.1		
MAX			155	538	627	1450	1410	829	798	470		
MIN			0.50	90	29	31	50	276	485	0.50		
AC-FT			4240	20570	18810	27830	27410	33220	34140	7880		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1924 - 2002*

MEAN	79.96	218.9	356.6	376.3	433.2	526.0	364.9	98.49	a169	b86.1
MAX	407	644	1033	973	970	756	792	477	495	172
(WY)	1981	1963	1972	1975	1982	1937	1975	1951	2000	2000
MIN	0.000	0.54	11.0	17.9	134	76.1	0.16	0.011	4.91	.048
(WY)	1954	1967	1987	1963	1956	1988	1992	1975	2002	1966

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1924 - 2002*	
HIGHEST DAILY MEAN	1450	Jun 25	2340	Jun 12 1964
LOWEST DAILY MEAN	0.50	Mar 1	0.00	Oct 3 1935
MAXIMUM PEAK FLOW	1490	Jun 24	2510	Jun 7 1995
MAXIMUM PEAK STAGE	7.30	Jun 24	8.63	Jun 7 1995

*--During period of seasonal operation (May 1924 to September 1981, March 1984 to current year).
a--Based upon 4 years of record (water years 1966, 1998, 2000, and 2001).
b--Based upon 2 years of record (water years 1966 and 2000).
e--Estimated.

SASKATCHEWAN RIVER BASIN

05016000 SWIFTCURRENT CREEK AT SHERBURNE, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--1990-92, 1996 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT								
01...	1300	.23	167	20.0	9.0	99	34	.02
NOV								
02...	0745	53	142	4.0	2.0	97	501	71.7
MAR								
13...	1315	E1.0	127	-1.0	.5	78	3	E.01
25...	1445	153	160	4.0	2.0	75	5	2.1
APR								
23...	1730	543	146	2.0	3.0	47	44	64.5
JUN								
20...	1015	706	132	20.0	10.5	60	24	45.7
AUG								
29...	1350	826	113	25.0	16.0	76	4	8.9

E--Estimated.

SASKATCHEWAN RIVER BASIN

05017500 ST. MARY RIVER NEAR BABB, MT

LOCATION.--Lat 48°50'00", long 113°25'08" (NAD 27), in NW$^1/_4$NW$^1/_4$SE$^1/_4$ sec.34, T.36 N., R.14 W., Glacier County, Hydrologic Unit 10010002, Blackfeet Indian Reservation, on right bank 0.7 mi upstream from outlet of Lower St. Mary Lake and 2.0 mi southeast of Babb.

DRAINAGE AREA.--276 mi^2.

PERIOD OF RECORD.--July 1901 to October 1902, May 1910 to September 1925, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "at Main" in 1901-02, and as "below Swiftcurrent Creek, at Babb" 1910-15. Records published as "near Babb" for April 1902 to September 1915, May 1929 to September 1950 at sites about 1.5 mi downstream not equivalent because flow of Swiftcurrent Creek not included 1902-15 and because diversion by St. Mary Canal not included 1929-50.

REVISED RECORDS.--WSP 1308: 1913-14, 1920, 1922-24. WSP 1508: 1902.

GAGE.--Water-stage recorder. Datum of gage is 4,468.13 ft (NGVD 29). Prior to Oct. 1, 1915, water-stage recorder or nonrecording gages at several sites about 3.8 mi downstream at different datums. Oct. 1, 1915, to Sept. 30, 1925, water-stage recorder or nonrecording gages at several sites within 1.5 mi downstream at different datums.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Entire flow of Swiftcurrent Creek below Lake Sherburne is diverted into Lower St. Mary Lake upstream from station. Flow of Swiftcurrent Creek regulated by Lake Sherburne (station number 05015500) since 1919. October 1950 to September 1976, monthly discharge and runoff figures adjusted for change in contents in Lake Sherburne. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	97	136	47	125	145	e280	818	3840	5390	1270	1200
2	98	106	137	45	121	144	276	805	3820	4810	1200	1200
3	93	106	131	46	114	142	244	815	3570	4190	1100	1170
4	89	106	132	46	108	136	197	813	3270	3690	1020	1090
5	87	104	125	46	99	156	183	797	3090	3310	968	1040
6	83	100	118	46	95	164	196	786	3110	2980	922	1000
7	80	99	124	50	94	162	238	788	3180	2700	878	987
8	78	101	127	60	91	156	271	787	3200	2600	837	965
9	72	100	122	74	89	147	319	740	3280	2660	809	940
10	70	101	113	84	86	141	377	702	3260	2740	858	915
11	66	94	99	100	84	140	437	668	3030	2740	887	888
12	68	90	92	125	77	142	498	655	2730	2750	901	869
13	60	88	92	143	76	132	560	658	2590	2840	907	848
14	58	90	95	155	72	125	648	690	2560	2890	929	862
15	56	93	88	163	69	116	694	729	2630	2970	994	860
16	56	88	83	167	66	e113	736	783	2880	3000	1040	851
17	55	86	86	169	65	e110	778	837	3380	2920	1060	831
18	56	89	80	166	63	e110	799	921	3800	2800	1050	823
19	53	98	77	162	62	e110	809	990	4160	2670	1020	818
20	52	106	72	161	61	e110	804	1160	4250	2510	992	802
21	48	114	68	157	60	e110	795	1530	4180	2340	969	805
22	48	121	62	152	73	e115	791	2160	4080	2150	950	801
23	52	124	60	150	100	e125	806	2470	4220	1910	927	790
24	51	127	58	140	116	e135	858	2460	4620	1640	971	773
25	52	134	55	144	125	e145	878	2270	5160	1450	1010	752
26	53	139	53	156	132	e155	882	2090	5400	1340	1030	731
27	57	141	51	153	136	e170	879	2020	5480	1320	1070	726
28	66	134	50	152	142	e190	855	2110	5500	1340	1100	716
29	69	130	49	145	---	e210	832	2390	5520	1330	1150	697
30	74	131	48	139	---	e240	826	2960	5670	1340	1190	671
31	88	---	47	130	---	e270	---	3520	---	1310	1210	---
TOTAL	2090	3237	2730	3673	2601	4566	17746	41922	115460	80630	31219	26421
MEAN	67.42	107.9	88.06	118.5	92.89	147.3	591.5	1352	3849	2601	1007	880.7
MAX	102	141	137	169	142	270	882	3520	5670	5390	1270	1200
MIN	48	86	47	45	60	110	183	655	2560	1310	809	671
AC-FT	4150	6420	5410	7290	5160	9060	35200	83150	229000	159900	61920	52410

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2002, BY WATER YEAR (WY)*

MEAN	378.8	259.6	149.7	110.9	103.9	158.2	474.2	1644	2470	1607	1019	720.0
MAX	1323	1281	722	302	249	457	977	2573	4807	2697	1413	1291
(WY)	1952	2000	1996	1981	1996	1981	1988	1957	1975	1954	1976	1959
MIN	67.4	45.0	33.5	37.2	33.8	38.6	85.0	670	1289	687	320	119
(WY)	2002	1988	1953	2001	2001	2001	1975	1955	1992	1977	1988	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1951 - 2002*	
ANNUAL TOTAL	158843		332295			
ANNUAL MEAN	435.2		910.4		760.3	
HIGHEST ANNUAL MEAN					1073	1951
LOWEST ANNUAL MEAN					442	2001
HIGHEST DAILY MEAN	2430	May 29	5670	Jun 30	15600	Jun 9 1964
LOWEST DAILY MEAN	31	Feb 4	45	Jan 2	27	Jan 3 1953
ANNUAL SEVEN-DAY MINIMUM	32	Jan 30	46	Dec 31	28	Dec 30 1952
MAXIMUM PEAK FLOW			5790	Jun 30	a16500	Jun 9 1964
MAXIMUM PEAK STAGE			7.28	Jun 30	b12.96	Jun 9 1964
INSTANTANEOUS LOW FLOW					27	Jan 3 1953
ANNUAL RUNOFF (AC-FT)	315100		659100		550800	
10 PERCENT EXCEEDS	1450		2900		1890	
50 PERCENT EXCEEDS	115		210		358	
90 PERCENT EXCEEDS	35		63		74	

*--During periods of operation 1951 to current.
a--From rating curve extended above 6,000 ft^3/s on basis of slope-area measurement of peak flow.
b--From highwater mark in well.
e--Estimated.

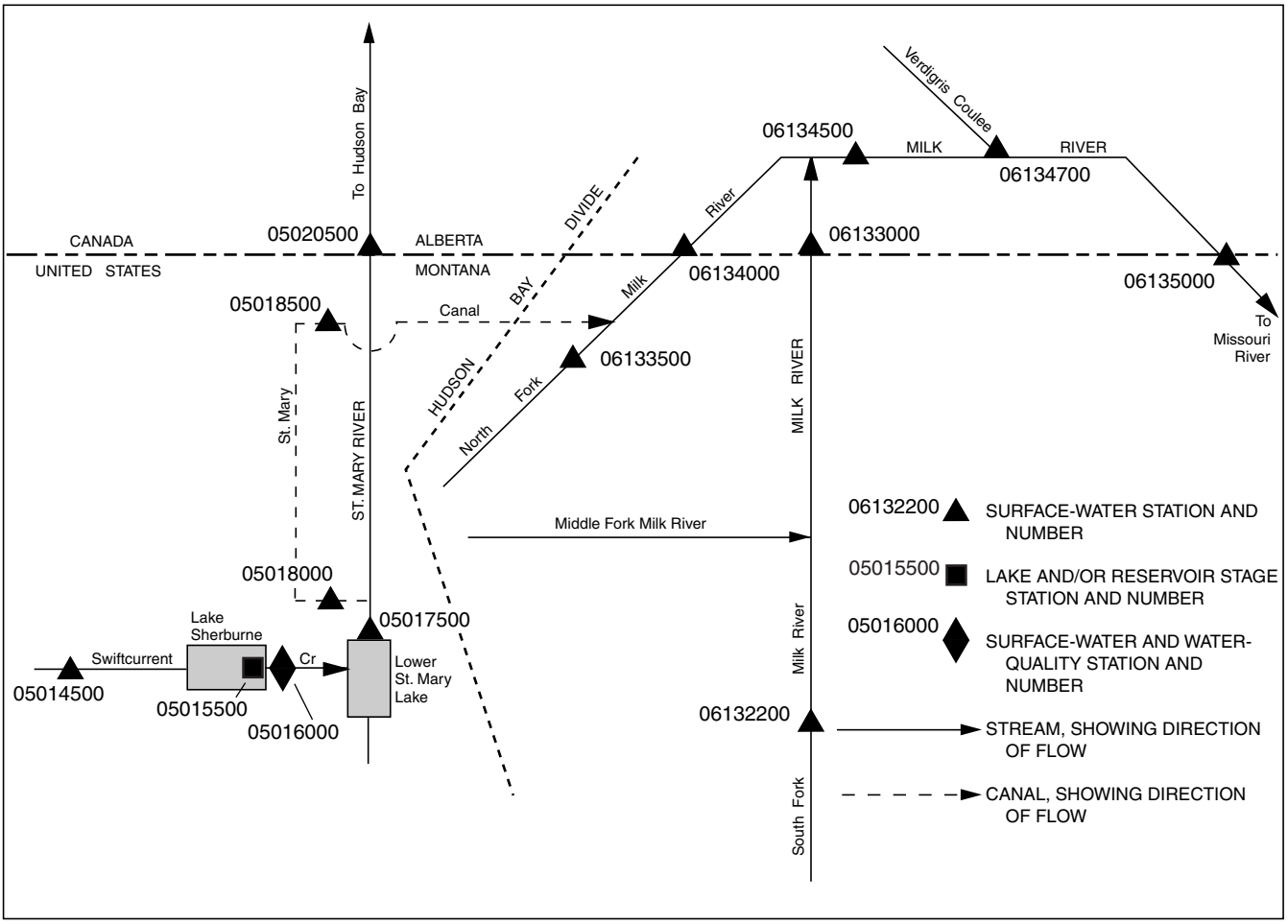

Figure 9. Schematic diagram showing diversion from St. Mary River in Part 5 to Milk River in Part 6.

SASKATCHEWAN RIVER BASIN

05018000 ST. MARY CANAL AT INTAKE, NEAR BABB, MT

LOCATION.--Lat 48°51'10", long 113°24'57" (NAD 27), in SE$^1/_4$NW$^1/_4$NE$^1/_4$ sec.27, T.36 N., R.14 W., Glacier County, Hydrologic Unit 10010002, Blackfeet Indian Reservation, on right bank of canal 500 ft upstream from St. Mary intake structure, and 1.0 mi east of Babb.

PERIOD OF RECORD.--July 1918 to November 1951, May 1997 to current season (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 4,470 ft (NGVD 29). Prior to April 17, 1919, staff gage at site 300 ft upstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Canal diverts water from left bank of St. Mary River near Babb and discharges into North Fork Milk River. This water flows in the natural channel of Milk River through Canada and then back into Montana where it is used for irrigation in Milk River Valley downstream from Havre, Montana. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 871 ft^3/s, May 26, 27, 1936; no flow at times most seasons.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e4.5	e90	701	706	29	559	731	598		
2			e5.0	e90	703	706	28	576	732	574		
3			e4.5	e90	716	700	27	571	731	492		
4			e5.0	e100	715	718	27	568	727	384		
5			e6.0	e110	714	713	27	578	725	325		
6			e7.0	e150	702	711	26	609	723	323		
7			e8.0	e200	681	688	26	645	722	238		
8			e8.0	243	679	633	26	656	720	136		
9			e8.0	309	666	463	26	666	718	58		
10			e7.5	330	636	e462	26	668	716	18		
11			e7.5	363	565	e300	26	670	714	17		
12			e8.0	386	538	e230	26	675	711	15		
13			e15	483	498	e240	26	697	709	14		
14			e20	585	451	e240	26	714	710	15		
15			e25	616	426	e220	27	722	710	14		
16			e25	638	419	e200	27	726	708	14		
17			e25	646	419	e180	27	726	707	13		
18			e30	651	417	e150	27	726	680	12		
19			e30	654	409	e70	27	725	655	12		
20			e30	664	386	e60	27	722	656	11		
21			e30	681	401	e55	27	718	655	11		
22			e30	697	421	e50	27	722	655	11		
23			e30	705	405	e45	27	720	653	11		
24			e32	712	427	e40	27	721	651	10		
25			e34	716	482	e36	60	724	619	9.9		
26			e40	714	482	e34	176	724	598	10		
27			e45	707	475	32	249	707	604	9.6		
28			e45	706	498	32	296	693	601	9.7		
29			e45	704	539	31	342	692	600	9.2		
30			e80	702	603	31	442	712	599	9.1		
31			e100	---	678	---	513	731	---	8.8		
TOTAL			790.0	14442	16852	8776	2720	21063	20440	3392.3		
MEAN			25.48	481.4	543.6	292.5	87.74	679.5	681.3	109.4		
MAX			100	716	716	718	513	731	732	598		
MIN			4.5	90	386	31	26	559	598	8.8		
AC-FT			1570	28650	33430	17410	5400	41780	40540	6730		

e--Estimated.

SASKATCHEWAN RIVER BASIN

05018500 ST. MARY CANAL AT ST. MARY CROSSING, NEAR BABB, MT

(International gaging station)

LOCATION.--Lat 48°56'50", long 113°22'28" (NAD 27), in NE$^1/_4$SW$^1/_4$SW$^1/_4$ sec.19, T.37 N., R.13 W., Glacier County, Hydrologic Unit 10010002, Blackfeet Indian Reservation, on left bank 50 ft upstream from inlet of St. Mary siphon, 6.6 mi northeast of Babb, and 9 mi downstream from intake.

PERIOD OF RECORD.--July 1918 to current season (seasonal records only). Monthly discharge only for some periods, published in WSP 1308, 1728.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 4,450 ft (NGVD 29). Prior to June 14, 1951, water-stage recorder at several sites 0.8 mi downstream at different datums.

REMARKS.--Records excellent. Canal diverts water from left bank of St. Mary River near Babb and discharges into North Fork Milk River. This water flows in the natural channel of Milk River through Canada and then back into Montana where it is used for irrigation in Milk River Valley downstream from Havre, Mt. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

COOPERATION.--This is one of a number of stations which are maintained jointly by the United States and Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 767 ft^3/s, June 19, 28, 1936; no flow at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e64	625	636	0.00	498	636	537		
2			e0.00	e62	629	636	0.00	519	639	523		
3			e0.00	e60	632	632	0.00	519	636	470		
4			e0.00	e64	636	650	0.00	516	636	374		
5			e0.00	e71	636	653	0.00	519	636	297		
6			e0.00	e78	629	646	0.00	540	632	292		
7			e0.00	e92	611	629	0.00	569	632	248		
8			e0.00	e141	607	614	0.00	579	629	142		
9			e0.00	e198	604	491	0.00	590	625	84		
10			e0.00	e247	583	459	0.00	590	625	15		
11			e0.00	e283	530	217	0.00	590	625	2.4		
12			e0.00	e318	498	216	0.00	593	622	1.5		
13			e0.00	e371	473	228	0.00	604	622	1.3		
14			e0.00	e512	431	212	0.00	622	622	0.85		
15			e0.00	e551	403	199	0.00	625	622	0.67		
16			e0.00	565	396	184	0.00	632	622	0.60		
17			e0.00	572	396	156	0.00	632	622	0.53		
18			e0.00	576	392	131	0.00	629	607	0.00		
19			e0.00	579	388	51	0.00	629	583	0.00		
20			e0.00	586	374	3.6	0.00	629	579	0.00		
21			e0.00	600	378	2.2	0.00	625	579	0.00		
22			e0.00	614	417	1.1	0.00	625	579	0.00		
23			e14	622	396	0.00	0.00	625	579	0.00		
24			e16	625	403	0.00	0.00	625	579	0.00		
25			e15	629	459	0.00	8.0	629	562	0.00		
26			e14	632	484	0.00	132	629	537	0.00		
27			e13	625	484	0.00	216	622	540	0.00		
28			e12	625	484	0.00	267	607	540	0.00		
29			e12	622	516	0.00	302	607	537	0.00		
30			e12	622	544	0.00	392	614	537	e0.00		
31			e26	---	611	---	466	636	---	e0.00		
TOTAL			134.00	12206	15649	7646.90	1783.00	18468	18021	2989.85		
MEAN			4.323	406.9	504.8	254.9	57.52	595.7	600.7	96.45		
MAX			26	632	636	653	466	636	639	537		
MIN			0.00	60	374	0.00	0.00	498	537	0.00		
AC-FT			266	24210	31040	15170	3540	36630	35740	5930		

e--Estimated.

SASKATCHEWAN RIVER BASIN

05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'43", long 113°17'57" (NAD 27), in NE$^1/_4$ sec.5, T.1, R.25 W., fourth meridian, in Alberta, Hydrologic Unit 10010002, on left bank 1.0 mi north of international boundary, 3.6 mi downstream from Boundary Creek, 6.5 mi southwest of Kimball, Alberta, and 13 mi northeast of Babb, MT.

DRAINAGE AREA.--465 mi^2.

PERIOD OF RECORD.--September 1902 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "near Cardston, Alberta" and "at Cook's Ranch, Alberta" 1902-12 and as "near Kimball, Alberta" 1913-55.

REVISED RECORDS.--WSP 1308: 1902, 1908-12. WSP 1508: 1902, 1908-9. W 1983: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,087.40 ft (NGVD 29) based upon levels from datum established at previous site 1.1 mi upstream by Prairie Farm Rehabilitation Administration. Prior to Jan. 1, 1913, nonrecording gages at two sites within 0.3 mi of previous site at different datums. Jan. 1, 1913, to Oct. 25, 1955, water-stage recorder at several sites about 7 mi downstream from present site at various datums. Oct. 26, 1955, to Mar. 23, 1965, water-stage recorder at site 200 ft upstream from previous site at datum 2 ft higher. Mar. 24, 1965, to Sept. 8, 1975, water-stage recorder at site 100 ft upstream from previous site at same datum. Water-stage recorder at site 1.1 miles upstream June 22, 1975 to Oct. 31, 1999.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Since 1917, St. Mary Canal has diverted water from the river near Babb, MT, to North Fork Milk River. Some regulation by Lake Sherburne on Swiftcurrent Creek. Bureau of Reclamation satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	138	147	e155	e74	e155	e160	e160	304	4100	6840	876	565
2	121	155	e160	e76	e150	e160	e135	306	4090	6090	787	549
3	116	148	e150	e78	e145	e160	e120	321	3770	5350	700	524
4	111	144	e150	e80	e135	e160	e105	318	3380	4740	638	470
5	109	142	e150	e78	e120	e170	e100	300	3220	4270	581	455
6	104	136	e145	e78	e120	e180	e95	270	3320	3820	525	425
7	96	133	e150	e88	e120	e180	e95	288	3290	3410	470	416
8	98	140	e150	e100	e115	e175	e100	299	3510	3280	412	411
9	93	130	e145	e120	e110	e170	e105	258	4170	3330	370	390
10	87	138	e135	e140	e110	e165	e120	253	5880	3420	379	362
11	85	130	e130	e160	e110	e165	e130	299	5400	3400	407	347
12	85	126	e120	e170	e105	e165	e160	339	4720	3370	416	332
13	83	119	e120	e175	e105	e160	261	371	4530	3460	391	333
14	74	115	e130	e180	e100	e155	320	463	4420	3270	380	354
15	70	131	e125	e185	e100	e155	254	520	4710	3340	433	351
16	70	119	e120	e190	e98	e155	234	566	5170	3330	492	343
17	72	119	e110	e190	e96	e155	242	626	5800	3290	517	331
18	72	122	e105	e190	e90	e160	256	731	5910	3120	491	334
19	73	126	e105	e185	e90	e120	267	866	5990	2980	466	357
20	66	137	e100	e185	e90	e110	260	1190	6020	2800	444	365
21	62	143	e96	e180	e92	e110	245	1740	5830	2540	422	345
22	59	152	e92	e180	e110	e115	230	2400	5680	2300	404	316
23	65	157	e88	e180	e150	e120	238	2590	5870	2050	379	302
24	69	158	e86	e175	e155	e125	288	2650	6360	1780	393	289
25	70	154	e84	e185	e160	e130	312	2480	6750	1560	415	297
26	73	e145	e80	e190	e160	e140	322	2580	6830	1340	437	296
27	78	e140	e78	e190	e150	e150	325	2650	6870	1240	513	299
28	101	e150	e78	e185	e155	e155	318	2740	6850	1190	544	291
29	102	e150	e76	e175	---	e160	306	2960	6870	1120	565	276
30	112	e150	e74	e165	---	e170	309	3650	6970	1020	587	247
31	127	---	e72	e160	---	e180	---	3940	---	950	574	---
TOTAL	2741	4156	3559	4687	3396	4735	6412	39268	156280	94000	15408	10972
MEAN	88.42	138.5	114.8	151.2	121.3	152.7	213.7	1267	5209	3032	497.0	365.7
MAX	138	158	160	190	160	180	325	3940	6970	6840	876	565
MIN	59	115	72	74	90	110	95	253	3220	950	370	247
AC-FT	5440	8240	7060	9300	6740	9390	12720	77890	310000	186400	30560	21760

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1917 - 2002, BY WATER YEAR (WY)**

MEAN	423.0	319.0	196.8	155.1	149.1	182.3	447.0	1642	2433	1200	530.7	448.0
MAX	1588	1423	844	729	411	512	1330	3565	5941	3032	1065	1511
(WY)	1952	2000	1996	1918	1934	1972	1934	1928	1975	2002	1995	1927
MIN	88.4	80.3	64.3	55.5	41.6	54.7	136	678	694	496	246	153
(WY)	2002	1988	2001	1944	1936	2001	1975	1941	1941	1988	1988	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1902 - 2002	
ANNUAL TOTAL	121300		345614			
ANNUAL MEAN	332.3		946.9		723.9	
HIGHEST ANNUAL MEAN					1353	1908
LOWEST ANNUAL MEAN					316	1941
HIGHEST DAILY MEAN	2050	May 29	6970	Jun 30	28000	Jun 5 1908
LOWEST DAILY MEAN	38	Feb 6	59	Oct 22	16	Nov 29 1936
ANNUAL SEVEN-DAY MINIMUM	41	Feb 5	66	Oct 19	27	Nov 26 1936
MAXIMUM PEAK FLOW			7240	Jul 1	a40000	Jun 5 1908
MAXIMUM PEAK STAGE			8.30	Jul 1	c13.46	Jun 21 1975
ANNUAL RUNOFF (AC-FT)	240600		685500		524400	
10 PERCENT EXCEEDS	1100		3410		1840	
50 PERCENT EXCEEDS	142		180		359	
90 PERCENT EXCEEDS	48		90		110	

05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY--Continued

	WATER YEARS 1902 - 1916*		WATER YEARS 1917 - 2002**	
ANNUAL MEAN	1002		678.6	
HIGHEST ANNUAL MEAN	1353		1285	1927
LOWEST ANNUAL MEAN	646		316	1941
HIGHEST DAILY MEAN	28000	Jun 5 1908	17000	Jun 9 1964
LOWEST DAILY MEAN	70	Feb 5 1914	16	Nov 29 1936
ANNUAL SEVEN-DAY MINIMUM	75	Feb 1 1914	27	Nov 26 1936
MAXIMUM PEAK FLOW	a40000	Jun 5 1908	23300	Jun 21 1975
MAXIMUM PEAK STAGE	b12.75	Jun 5 1908	c13.46	Jun 21 1975
ANNUAL RUNOFF (AC-FT)	726000		491600	
10 PERCENT EXCEEDS	2470		1700	
50 PERCENT EXCEEDS	538		338	
90 PERCENT EXCEEDS	150		106	

*--Before St. Mary Canal diversions.
**--Post operation of St. Mary Canal.
a--From rating curve extended above 6,000 ft^3/s.
b--From floodmarks at site and datum then in use.
c--From floodmarks.
e--Estimated.

RED ROCK RIVER BASIN

06006000 RED ROCK CREEK ABOVE LAKES, NEAR LAKEVIEW, MT

LOCATION.--Lat 44°36'56", long 111°37'42" (NAD 27), in NE$^1/_4$SE$^1/_4$NW$^1/_4$ sec. 17, T.14 S., R.1 E., Beaverhead County, Hydrologic Unit 10020001, on right bank 0.2 mi downstream from Red Rock Lakes National Wildlife Refuge boundary, 9.1 mi east of Lakeview, and at river mile 2,602.2.
DRAINAGE AREA.--39.2 mi^2.
PERIOD OF RECORD.--July 1997 to current year (seasonal records only).
GAGE.--Water-stage recorder. Elevation of gage is 6,670 ft (NGVD 29).
REMARKS.--Seasonal records good except those for estimated daily discharges, which are fair. Diversion for use by Wildlife Refuge about 1.5 mi upstream from station. Several observations of water temperature and specific conductance were made during the year. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				15	23	e110	41	25	22	21		
2				e14	23	e150	40	26	22	20		
3				15	24	e130	39	29	21	20		
4				15	22	e100	37	27	20	20		
5				16	23	e90	35	26	21	20		
6				17	22	e100	35	25	23	20		
7				18	23	e95	34	25	26	20		
8				18	21	89	33	26	24	20		
9				19	20	77	32	26	23	20		
10				21	21	68	31	25	22	20		
11				21	21	60	30	24	22	20		
12				25	23	55	30	24	21	19		
13				30	24	52	30	24	21	19		
14				56	28	50	30	25	21	19		
15				43	29	55	29	25	21	19		
16				28	29	62	30	24	20	19		
17				24	31	62	29	24	21	19		
18				22	36	70	32	24	22	19		
19				21	46	69	34	24	21	19		
20				20	69	60	30	23	20	19		
21				20	74	57	31	24	20	19		
22				23	58	61	30	24	20	19		
23				26	43	61	29	23	20	18		
24				23	38	58	28	23	20	19		
25				23	35	55	28	23	20	18		
26				24	36	54	29	23	20	18		
27				23	39	52	29	23	20	18		
28				23	48	49	30	23	20	19		
29				24	64	43	28	23	20	16		
30				24	e80	42	28	23	20	16		
31				---	e100	---	26	23	---	e15		
TOTAL				691	1173	2136	977	756	634	587		
MEAN				23.03	37.84	71.20	31.52	24.39	21.13	18.94		
MAX				56	100	150	41	29	26	21		
MIN				14	20	42	26	23	20	15		
AC-FT				1370	2330	4240	1940	1500	1260	1160		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1997 - 2002

MEAN	28.49	60.34	101.1	63.38	38.89	31.48	27.59
MAX	35.6	90.3	192	110	56.7	43.0	37.6
(WY)	2000	1998	1999	1999	1999	1997	1998
MIN	21.5	37.8	30.5	24.7	19.3	17.4	16.3
(WY)	2001	2002	2001	2001	2001	2001	2002

SUMMARY STATISTICS	FOR 2002 SEASON		WATER YEARS 1997 - 2002	
HIGHEST DAILY MEAN	150	Jun 2	270	Jun 22 1999
LOWEST DAILY MEAN	14	Apr 2	14	Oct 12 2001
MAXIMUM PEAK FLOW	unknown		b293	Jun 10 1997
MAXIMUM PEAK STAGE	unknown		5.34	Jun 22 1999
INSTANTANEOUS LOW FLOW	a9.8	Oct 26	c8.9	Oct 25 2001

a--Gage height, 2.44 ft, result of freezeup.
b--Gage height, 3.93 ft, from crest-stage at miscellaneous site downstream.
c--Gage height, 2.48 ft, result of freezeup.
e--Estimated.

06012500 RED ROCK RIVER BELOW LIMA RESERVOIR, NEAR MONIDA, MT

LOCATION.--Lat 44°39'22", long 112°22'14" (NAD 27), in NE$^1/_4$SE$^1/_4$SE$^1/_4$ sec. 31, T.13 S., R.6 W., Beaverhead County, Hydrologic Unit 10020001, on right bank just downstream from Lima Reservoir, 7 mi northwest of Monida, and at river mile 2,542.1.

DRAINAGE AREA.--570 mi^2.

PERIOD OF RECORD.--January 1911 to December 1918, April 1919, May 1925 to October 1933, April 1934 to September 1935, May 1936 to October 1938, May 1939 to September 1969, seasonal records only June 1974 to September 1982 and April 1985 to current year. Monthly discharge only for some periods, published in WSP 1309. Prior to October 1950, published as "below Red Rock Reservoir".

REVISED RECORDS.--WSP 1309: 1935. WSP 1389: 1912, 1934. WSP 1559: Drainage area.

GAGE.--Water-stage recorder and sharp-crested weir. Elevation of gage is 6,530 ft (NGVD 29), estimated from spillway elevation based on Montana Department of Natural Resources and Conservation datum. Prior to Oct. 1, 1978, at datum 1.00 ft higher. See WSP 1709 for history of nonrecording gage changes prior to May 8, 1939.

REMARKS.--Seasonal records. Flow regulated by Lima Reservoir (station number 06012000). No storage during 1934. Diversions for irrigation of about 10,000 acres upstream from reservoir. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 1984 reached a discharge of 1,500 ft^3/s, gage height, 5.15 ft, from floodmarks.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				0.00	47	500	395	24	23	14		
2				0.00	48	500	240	24	23	6.6		
3				0.00	48	499	199	24	23	6.8		
4				0.00	48	498	81	24	23	6.8		
5				0.00	48	496	48	24	23	6.5		
6				0.00	48	499	50	23	23	6.5		
7				0.00	46	499	50	23	24	7.1		
8				0.00	47	497	50	23	24	9.9		
9				0.00	47	530	50	23	24	9.5		
10				0.00	47	549	49	23	24	9.5		
11				0.00	47	544	48	21	23	9.5		
12				0.00	48	549	46	21	23	9.5		
13				0.00	48	550	46	22	23	9.5		
14				0.00	48	546	45	23	23	9.6		
15				0.00	48	543	33	23	23	9.6		
16				0.00	48	537	15	23	23	9.7		
17				0.00	48	541	9.6	24	23	9.7		
18				0.00	48	531	10	24	23	9.6		
19				0.00	47	519	11	24	23	9.7		
20				0.00	48	508	11	23	24	9.8		
21				0.00	108	498	11	23	24	9.9		
22				0.00	256	491	15	23	24	9.9		
23				60	305	484	22	23	25	9.8		
24				61	306	463	23	23	25	10		
25				56	306	444	24	23	25	9.9		
26				46	351	440	24	22	25	9.9		
27				46	385	443	24	22	26	9.9		
28				46	411	439	24	22	26	10		
29				46	427	419	24	23	26	10		
30				47	473	420	24	23	26	9.9		
31				---	501	---	24	23	---	9.8		
TOTAL				408.00	4781	14976	1725.6	713	717	288.4		
MEAN				13.60	154.2	499.2	55.66	23.00	23.90	9.303		
MAX				61	501	550	395	24	26	14		
MIN				0.00	46	419	9.6	21	23	6.5		
AC-FT				809	9480	29700	3420	1410	1420	572		

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1969, AND SEASONS 1974 - 2002*

MEAN	21.50	19.86	18.82	92.87	339.2	459.1	290.8	194.4	134.8	80.6	54.0	28.0
MAX	57.9	55.3	48.0	571	948	754	652	513	384	430	353	97.6
(WY)	11928	1928	1918	1913	1917	1917	1982	1982	1995	1917	1913	1926
MIN	0.000	0.000	0.000	0.000	26.2	4.62	0.63	0.000	0.000	.000	.000	.000
(WY)	1932	1932	1932	1980	1934	1934	1934	1934	1937	1932	1932	1932

SUMMARY STATISTICS	FOR 2002 SEASON		WATER YEARS 1911 - 1969*		SEASONS 1974 - 2002*	
ANNUAL MEAN			143			
HIGHEST ANNUAL MEAN			271	1913		
LOWEST ANNUAL MEAN			59.5	1935		
HIGHEST DAILY MEAN	550	Jun 13	a2500	May 15 1933	946	May 28 1975
LOWEST DAILY MEAN	.00	Apr. 1	.00	Oct 1 1931	.00	Oct 9 1978
ANNUAL SEVEN-DAY MINIMUM			.00	Oct 1 1931		
MAXIMUM PEAK FLOW	559	Jun 09	a2500	May 15 1933	b946	May 28 1975
MAXIMUM PEAK STAGE	3.38	Jun 09	6.40	May 15 1933	4.00	Jun 26 1981
ANNUAL RUNOFF (AC-FT)			103300			
10 PERCENT EXCEEDS			449			
50 PERCENT EXCEEDS			56			
90 PERCENT EXCEEDS			8.0			

*--During periods of operation (January 1911 to December 1918, April 1919, May 1925 to October 1933, April 1934 to September 1935, May 1936 to October 1938, May 1939 to September 1969, June 1974 to September 1982, April 1985 to current year; seasonal records beginning water year 1974).
a--Observed, estimated by dam tender; released to prevent dam failure.
b--Gage height, 3.38 ft, datum then in use.

06015300 CLARK CANYON RESERVOIR NEAR GRANT, MT

LOCATION.--Lat 45°00'06", long 112°51'27" (NAD 27), in SE$^1/_4$SW$^1/_4$ sec 32, T.9 S., R.10 W., Beaverhead County, Hydrologic Unit 10020001, in shaft house near left end of dam on Beaverhead River, 1.5 mi upstream from Clark Canyon Creek, 10 mi east of Grant, and at river mile 2,483.9.

DRAINAGE AREA.--2,321 mi^2.

PERIOD OF RECORD.--May 1964 to current year (monthend contents only). Records of daily elevations are in files of Helena district.

GAGE.--Water-stage recorder in shaft house. Elevation of gage is 5,455 ft (NGVD 29) (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by zoned earthfill dam with concrete control works and spillway completed in October 1964. Storage began Aug. 28, 1964 (uncontrolled storage began June 10, 1964). Capacity table revised effective Oct. 1, 2001. Elevations are referenced to the National Geodetic Vertical Datum of 1929. Usable capacity, 253,400 acre-ft (revised) between elevation 5,470.60 ft, invert of outlet works, and 5,560.40 ft, top of flood control. Dead storage, 1,060 acre-ft, below elevation 5,470.60 ft (revised). Normal operating level, 174,400 acre-ft at elevation 5,546.10 ft (revised). Minimum operating level, 1,060 acre-ft at elevation 5,470.60 ft (revised). Figures given herein represent usable contents. Total contents published in previous water-supply papers and annual reports for May 1964 to September 1975. Water is used for irrigation, flood control, and recreation.

COOPERATION.--Elevations and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 283,000 acre-ft, June 25, 1984, elevation, 5,564.70 ft; minimum since normal operating level was reached, 10,940 acre-ft, Aug. 29, 2002, elevation, 5,491.33 ft

EXTREMES FOR CURRENT YEAR.--Maximum contents, 88,170 acre-ft, May 2, 3, elevation, 5,526.97 ft; minimum, 10,940 acre-ft, Aug. 29, elevation, 5,491.33 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, SEPTEMBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in Contents (acre-feet)
Sept. 30	5,507.05	34,960	---
Oct. 31	5,510.62	41,380	+6,420
Nov. 30	5,514.59	50,660	+9,280
Dec. 31	5,517.98	59,560	+8,900
CAL YR 2001			-35,580
Jan. 31	5,520.71	67,490	+7,930
Feb. 28	5,523.02	74,720	+7,230
Mar. 31	5,525.46	82,850	+8,130
Apr. 30	5,526.94	88,060	+5,210
May 31	5,521.85	71,000	-17,060
June 30	5,514.07	49,380	-21,620
July 31	5,499.42	20,910	-28,470
Aug. 31	5,491.42	11,030	-9,880
Sept. 30	5,495.69	15,840	+4,810
WTR YR 2002			-19,120

MISSOURI RIVER MAIN STEM

06016000 BEAVERHEAD RIVER AT BARRETTS, MT

LOCATION.--Lat 45°06'59", long 112°44'59" (NAD 27), in SE$^1/_4$SW$^1/_4$SE$^1/_4$ sec.19, T.8 S., R.9 W., Beaverhead County, Hydrologic Unit 10020002, on left bank 1.4 mi upstream from Barretts, 2.2 mi downstream from Grasshopper Creek, 8.9 mi southwest of Dillon, and at river mile 2,469.2.

DRAINAGE AREA.--2,737 mi^2.

PERIOD OF RECORD.--August 1907 to September 1986, October 1986 to current year (seasonal records only). Monthly discharge only for some periods, published in WSP 1309. Prior to October 1963, published as "at Barratts".

REVISED RECORDS.--WSP 1279: 1908(M), 1910-12(M), 1929(M), 1935-36. WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,268.17 ft (NGVD 29). Prior to Oct. 19, 1934, nonrecording gages at same site and datum.

REMARKS.--Seasonal records good. Some regulation by Lima Reservoir (station number 06012000) and nearly complete regulation by Clark Canyon Reservoir (station number 06015300) since August 1964. Diversions for irrigation of about 90,000 acres above station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			104	143	125	661	630	644	130	78		
2			100	146	141	690	573	590	127	77		
3			101	132	147	655	530	570	117	77		
4			97	128	167	559	515	565	93	71		
5			98	132	197	506	504	532	80	71		
6			98	147	245	491	494	498	78	70		
7			100	156	248	485	491	470	74	70		
8			105	148	243	515	474	447	73	71		
9			99	141	234	537	445	401	70	73		
10			98	139	227	536	449	365	66	72		
11			99	135	209	440	475	361	64	73		
12			101	131	212	365	518	360	64	73		
13			101	134	247	373	564	357	65	74		
14			102	139	319	433	589	352	64	75		
15			104	151	397	472	589	349	64	75		
16			105	145	461	505	681	339	64	75		
17			104	136	489	539	718	326	70	73		
18			106	135	504	597	734	324	72	73		
19			109	126	520	670	776	315	70	74		
20			109	130	595	735	808	290	68	75		
21			110	132	662	758	814	274	67	80		
22			111	125	716	762	805	269	68	83		
23			115	120	718	770	782	262	69	84		
24			118	110	683	768	766	256	69	83		
25			123	111	656	738	766	252	70	80		
26			129	111	647	723	762	241	71	79		
27			140	115	645	733	745	210	73	79		
28			136	116	645	717	730	206	75	90		
29			134	111	641	680	723	230	75	89		
30			135	115	642	650	727	165	77	79		
31			138	---	644	---	705	133	---	92		
TOTAL			3429	3940	13226	18063	19882	10953	2287	2388		
MEAN			110.6	131.3	426.6	602.1	641.4	353.3	76.23	77.03		
MAX			140	156	718	770	814	644	130	92		
MIN			97	110	125	365	445	133	64	70		
AC-FT			6800	7810	26230	35830	39440	21730	4540	4740		

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 1986 AND SEASONS 1987 - 2002*

MEAN	293.2	289.7	327.2	444.3	615.9	805.2	567.2	462.9	347.7	355.2	408.7	345.8
MAX	547	513	934	1347	1913	2608	2147	1929	1645	1093	889	685
(WY)	1984	1984	1910	1913	1917	1908	1984	1984	1984	1093	889	685
MIN	120	132	110	123	131	146	95.5	96.1	74.6	75.9	138	133
(WY)	1932	1975	2002	1934	1934	1934	1934	1934	2002	2003	1975	1975

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1987-2002		WATER YEARS 1908 - 2002*	
ANNUAL MEAN					440.7	
HIGHEST ANNUAL MEAN					1101	1984
LOWEST ANNUAL MEAN					168	1934
HIGHEST DAILY MEAN	814	Jul 21	1640	Jul 26 1995	3640	Jun 19 1908
LOWEST DAILY MEAN	64	Sep 11	64	Sep 11 2002	64	Sep 11 2002
ANNUAL SEVEN-DAY MINIMUM					64	Sep 10 2002
MAXIMUM PEAK FLOW	837	Jul 21	1650	Jul 25 1995	3720	Jun 20 1908
MAXIMUM PEAK STAGE	2.16	Jun 21	3.25	Jul 25 1995	6.10	Jun 20 1908
INSTANTANEOUS LOW FLOW	a61	Sep 15	a61	Sep 15 2002	a61	Sep 15 2002
ANNUAL RUNOFF (AC-FT)					319200	
10 PERCENT EXCEEDS					836	
50 PERCENT EXCEEDS					347	
90 PERCENT EXCEEDS					182	

SUMMARY STATISTICS	WATER YEARS 1908-1986**		WATER YEARS 1908-1964***		WATER YEARS 1965-1986****	
ANNUAL MEAN	441		401		543	
HIGHEST ANNUAL MEAN	1101	1984	738	1913	1101	1984
LOWEST ANNUAL MEAN	168	1934	168	1934	293	1967
HIGHEST DAILY MEAN	3640	Jun 19 1908	3640	Jun 23 1908	2930	Jun 23 1984
LOWEST DAILY MEAN	80	Jan 22 1962	80	Jan 22 1962	110	Jan 29 1975
ANNUAL SEVEN-DAY MINIMUM	81	Sep 11 1934	81	Sep 11 1934	119	Jan 28 1975
MAXIMUM PEAK FLOW	3720	Jun 2 1908	3720	Jun 20 1908	3000	Jun 22 1984
MAXIMUM PEAK STAGE	6.10	Jun 2 1908	6.10	Jun 20 1908	5.04	Jun 22 1984
INSTANTANEOUS LOW FLOW	b69	Jan 30 1939	b69	Jan 30 1939		
ANNUAL RUNOFF (AC-FT)	319200		290500		3933700	
10 PERCENT EXCEEDS	830		676		1000	
50 PERCENT EXCEEDS	344		330		454	
90 PERCENT EXCEEDS	177		179		190	

*--Seasonal records after 1986 water year.
**--Annual record.
JO -1

*--Seasonal records after 1986 water year.
**--Annual record.
JO -1

*--Seasonal records after 1986 water year.
**--Annual record.
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**--Annual record.
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*--Seasonal records after 1986 water year.
**--Annual record.
JO -1

WILLOW CREEK BASIN

06035000 WILLOW CREEK NEAR HARRISON, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO OCTOBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER			OCTOBER	
1	24.0	11.5	17.5	20.5	11.5	15.5	7.0	5.0	6.0
2	20.5	13.0	16.5	23.5	11.5	17.0	11.5	4.5	7.5
3	22.5	12.0	17.0	20.0	11.5	16.0	8.0	4.5	6.0
4	20.5	14.0	16.5	22.0	11.5	16.5	10.5	5.5	8.0
5	21.0	11.5	16.0	18.5	13.0	15.5	8.0	5.5	7.0
6	23.0	13.5	17.5	14.0	11.5	12.5	13.0	6.5	9.0
7	23.0	14.5	17.5	13.5	10.5	12.0	13.0	6.0	9.0
8	16.5	12.0	14.5	16.5	8.5	12.0	12.0	5.0	8.5
9	20.0	9.5	14.0	18.5	7.5	12.5	13.0	5.5	9.0
10	23.0	11.5	17.0	19.5	8.5	13.5	11.0	5.0	8.0
11	21.0	13.5	17.0	20.0	9.0	14.5	8.5	4.0	6.5
12	22.0	12.5	17.0	19.0	9.5	14.0	9.0	1.0	4.5
13	23.5	11.5	17.0	20.0	9.0	14.5	9.5	1.0	5.0
14	22.5	13.0	17.5	20.5	9.0	14.5	9.5	2.0	6.0
15	24.0	11.0	17.0	19.0	11.0	15.0	9.5	1.5	5.5
16	21.0	12.0	16.5	17.5	11.0	14.0	9.5	2.0	5.5
17	21.0	9.0	15.0	14.0	10.5	12.0	8.5	1.5	5.0
18	22.0	10.0	16.0	15.5	10.0	12.0	9.0	1.5	5.0
19	22.5	10.5	16.5	17.5	8.0	12.0	9.0	1.0	5.0
20	22.0	11.5	16.5	17.5	9.5	13.0	7.5	3.5	6.0
21	19.0	12.5	15.5	14.5	6.5	10.5	10.5	4.5	7.0
22	21.5	10.0	15.5	15.0	5.0	10.0	7.0	2.0	4.0
23	20.5	10.5	15.0	16.0	6.5	11.0	4.0	1.0	2.0
24	20.0	10.5	15.0	17.0	8.0	12.0	4.5	0.0	1.5
25	22.0	11.0	16.0	15.5	9.0	11.5	4.0	0.0	1.5
26	22.0	11.0	16.0	13.5	6.0	10.0	4.0	0.0	1.5
27	17.0	11.5	14.0	10.0	8.0	8.5	3.5	0.0	1.5
28	20.0	10.5	15.0	15.0	7.0	10.0	---	---	---
29	21.0	12.0	16.0	13.5	5.5	9.5	---	---	---
30	22.5	11.0	16.0	11.0	6.0	8.5	---	---	---
31	21.0	13.0	16.5	---	---	---	---	---	---
MONTH	24.0	9.0	16.0	23.5	5.0	12.5	---	---	---

JEFFERSON RIVER BASIN

06036650 JEFFERSON RIVER NEAR THREE FORKS, MT

LOCATION.--Lat 45°53'52", long 111°35'45" (NAD 27), in SW$^1/_4$SW$^1/_4$NW$^1/_4$ sec.27, T.2 N., R.1 E., Broadwater County, Hydrologic Unit 10020005, on left bank 50 ft downstream from bridge on U.S. Highway 10, 2.5 mi northwest of Three Forks, and at river mile 2,329.3.
DRAINAGE AREA.--9,532 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to current year.
GAGE.--Water-stage recorder. Datum of gage is 4,076.76 ft (NGVD 29).
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Some regulation by Ruby River Reservoir (station number 06020500) and Clark Canyon Reservoir (station number 06015300). Diversions for irrigation of about 390,000 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	479	1120	1030	e850	e750	e650	973	1110	3510	1800	392	512
2	498	1130	1020	e800	e750	e600	975	1090	4720	1660	338	518
3	513	1150	1120	e750	e800	e600	992	1020	5790	1520	301	510
4	530	1160	1120	e850	e800	e650	1010	962	6180	1590	280	490
5	540	1160	1100	e850	e800	e700	1020	1000	5890	1580	288	484
6	589	1140	1040	e900	e800	e650	1050	1030	5160	1420	333	466
7	637	1140	1130	e1000	e900	e550	1100	1080	4410	1310	323	503
8	675	1140	1100	e1150	e950	e450	1250	1130	4260	1330	308	597
9	701	1140	1070	e1200	e900	e600	1470	1140	4240	1110	355	664
10	704	1130	e1000	e1100	e900	e750	1610	1070	4550	1010	444	677
11	756	1110	e800	e1000	e900	994	1740	963	4930	965	456	698
12	850	1100	e750	e1050	e850	1140	1790	895	4690	875	449	660
13	923	1100	e850	e1000	e850	1060	1800	853	4370	782	407	637
14	942	1140	1060	e950	e850	1000	1760	749	3720	712	376	624
15	943	1160	1070	e900	e800	968	1920	650	3210	641	341	601
16	994	1180	e900	e850	e800	928	2220	649	2940	602	314	569
17	1030	1170	952	e850	e850	e850	2260	692	2830	578	271	556
18	1030	1160	1060	e800	e850	e750	2020	723	2910	613	238	617
19	1010	1180	e1000	e800	e850	e800	1800	702	3070	610	223	713
20	1020	1180	e950	e800	e850	e700	1610	716	3210	616	217	710
21	1010	1190	e900	e850	e850	e600	1490	884	3090	652	204	709
22	1020	1180	e900	e850	e900	e800	1450	1580	2920	597	217	684
23	1040	1200	e950	e800	e950	1020	1420	2170	2910	593	223	668
24	1040	1190	e800	e850	e700	1010	1360	2470	3010	544	233	648
25	1060	1200	e650	e950	e550	996	1370	2310	2880	511	236	646
26	1090	1160	e650	e1050	e550	962	1320	2030	2680	473	240	662
27	1080	1110	e650	e1000	e600	962	1210	1840	2460	477	257	691
28	1080	1060	e700	e900	e650	948	1180	1770	2260	558	275	730
29	1090	1000	e750	e750	---	952	1160	1860	2100	544	301	737
30	1100	1040	e850	e700	---	946	1150	2010	1930	500	369	751
31	1120	---	e900	e650	---	956	---	2550	---	457	462	---
TOTAL	27094	34220	28822	27800	22550	25542	43480	39698	110830	27230	9671	18732
MEAN	874.0	1141	929.7	896.8	805.4	823.9	1449	1281	3694	878.4	312.0	624.4
MAX	1120	1200	1130	1200	950	1140	2260	2550	6180	1800	462	751
MIN	479	1000	650	650	550	450	973	649	1930	457	204	466
AC-FT	53740	67880	57170	55140	44730	50660	86240	78740	219800	54010	19180	37150

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2002, BY WATER YEAR (WY)

MEAN	1612	1654	1358	1238	1315	1552	2391	3788	5110	2094	920.4	1161
MAX	3163	2805	1993	1929	1964	2295	4444	7679	11420	5505	3030	3303
(WY)	1985	1984	1999	1983	1984	1996	1996	1997	1997	1995	1984	1984
MIN	803	1039	805	727	805	824	1371	990	988	352	59.1	262
(WY)	1989	1989	1993	1993	2002	2002	1992	1992	1992	1988	1988	1994

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1978 - 2002	
ANNUAL TOTAL	365918		415669			
ANNUAL MEAN	1003		1139		2015	
HIGHEST ANNUAL MEAN					3650	1984
LOWEST ANNUAL MEAN					996	1992
HIGHEST DAILY MEAN	3170	Jun 16	6180	Jun 4	16800	Jun 9 1995
LOWEST DAILY MEAN	110	Aug 28	204	Aug 21	44	Aug 19 1988
ANNUAL SEVEN-DAY MINIMUM	114	Aug 25	222	Aug 19	48	Aug 19 1988
MAXIMUM PEAK FLOW			6270	Jun 4	b17000	Jun 9 1995
MAXIMUM PEAK STAGE			6.17	Jun 4	c9.88	Jan 3 1997
INSTANTANEOUS LOW FLOW			a202	Aug 21	d43	Aug 19 1988
ANNUAL RUNOFF (AC-FT)	725800		824500		1460000	
10 PERCENT EXCEEDS	1660		2020		3880	
50 PERCENT EXCEEDS	1000		943		1500	
90 PERCENT EXCEEDS	257		478		632	

a--Gage height, 1.91 ft.
b--Gage height, 9.00 ft.
c--Backwater from ice.
d--Gage height, 1.31 ft.
e--Estimated.

06036650 JEFFERSON RIVER NEAR THREE FORKS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1980-81, 1986, 1987, May 1999 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: June 1980 to September 1981, October 1999 to current year.
INSTRUMENTATION.--Temperature recorder since October 1999.
REMARKS--Unpublished records of instantaneous specific conductance and temperature data are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 27.0°C, July 31, 2000; July 13, 14, 2002; minimum, 0.0°C, on many days during winter period.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 27.0°C, July 13, 14; minimum, 0.0°C, many days November through March.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT									
23...	1545	1040	8.6	510	8.0	7.5	.38	.102	E.002
APR									
03...	1150	1000	8.6	430	4.0	3.5	.47	.196	.003
MAY									
22...	1130	1530	8.1	245	6.0	12.0	.77	<.013	<.002
JUL									
30...	1300	589	8.5	425	28.0	20.5	.33	<.013	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT					
23...	<.007	.025	83	23	64.6
APR					
03...	<.007	.054	84	34	91.8
MAY					
22...	E.005	.138	88	65	269
JUL					
30...	<.007	.021	74	15	23.9

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT											
23...	1545	210	53.7	19.3	4.54	.6	20.9	181	13.2	.4	15.8
MAY											
22...	1130	110	28.5	8.31	2.58	.4	9.85	94	4.18	.2	15.4

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT											
23...	73.2	.42	871	310	4	<.1	<.8	1.5	<1	1	6
MAY											
22...	25.9	.21	626	151	7	.9	1.0	7.3	3	2	20

E--Estimated.

JEFFERSON RIVER BASIN

06036650 JEFFERSON RIVER NEAR THREE FORKS, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	16.5	13.5	15.0	8.0	7.0	7.5	0.0	0.0	0.0	0.0	0.0	0.0
2	15.5	12.0	14.0	8.5	6.5	7.5	0.0	0.0	0.0	0.0	0.0	0.0
3	14.5	12.0	13.5	8.0	6.0	7.0	1.0	0.0	0.5	0.0	0.0	0.0
4	12.5	8.5	10.5	7.5	5.5	6.5	0.0	0.0	0.0	0.0	0.0	0.0
5	10.0	7.0	8.5	7.0	5.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
6	10.0	7.0	8.5	6.5	5.5	6.0	0.0	0.0	0.0	0.0	0.0	0.0
7	10.5	8.0	9.5	6.5	4.5	6.0	0.0	0.0	0.0	0.5	0.0	0.0
8	11.0	9.0	10.0	5.0	3.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
9	10.5	9.0	9.5	4.5	2.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
10	10.0	8.0	9.0	4.5	2.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0
11	9.0	7.5	8.0	4.5	2.5	3.5	0.0	0.0	0.0	0.5	0.0	0.0
12	7.5	6.0	6.5	5.0	2.5	3.5	0.0	0.0	0.0	0.5	0.0	0.0
13	9.0	6.0	7.5	5.0	3.5	4.5	0.0	0.0	0.0	0.5	0.0	0.0
14	8.0	7.0	7.5	6.5	4.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
15	9.0	6.0	7.5	6.5	4.5	5.5	0.0	0.0	0.0	0.0	0.0	0.0
16	8.5	6.5	7.5	6.0	4.5	5.5	0.0	0.0	0.0	0.0	0.0	0.0
17	9.0	7.0	8.0	6.5	5.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
18	7.5	6.5	7.0	6.0	4.5	5.5	0.0	0.0	0.0	0.0	0.0	0.0
19	8.0	6.5	7.0	4.5	2.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
20	9.5	7.5	8.5	4.5	2.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
21	9.0	7.5	8.0	5.5	4.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0
22	8.0	7.0	7.5	5.0	4.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0
23	7.5	6.0	7.0	5.0	4.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0
24	6.0	4.5	5.0	4.0	3.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0
25	4.5	3.5	4.0	3.5	2.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
26	5.5	3.0	4.0	2.0	1.5	1.5	0.0	0.0	0.0	0.5	0.0	0.0
27	7.0	3.5	5.5	1.5	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
28	7.0	6.0	6.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	8.0	6.5	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	8.5	7.5	8.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	9.0	8.0	8.5	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0
MONTH	16.5	3.0	8.0	8.5	0.0	4.0	1.0	0.0	0.0	0.5	0.0	0.0
		FEBRUARY			MARCH			APRIL			MAY	
1	0.0	0.0	0.0	0.0	0.0	0.0	7.5	2.5	5.0	13.5	8.5	11.0
2	0.0	0.0	0.0	0.0	0.0	0.0	5.5	1.5	3.5	14.0	9.5	11.5
3	0.0	0.0	0.0	0.5	0.0	0.0	5.5	1.5	3.5	13.5	10.5	12.0
4	0.0	0.0	0.0	0.0	0.0	0.0	8.0	3.0	5.5	14.0	9.0	11.5
5	0.0	0.0	0.0	1.0	0.0	0.5	10.0	5.0	7.5	12.5	10.5	11.5
6	0.0	0.0	0.0	0.0	0.0	0.0	10.5	8.0	9.5	12.0	9.5	11.0
7	0.0	0.0	0.0	0.0	0.0	0.0	11.0	8.5	9.5	10.5	8.0	9.0
8	0.0	0.0	0.0	0.0	0.0	0.0	11.5	8.0	9.5	9.5	6.5	8.0
9	0.5	0.0	0.0	0.5	0.0	0.0	10.0	8.0	8.5	11.5	6.5	9.0
10	0.5	0.0	0.0	0.5	0.0	0.0	10.0	7.5	8.5	11.0	9.0	10.0
11	0.5	0.0	0.0	0.5	0.0	0.0	10.0	7.0	8.5	13.5	8.0	11.0
12	0.5	0.0	0.0	1.0	0.0	0.5	10.0	7.5	9.0	16.0	11.0	13.5
13	0.5	0.0	0.0	1.5	0.0	0.5	11.0	8.0	9.5	17.5	12.0	15.0
14	0.5	0.0	0.0	2.0	0.0	0.5	11.5	10.0	10.5	16.5	13.5	15.0
15	0.5	0.0	0.0	2.0	0.0	0.5	10.0	7.0	8.0	15.0	12.0	13.5
16	0.5	0.0	0.0	1.5	0.0	0.5	8.5	6.5	7.0	15.5	11.0	13.5
17	0.5	0.0	0.0	1.0	0.0	0.0	7.5	6.0	7.0	16.5	12.0	14.5
18	1.0	0.0	0.5	1.5	0.0	0.5	6.5	5.0	6.0	17.5	13.0	15.5
19	0.5	0.0	0.0	1.5	0.0	0.5	8.0	4.5	6.0	20.0	14.5	17.0
20	1.5	0.0	0.5	0.0	0.0	0.0	9.5	5.5	7.5	19.5	16.0	18.0
21	1.0	0.0	0.5	0.5	0.0	0.0	9.0	6.5	8.0	17.5	13.5	15.5
22	2.0	0.0	1.0	2.5	0.0	1.0	11.5	7.0	9.5	13.5	9.5	11.5
23	0.5	0.0	0.0	2.5	0.0	1.0	11.0	9.0	10.0	11.0	8.5	9.5
24	0.0	0.0	0.0	2.5	0.0	1.0	11.0	7.0	9.0	13.5	9.5	11.5
25	0.0	0.0	0.0	3.0	0.0	1.0	10.5	7.0	9.0	14.0	11.5	13.0
26	0.0	0.0	0.0	5.5	0.5	3.0	12.0	8.0	9.5	15.5	12.5	13.5
27	0.0	0.0	0.0	7.0	3.5	5.0	9.5	7.5	8.5	17.0	13.5	15.0
28	0.0	0.0	0.0	6.5	4.0	5.5	11.5	6.0	8.5	16.5	14.5	15.5
29	---	---	---	8.5	4.5	6.0	13.0	8.0	10.5	18.5	15.0	16.5
30	---	---	---	8.5	5.5	7.0	12.5	10.0	11.0	18.0	16.5	17.0
31	---	---	---	8.0	5.0	7.0	---	---	---	18.5	15.0	16.5
MONTH	2.0	0.0	0.0	8.5	0.0	1.5	13.0	1.5	8.0	20.0	6.5	13.0

JEFFERSON RIVER BASIN

06036650 JEFFERSON RIVER NEAR THREE FORKS, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	18.0	15.5	16.5	22.0	18.5	20.0	22.0	16.5	19.5	20.0	17.0	18.5
2	15.5	13.0	14.0	22.5	18.0	20.0	21.5	18.5	20.0	21.0	16.5	18.5
3	14.5	12.5	13.5	20.5	18.5	19.5	22.0	17.0	19.5	20.0	17.5	19.0
4	15.0	12.5	14.0	22.5	18.0	20.0	20.5	17.5	19.0	21.0	16.5	19.0
5	16.5	13.5	15.0	23.0	19.0	21.0	22.5	17.0	19.5	19.5	17.5	18.0
6	18.0	15.0	16.5	23.5	19.5	21.5	22.5	18.0	20.0	17.5	15.5	16.0
7	18.0	15.5	16.5	22.5	19.5	21.0	23.0	19.5	20.5	15.5	14.0	15.0
8	16.5	14.0	15.0	23.5	19.5	21.5	19.5	16.5	18.5	16.5	13.0	15.0
9	14.0	11.0	12.5	23.5	19.0	21.0	19.5	14.5	17.0	17.5	13.0	15.0
10	11.0	10.0	10.5	24.5	19.0	22.0	21.5	16.5	19.0	18.0	13.5	16.0
11	12.5	9.5	10.5	25.5	20.0	23.0	21.0	18.5	19.5	19.0	14.5	17.0
12	14.5	11.5	13.0	26.0	21.0	24.0	20.5	17.5	19.0	18.5	15.0	17.0
13	16.0	12.5	14.5	27.0	22.0	24.5	21.5	17.0	19.5	19.0	15.0	17.0
14	18.5	14.5	16.5	27.0	22.5	24.5	22.0	18.0	20.0	19.0	15.0	17.0
15	20.0	16.5	18.0	25.5	22.5	24.0	22.0	17.0	19.5	19.0	15.5	17.0
16	20.5	17.5	19.0	24.0	21.5	23.0	20.0	17.5	19.0	18.0	15.0	16.5
17	20.0	18.0	19.0	25.5	20.0	22.5	20.5	15.5	17.5	16.5	14.5	15.5
18	18.5	16.5	17.5	25.5	22.0	23.5	21.0	16.0	18.5	15.5	13.0	14.5
19	17.0	14.5	15.5	24.0	21.5	23.0	22.0	16.5	19.0	16.0	12.0	14.0
20	18.0	14.5	16.0	23.5	20.5	22.5	21.5	17.0	19.0	15.5	13.0	14.5
21	19.0	16.0	17.5	24.5	20.5	22.5	19.5	17.0	18.0	14.5	11.5	13.0
22	18.5	17.0	18.0	24.0	20.0	22.0	20.5	15.5	18.0	14.5	10.5	12.5
23	19.0	16.5	18.0	24.5	20.5	22.5	20.0	16.0	18.0	15.0	11.0	13.0
24	20.5	17.0	19.0	25.0	20.5	22.5	20.5	16.0	18.0	15.5	12.0	14.0
25	22.0	18.5	20.5	23.0	20.5	22.0	21.5	16.5	18.5	15.0	12.0	13.5
26	23.0	20.0	21.5	21.0	17.5	19.5	21.5	17.0	19.0	14.0	11.0	12.5
27	23.5	21.0	22.0	20.5	18.5	19.0	19.0	17.5	18.0	12.5	10.5	11.5
28	22.0	19.5	21.0	21.5	17.5	19.5	21.0	15.5	18.0	13.5	10.0	11.5
29	20.5	19.0	19.5	22.5	18.5	20.5	21.0	17.0	19.0	12.5	10.0	11.5
30	21.5	17.0	19.0	22.5	18.5	20.5	20.5	16.5	18.5	12.0	10.0	11.0
31	---	---	---	22.5	19.0	20.5	20.0	17.0	19.0	---	---	---
MONTH	23.5	9.5	16.5	27.0	17.5	21.5	23.0	14.5	19.0	21.0	10.0	15.0

MADISON RIVER BASIN

06037500 MADISON RIVER NEAR WEST YELLOWSTONE, MT

LOCATION.--Lat 44°39'25", long 111°04'03" (NAD 27), in NE$^1/_4$NW$^1/_4$SW$^1/_4$ sec.36, T.13 S., R.5 E., Gallatin County, Hydrologic Unit 10020007, Yellowstone National Park, on left bank 0.7 mi downstream from Montana-Wyoming stateline, 1.5 mi east of West Yellowstone, 16.4 mi downstream from Gibbon River, and at river mile 132.7.

DRAINAGE AREA.--420 mi^2.

PERIOD OF RECORD.--June 1913 to December 1917, July 1918 to October 1921, June 1922 to September 1973, August 1983 to September 1986, October 1988 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Elevation of gage is 6,650 ft (NGVD 29). Prior to Oct. 20, 1918, nonrecording gage, and Oct. 20, 1918 to June 29, 1930, nonrecording gage or water-stage recorder at sites 2.5 mi upstream at different datums. Supplementary nonrecording gage at site 0.3 mi downstream at different datum used at time during 1927-30.

REMARKS.--Records good. No regulation or diversions upstream from station. U. S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	360	423	370	363	370	359	394	536	791	417	375	368
2	361	390	376	356	369	355	401	526	813	413	379	363
3	363	381	390	368	366	360	387	566	892	411	397	362
4	363	374	382	369	367	358	385	581	751	415	414	361
5	362	372	381	365	363	358	397	586	687	405	390	361
6	363	382	386	365	365	363	428	559	666	402	381	383
7	365	444	379	369	365	381	471	586	670	403	375	447
8	364	387	375	371	376	384	446	569	649	397	378	411
9	372	374	375	372	370	365	441	520	651	390	382	384
10	375	371	372	361	360	369	468	505	654	390	380	375
11	379	370	375	362	364	372	489	516	641	388	375	375
12	379	369	371	362	366	379	455	570	610	387	375	370
13	381	369	373	363	360	382	461	644	568	387	374	369
14	391	369	385	360	366	380	556	798	540	387	369	369
15	386	369	383	361	356	372	754	858	537	382	369	365
16	377	369	370	351	358	369	617	827	532	386	367	366
17	383	369	376	359	365	367	523	819	523	386	362	368
18	383	376	378	360	365	361	488	836	542	389	364	395
19	375	371	379	357	363	360	458	908	592	402	363	380
20	375	364	378	358	368	360	431	984	519	392	363	374
21	374	376	377	356	359	367	420	1000	495	389	364	369
22	373	387	373	363	363	390	430	904	486	387	364	368
23	399	382	369	363	370	401	440	822	492	387	365	367
24	390	377	e350	366	377	394	421	734	484	381	369	367
25	370	379	e340	375	364	393	422	684	473	381	363	367
26	366	375	e340	382	348	383	447	662	456	384	364	365
27	370	365	e350	390	371	380	468	675	449	395	378	368
28	371	365	e360	385	370	376	458	701	442	422	381	369
29	370	370	369	376	---	375	460	698	435	392	375	369
30	374	373	368	e350	---	373	530	725	423	384	375	384
31	419	---	369	e360	---	378	---	772	---	381	369	---
TOTAL	11633	11342	11519	11318	10224	11564	13946	21671	17463	12212	11599	11239
MEAN	375.3	378.1	371.6	365.1	365.1	373.0	464.9	699.1	582.1	393.9	374.2	374.6
MAX	419	444	390	390	377	401	754	1000	892	422	414	447
MIN	360	364	340	350	348	355	385	505	423	381	362	361
AC-FT	23070	22500	22850	22450	20280	22940	27660	42980	34640	24220	23010	22290

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 2002, BY WATER YEAR (WY)*

MEAN	434.1	424.7	416.1	404.7	399.1	405.8	496.1	851.5	815.1	500.0	433.7	427.2
MAX	710	697	641	586	572	539	671	1725	1479	917	759	704
(WY)	1914	1914	1997	1997	1914	1917	1925	1997	1997	1913	1913	1913
MIN	297	297	304	304	303	313	369	388	341	282	273	282
(WY)	1935	1932	1932	1932	1932	1943	1941	1934	1931	1931	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1913 - 2002*	
ANNUAL TOTAL	156096		155730			
ANNUAL MEAN	427.7		426.7		499.4	
HIGHEST ANNUAL MEAN					789	1997
LOWEST ANNUAL MEAN					337	1934
HIGHEST DAILY MEAN	1490	May 16	1000	May 21	2750	May 18 1996
LOWEST DAILY MEAN	340	Dec 25	340	Dec 25	245	Jan 1 1942
ANNUAL SEVEN-DAY MINIMUM	354	Dec 24	354	Dec 24	267	Aug 6 1931
MAXIMUM PEAK FLOW			1080	May 20	b2820	May 18 1996
MAXIMUM PEAK STAGE			2.55	May 20	c10.0	Jan 8 1937
INSTANTANEOUS LOW FLOW			a325	Feb 26	d100	Feb 7 1933
ANNUAL RUNOFF (AC-FT)	309600		308900		361800	
10 PERCENT EXCEEDS	533		583		747	
50 PERCENT EXCEEDS	406		378		433	
90 PERCENT EXCEEDS	365		362		339	

*--During periods of operation (June 1913 to December 1917, July 1918 to October 1921, June 1922 to September 1973, August 1983 to September 1986, October 1988 to current year).
a--Gage height, 1.62 ft.
b--Gage height, 3.78 ft.
c--About, backwater from ice.
d--Result of freezeup.
e--Estimated.

MADISON RIVER BASIN

06038500 MADISON RIVER BELOW HEBGEN LAKE, NEAR GRAYLING, MT

LOCATION.--Lat 44°52'00", long 111°20'15" (NAD 27), NE$^1/_4$NE$^1/_4$NE$^1/_4$ sec.22, T.11 S., R.3 E., Gallatin County, Hydrologic Unit 10020007, Gallatin National Forest, on right bank 1,500 ft downstream from Hebgen Dam, 8 mi northwest of Grayling, 17 mi upstream from West Fork, and at river mile 108.8.

DRAINAGE AREA.--905 mi^2.

PERIOD OF RECORD.--June 1909 to current year. Prior to October 1938 adjusted runoff only, published in WSP 1309. Prior to October 1949, published as "below Hebgen Reservoir".

REVISED RECORDS.--WSP 1509: 1948. WSP 1559: Drainage area. WSP 1629: 1943. WSP 1709: 1959. WSP 1729: 1943.

GAGE.--Water-stage recorder. Datum of gage is 6,448.47 ft (after 1959 earthquake) (NGVD 29). Prior to July 13, 1943, nonrecording gage in stilling well.

REMARKS.--Records excellent. Flow completely regulated by Hebgen Lake (station number 06038000). Diversions for irrigation of about 1,100 acres upstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--93 years, 1,022 ft^3/s, 15.34 in/yr, 740,400 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,200 ft^3/s, Aug. 17, 1959, caused by wave over Hebgen Dam during earthquake, gage height, 5.3 ft, from floodmark, from rating curve extended above 3,500 ft^3/s on basis of slope-area measurement of peak flow; maximum observed unaffected by wave over dam, 5,090 ft^3/s, June 3, 1943, gage height, 3.69 ft; minimum daily, 5.0 ft^3/s, May 9-12, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,670 ft^3/s, July 16, gage height, 2.28 ft; minimum daily, 733 ft^3/s, Apr. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	918	889	879	865	855	750	751	750	803	994	983	889
2	918	888	879	863	853	750	750	750	810	865	971	888
3	916	888	879	861	853	750	750	750	813	822	968	888
4	914	888	879	860	852	750	750	750	818	822	967	888
5	910	888	879	861	851	750	750	750	821	822	907	888
6	908	888	879	861	850	751	750	750	822	822	839	888
7	908	888	879	860	803	752	751	753	822	822	831	888
8	908	888	879	859	758	756	741	755	822	822	825	888
9	908	888	879	859	758	754	741	753	829	840	823	888
10	908	888	879	859	758	754	742	752	831	918	822	888
11	908	888	879	859	758	755	741	750	833	1040	822	888
12	908	887	879	860	757	757	733	750	837	1080	822	888
13	908	886	879	859	750	756	734	750	837	1180	822	888
14	908	885	879	859	750	756	736	750	836	1250	820	885
15	908	883	879	859	750	755	741	755	838	1370	815	881
16	908	881	879	859	750	757	741	758	841	1560	815	881
17	908	882	879	859	750	758	741	758	841	1650	812	882
18	908	886	879	859	750	759	741	758	841	1650	808	881
19	908	884	879	859	750	759	741	764	841	1640	806	879
20	908	883	879	860	750	759	744	780	841	1640	803	881
21	908	883	874	859	750	758	742	798	841	1640	835	882
22	907	882	869	859	750	758	744	803	841	1530	889	881
23	905	882	869	859	750	758	748	803	841	1340	888	880
24	902	879	869	859	750	758	748	803	878	1230	888	879
25	898	880	869	859	750	758	747	807	928	1150	889	881
26	898	880	869	857	750	758	748	812	969	1080	888	879
27	898	879	869	858	750	756	749	813	1060	1030	889	879
28	898	879	869	858	750	754	749	815	1060	1030	888	879
29	889	879	869	857	---	753	749	818	1060	1020	888	879
30	888	879	868	856	---	752	750	821	1060	1010	889	879
31	889	---	867	858	---	752	---	818	---	993	890	---
TOTAL	28076	26528	27141	26639	21706	23403	22343	23997	26115	35662	26802	26513
MEAN	905.7	884.3	875.5	859.3	775.2	754.9	744.8	774.1	870.5	1150	864.6	883.8
MAX	918	889	879	865	855	759	751	821	1060	1650	983	889
MIN	888	879	867	856	750	750	733	750	803	822	803	879
AC-FT	55690	52620	53830	52840	43050	46420	44320	47600	51800	70740	53160	52590

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2002, BY WATER YEAR (WY)

MEAN	1364	1405	985.7	899.7	838.6	838.1	928.9	857.5	1267	1026	1081	1136
MAX	2477	2535	2838	1407	1905	1574	2343	2494	2940	2058	1722	1688
(WY)	1962	1960	1960	1944	1943	1947	1948	1996	1943	1965	1939	1982
MIN	215	501	410	180	181	291	217	45.5	96.0	503	662	368
(WY)	1942	1941	1940	1940	1940	1941	1961	1962	1960	1978	1960	1941

ADJUSTED FOR CHANGE IN CONTENTS IN HEBGEN LAKE

MEAN †	712	728	744	713	705	705	930	1540	1489	737	652	684
CFSM †	0.79	0.80	0.82	0.79	0.78	0.78	1.03	1.70	1.65	0.81	0.72	0.76
IN †	0.91	0.90	0.95	0.91	0.81	0.90	1.15	1.96	1.84	0.94	0.83	0.84
AC-FT†	43790	43320	45730	43840	39150	43320	55320	94700	88600	45340	40060	40690

OBSERVED

CAL YR	2001	TOTAL	303029	MEAN	830	MAX	1140	MIN	484	AC-FT	601100
WTR YR	2002	TOTAL	314925	MEAN	863	MAX	1650	MIN	733	AC-FT	624700

ADJUSTED

CAL YR	2001	TOTAL	303554	MEAN	832	CFSM	0.92	IN	12.47	AC-FT	602100
WTR YR	2002	TOTAL	314545	MEAN	862	CFSM	0.95	IN	12.93	AC-FT	623900

†--Adjusted for change in contents in Hebgen Lake.

MADISON RIVER BASIN

06038800 MADISON RIVER AT KIRBY RANCH, NEAR CAMERON, MT

LOCATION.--Lat 44°53'22", long 111°34'46" (NAD 27), in NE$^1/_4$NE$^1/_4$SE$^1/_4$ sec.10, T.11 S., R.1 E., Madison County, Hydrologic Unit 10020007, 75 ft upstream from county bridge, 0.2 mi upstream from West Fork Madison River, and 22 mi south of Cameron, and at river mile 89.8.
DRAINAGE AREA.--1,065 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1959 to September 1963, May 1978 to September 1994 (seasonal records only), October 1995 to current year.
GAGE.--Water-stage recorder. Elevation of gage is 5,860 ft (NGVD 29). Aug. 31, 1959 to Oct. 2, 1959, nonrecording gage 75 ft downstream at datum 0.96 ft. lower. Oct. 3, 1959 to September 1963, water-stage recorder at present site and datum. May 1978 to September 1994, nonrecording gage 75 ft downstream at present datum.
REMARKS.--Water-discharge records good. Flow regulated by Hebgen Lake (station 06038000). Diversions for irrigation of about 1,500 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	959	966	933	916	918	e820	810	880	1850	1380	1130	965
2	955	957	936	e910	915	e820	806	875	2020	1250	1120	967
3	953	952	935	927	e910	e820	811	895	1860	1140	1120	966
4	950	948	926	927	914	e830	814	894	1620	1100	1120	960
5	950	948	926	926	e910	838	815	902	1510	1100	1090	961
6	949	953	927	928	e910	837	818	900	1530	1080	991	987
7	948	953	921	926	904	842	827	898	1540	1070	956	1010
8	961	946	925	925	847	832	825	886	1510	1060	960	991
9	975	941	921	920	830	837	830	870	1420	1050	962	975
10	954	942	919	921	e820	829	832	866	1320	1090	949	968
11	968	941	918	919	824	828	827	865	1240	1180	947	961
12	960	944	918	920	827	831	820	888	1210	1260	939	958
13	965	946	932	916	834	825	826	937	1180	1300	937	951
14	974	946	940	917	826	818	862	1030	1180	1410	927	948
15	968	945	934	913	e820	821	898	1080	1230	1470	919	947
16	956	942	e930	917	e830	820	885	1060	1310	1670	914	944
17	955	941	932	910	837	817	862	1090	1370	1830	910	955
18	948	940	929	913	837	820	853	1140	1420	1860	906	966
19	953	938	927	921	837	818	838	1230	1410	1860	905	951
20	950	934	927	912	840	816	830	1400	1320	1850	900	947
21	952	952	924	917	844	820	826	1490	1270	1840	903	940
22	949	947	925	913	839	816	828	1390	1290	1800	964	939
23	959	941	925	912	840	815	826	1210	1280	1640	991	939
24	945	941	e920	911	e830	815	824	1130	1310	1480	992	937
25	943	936	e920	914	e820	817	822	1090	1370	1350	988	934
26	946	935	e920	914	e830	818	828	1080	1390	1300	986	938
27	948	928	e930	917	839	815	832	1110	1470	1220	985	938
28	949	922	937	912	e830	814	839	1170	1480	1190	980	942
29	951	925	928	914	---	813	846	1290	1450	1170	977	937
30	954	927	919	e910	---	812	881	1470	1420	1160	974	930
31	976	---	914	918	---	815	---	1660	---	1150	971	---
TOTAL	29623	28277	28718	28436	23862	25489	25041	33676	42780	42310	30313	28652
MEAN	955.6	942.6	926.4	917.3	852.2	822.2	834.7	1086	1426	1365	977.8	955.1
MAX	976	966	940	928	918	842	898	1660	2020	1860	1130	1010
MIN	943	922	914	910	820	812	806	865	1180	1050	900	930
AC-FT	58760	56090	56960	56400	47330	50560	49670	66800	84850	83920	60130	56830

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2002, BY WATER YEAR (WY)*

MEAN	1614	1615	1244	1055	1035	1039	1012	1383	1879	1326	1137	1183
MAX	2570	2780	3005	1449	1521	1611	1527	2865	3862	2125	1672	1567
(WY)	1962	1960	1960	1999	1999	1999	1995	1997	1997	1982	1997	1996
MIN	938	736	739	737	626	525	370	445	619	716	734	732
(WY)	1961	1961	1961	1961	1963	1963	1961	1961	1960	1979	1960	1960

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1959 - 2002*	
ANNUAL TOTAL	344013		367177			
ANNUAL MEAN	942.5		1006		1319	
HIGHEST ANNUAL MEAN					1896	1997
LOWEST ANNUAL MEAN					733	1961
HIGHEST DAILY MEAN	1310	Jul 11	2020	Jun 2	5030	May 31 1993
LOWEST DAILY MEAN	669	Apr 15	806	Apr 2	139	Sep 1 1959
ANNUAL SEVEN-DAY MINIMUM	672	Apr 11	812	Mar 28	152	Sep 1 1959
MAXIMUM PEAK FLOW			2050	Jun 2	b5030	May 30 1993
MAXIMUM PEAK STAGE			2.60	Jun 2	3.97	Jun 7 1996
INSTANTANEOUS LOW FLOW			a780	Apr 2	c139	Sep 1 1959
ANNUAL RUNOFF (AC-FT)	682300		728300		955200	
10 PERCENT EXCEEDS	1140		1330		2130	
50 PERCENT EXCEEDS	947		937		1200	
90 PERCENT EXCEEDS	726		826		722	

*--During periods of operation {September 1959 to September 1963, May 1978 to September 1994 (seasonal records only), October 1994 to current year}.
a--Gage height, 1.69 ft.
b--Observed, gage height, 3.15 ft, previous site at present datum.
c--Observed, present site and datum.
e--Estimated.

06038800 MADISON RIVER AT KIRBY RANCH, NEAR CAMERON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1994 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1994 to current year.

INSTRUMENTATION.--Temperature recorder installed Sept. 14, 1994.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 21.5°C, July 2, 3, 2001, July 12, 2002; minimum, 0.0°C many days during winter months.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 21.5°C, July 12; minimum, 0.0°C, many days December through April.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	16.5	11.0	13.0	9.5	6.5	7.5	3.5	2.0	3.0	2.0	0.0	1.0
2	16.5	10.5	13.0	9.0	6.0	7.0	4.5	2.0	3.0	1.5	0.0	0.5
3	15.0	10.5	12.5	9.5	5.5	7.0	4.5	2.5	3.5	2.5	1.0	1.5
4	11.5	9.5	10.5	9.5	5.5	7.0	4.0	1.5	2.5	3.0	0.5	1.5
5	14.5	9.0	11.0	9.5	5.5	7.0	3.0	1.0	2.0	2.0	0.5	1.0
6	14.5	9.0	11.0	7.5	5.5	6.5	4.5	1.5	2.5	3.0	1.0	1.5
7	13.0	9.5	11.0	8.0	5.0	6.5	4.0	1.0	2.5	4.0	1.5	2.5
8	12.5	10.5	11.0	8.0	4.5	6.0	3.0	0.5	1.5	3.5	1.5	2.5
9	12.0	9.0	10.5	8.0	4.5	5.5	3.0	0.5	1.5	3.5	0.5	2.0
10	13.0	8.5	10.5	9.0	4.5	6.0	2.5	0.0	0.5	2.5	0.0	1.0
11	9.5	8.0	9.0	8.5	5.0	6.0	2.0	0.0	1.0	3.0	1.0	2.0
12	10.5	8.0	9.0	8.5	5.0	6.5	2.0	0.0	1.0	3.5	1.0	2.0
13	12.0	8.0	9.5	8.0	5.5	6.5	1.5	0.0	0.5	3.0	0.5	1.5
14	10.5	7.5	9.0	7.0	5.5	6.0	2.5	0.5	1.5	2.0	0.0	1.0
15	11.5	7.5	9.0	8.0	5.5	6.5	2.0	0.0	0.5	2.0	0.0	1.0
16	11.5	7.5	9.0	8.0	5.0	6.0	1.0	0.0	0.5	2.0	0.0	0.5
17	10.0	7.0	9.0	7.5	5.0	6.0	2.0	0.5	1.0	2.5	0.0	1.0
18	10.5	6.5	8.0	6.0	5.0	5.5	2.5	0.5	1.5	2.5	0.0	1.0
19	10.0	8.0	8.5	6.5	4.5	5.5	3.0	0.0	1.5	1.5	0.0	0.5
20	10.5	7.0	8.5	7.0	4.0	5.5	2.5	0.0	1.5	1.5	0.0	0.5
21	11.5	6.5	8.5	6.0	5.0	5.5	3.0	0.5	1.5	3.0	1.0	1.5
22	10.0	7.0	8.0	7.0	5.0	5.5	2.5	0.0	1.0	2.5	0.0	1.0
23	8.0	6.5	7.5	6.0	4.5	5.0	2.0	0.0	0.5	2.0	0.0	0.5
24	9.0	6.0	7.0	5.5	3.5	4.5	1.0	0.0	0.0	1.5	0.0	0.5
25	8.5	6.0	7.0	5.0	3.5	4.0	1.0	0.0	0.0	2.5	0.5	1.5
26	10.0	5.5	7.0	4.5	2.5	3.5	1.5	0.0	0.5	3.0	1.0	2.0
27	10.0	6.0	7.5	5.0	2.5	3.0	1.0	0.0	0.0	2.5	0.5	1.5
28	8.5	7.0	7.5	3.0	1.5	2.5	2.0	0.0	1.0	1.5	0.0	0.5
29	10.0	7.0	8.0	4.5	2.5	3.5	2.5	0.5	1.5	2.5	0.0	0.5
30	9.0	7.0	8.0	4.5	2.0	3.5	2.5	0.5	1.0	1.0	0.0	0.0
31	8.5	7.0	7.5	---	---	---	2.5	0.5	1.5	1.5	0.0	0.5
MONTH	16.5	5.5	9.0	9.5	1.5	5.5	4.5	0.0	1.5	4.0	0.0	1.0

MADISON RIVER BASIN

06038800 MADISON RIVER AT KIRBY RANCH, NEAR CAMERON, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	2.5	0.0	1.0	3.0	0.0	0.5	7.0	0.0	3.0	8.5	2.0	4.5
2	3.0	0.0	1.0	3.0	0.0	0.5	5.5	0.0	1.5	10.5	2.0	5.5
3	2.5	0.0	0.5	3.0	0.0	0.5	8.0	0.0	3.0	7.0	3.0	5.0
4	3.5	0.0	1.0	3.5	0.0	1.0	9.0	0.5	4.0	10.0	2.0	5.5
5	2.5	0.0	0.5	5.5	0.5	2.0	9.0	1.0	4.0	6.0	3.5	4.5
6	2.5	0.0	0.5	5.0	1.5	2.5	7.5	2.0	4.0	6.5	3.5	4.5
7	3.5	0.0	1.5	4.0	0.0	1.5	6.0	1.5	3.5	7.0	1.5	4.0
8	2.0	0.0	1.5	3.5	0.0	1.0	9.0	1.5	4.5	7.0	1.0	3.5
9	4.0	0.0	1.5	3.5	0.0	1.0	5.0	1.5	3.5	8.0	1.5	4.5
10	2.5	0.0	0.5	4.0	0.0	2.0	7.0	2.5	4.0	8.5	3.0	5.0
11	4.5	0.0	1.0	4.5	1.0	2.5	6.5	1.5	4.0	10.0	3.0	5.5
12	3.5	0.0	1.0	6.0	1.0	3.0	8.5	2.5	5.0	11.0	2.5	6.0
13	1.5	0.0	0.5	4.5	0.0	2.0	8.0	2.5	4.5	11.0	3.0	6.5
14	4.0	0.0	1.5	5.0	0.0	1.5	5.5	3.5	4.5	8.5	4.0	6.0
15	3.0	0.0	1.0	5.0	0.0	1.5	3.5	1.5	2.5	8.5	3.5	5.5
16	4.0	0.0	1.0	5.0	0.0	1.5	7.0	1.0	3.5	9.5	3.0	5.5
17	5.5	0.5	2.5	4.5	0.0	1.5	6.0	1.5	3.5	10.0	3.5	6.5
18	4.5	1.0	2.0	5.5	0.0	1.5	6.0	1.5	3.0	11.0	4.5	7.5
19	3.5	0.5	2.0	4.5	0.5	2.0	7.5	0.5	3.0	11.5	5.5	8.0
20	5.0	0.0	2.0	5.5	0.0	2.0	6.5	0.5	3.0	12.0	6.0	8.5
21	5.0	0.0	1.5	6.0	0.0	2.0	7.5	1.0	3.5	9.0	4.5	6.5
22	5.0	0.5	2.5	7.5	0.5	3.0	9.5	2.0	5.0	6.5	4.0	5.0
23	4.5	0.5	2.0	6.5	1.5	3.5	7.5	1.0	3.5	8.5	3.5	5.5
24	1.5	0.0	0.5	5.5	1.5	3.0	8.5	0.5	4.0	11.0	5.5	7.5
25	2.0	0.0	0.5	6.0	1.5	3.0	8.5	1.5	4.0	10.5	5.0	7.5
26	1.0	0.0	0.0	6.0	2.0	3.0	8.5	2.0	4.5	9.5	6.0	7.5
27	4.0	0.0	1.5	6.5	1.5	3.5	7.0	2.0	4.0	11.5	6.5	8.5
28	1.5	0.0	0.5	5.0	1.0	3.0	9.0	2.5	5.0	11.5	6.5	9.0
29	---	---	---	7.0	1.0	3.5	10.5	2.0	5.5	11.5	6.5	8.5
30	---	---	---	7.5	1.5	4.0	7.0	3.0	4.0	10.5	7.0	8.5
31	---	---	---	7.5	1.5	4.0	---	---	---	13.0	7.5	9.5
MONTH	5.5	0.0	1.0	7.5	0.0	2.0	10.5	0.0	4.0	13.0	1.0	6.5

		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.0	7.5	9.5	17.0	9.0	12.5	19.5	11.5	15.0	18.0	12.0	14.5
2	9.0	6.5	8.0	18.0	10.0	13.5	18.0	12.5	14.5	19.0	12.5	15.0
3	11.5	6.5	8.5	18.0	11.0	14.0	18.5	13.0	15.5	19.0	12.5	15.0
4	11.5	6.5	9.0	19.0	11.0	14.0	19.5	13.5	16.0	18.5	12.5	15.0
5	12.0	7.0	9.0	19.0	10.5	14.0	19.0	12.5	15.0	17.5	12.5	14.5
6	12.0	6.5	8.5	19.5	11.5	15.0	19.0	12.5	15.0	15.0	13.0	14.0
7	12.0	6.0	8.5	19.5	12.5	15.5	19.5	12.5	15.0	14.5	13.0	14.0
8	12.0	7.0	8.5	19.5	11.0	15.0	15.5	12.5	14.0	17.5	12.5	14.5
9	10.0	7.5	8.5	19.0	10.5	14.0	19.0	11.5	14.5	18.5	11.0	14.0
10	9.0	7.0	7.5	20.0	11.5	15.0	19.5	12.0	15.0	20.0	10.0	14.5
11	12.0	7.0	9.0	20.5	12.5	16.0	17.0	12.0	14.5	18.0	10.0	14.0
12	12.5	7.5	9.5	21.5	13.5	16.5	18.0	12.0	14.5	18.5	10.5	14.0
13	14.5	7.0	10.5	21.0	14.0	17.0	19.5	12.0	15.0	19.5	10.0	14.5
14	14.5	7.5	11.0	21.0	14.0	17.0	19.5	12.0	15.0	20.0	10.0	14.5
15	16.0	9.0	12.0	19.5	13.5	16.0	19.5	11.5	14.5	19.5	10.5	14.5
16	16.0	8.5	11.5	18.5	14.0	16.0	18.5	11.5	14.5	18.5	10.0	14.0
17	16.0	9.0	11.5	19.5	13.5	16.0	18.5	11.0	14.0	16.0	10.5	13.0
18	14.0	7.0	10.5	19.5	14.5	16.5	18.5	11.5	14.5	16.0	9.5	13.5
19	14.0	7.0	10.0	18.5	13.5	16.5	19.0	11.5	15.0	17.5	10.5	13.5
20	15.5	8.5	11.5	18.0	13.5	15.5	18.5	11.5	14.5	16.5	11.0	13.0
21	16.5	9.5	12.5	18.5	14.0	16.0	17.5	12.0	14.5	14.5	10.0	12.0
22	14.0	9.5	11.5	18.0	13.5	15.5	18.0	11.5	14.5	16.5	9.5	12.5
23	15.5	9.5	12.0	20.0	13.5	16.0	17.5	12.0	14.0	16.5	10.0	12.5
24	16.5	10.5	13.0	20.0	14.0	16.0	17.0	12.5	14.5	16.0	10.0	12.5
25	17.5	10.5	13.5	19.5	13.5	16.0	18.5	12.5	15.0	15.0	10.5	12.0
26	18.0	10.5	14.0	17.5	13.5	15.5	18.0	12.0	14.5	15.0	9.5	12.0
27	18.5	11.0	14.0	17.0	14.0	15.0	17.0	12.5	14.0	13.0	10.5	11.5
28	17.5	10.5	13.5	19.0	13.0	15.5	18.0	13.0	15.0	15.5	10.5	12.5
29	17.0	8.5	12.0	18.5	12.0	15.0	17.5	12.5	14.5	15.5	10.5	12.0
30	17.0	9.0	12.5	19.5	12.5	15.5	18.0	12.5	14.5	12.5	10.0	11.0
31	---	---	---	19.0	11.5	15.0	18.0	13.0	15.0	---	---	---
MONTH	18.5	6.0	10.5	21.5	9.0	15.5	19.5	11.0	14.5	20.0	9.5	13.5

MADISON RIVER BASIN

06040800 MADISON RIVER ABOVE POWERPLANT, NEAR MCALLISTER, MT

LOCATION.--Lat 45°29'12", long 111°37'59" (NAD 27), in NW$^1/_4$NE$^1/_4$SW$^1/_4$ sec.17, T.4 S., R.1 E., Madison County, Hydrologic Unit 10020007, on right bank 160 ft upstream from Madison powerplant, 1.4 mi downstream from Ennis Lake, 5.6 mi northeast of McAllister, and at river mile 38.9.
DRAINAGE AREA.--2,186 mi^2.
PERIOD OF RECORD.--April 2002 to September 2002.
GAGE.--Water-stage recorder. Datum of gage is 4,690 ft (NGVD 29).
REMARKS.--Records good. Flow regulated by Hebgen Lake (station number 06038000) and Ennis Lake (station number 06040500). Diversions for irrigation of about 23,000 acres upstream from station. Flow through Madion Powerplant bypasses the station. U. S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							e200	216	2260	650	304	167
2							e235	301	2980	369	342	163
3							e235	221	2960	218	261	162
4							236	224	2050	217	266	162
5							226	224	1440	213	345	159
6							209	225	1100	211	257	162
7							210	232	1380	175	193	247
8							211	238	1560	131	195	303
9							211	240	1660	168	199	302
10							212	232	1190	143	200	302
11							214	220	687	342	196	300
12							212	223	551	346	195	298
13							214	227	550	330	194	221
14							215	229	473	320	190	169
15							823	234	331	420	186	172
16							1160	240	607	463	182	172
17							1160	247	802	493	178	171
18							1160	252	803	509	178	244
19							767	261	1050	353	176	297
20							238	259	1130	1170	173	297
21							234	509	677	1500	171	295
22							231	1230	311	1530	171	330
23							222	1020	266	1300	169	293
24							217	535	753	456	169	293
25							212	263	1470	299	170	291
26							212	237	771	406	169	290
27							211	238	394	1560	170	286
28							214	240	572	1480	173	290
29							214	244	686	1010	173	292
30							214	354	803	336	171	293
31							---	1000	---	240	168	---
TOTAL							10529	10615	32267	17358	6284	7423
MEAN							351.0	342.4	1076	559.9	202.7	247.4
MAX							1160	1230	2980	1560	345	330
MIN							200	216	266	131	168	159
AC-FT							20880	21050	64000	34430	12460	14720

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2002, BY WATER YEAR (WY)

MEAN	351.0	342.4	1076	559.9	202.7	247.4
MAX	351	342	1076	560	203	247
(WY)	2002	2002	2002	2002	2002	2002
MIN	351	342	1076	560	203	247
(WY)	2002	2002	2002	2002	2002	2002

SUMMARY STATISTICS	FOR 2002 WATER YEAR		
HIGHEST DAILY MEAN	2980	Jun	2
LOWEST DAILY MEAN	131	Jul	8
MAXIMUM PEAK FLOW	3940	Jun	2
MAXIMUM PEAK STAGE	9.42	Jun	2
INSTANTANEOUS LOW FLOW	a97	Jul	7

a--Gage height, 3.32 ft.
e--Estimated.

MADISON RIVER BASIN

06041000 MADISON RIVER BELOW ENNIS LAKE, NEAR MCALLISTER, MT

LOCATION.--Lat 45°29'25", long 111°38'00" (NAD 27), in SW$^1/_4$SE$^1/_4$NW$^1/_4$ sec.17, T.4 S., R.1 E., Madison County, Hydrologic Unit 10020007, on right bank 500 ft downstream from Madison powerplant, 1.5 mi downstream from Ennis Lake, 5.7 mi northeast of McAllister, and at river mile 38.8.
DRAINAGE AREA.--2,186 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1901 to December 1905, October 1906 to current year. Prior to October 1938 adjusted monthly runoff only, published in WSP 1309. Published as "below Madison Reservoir" 1938-49. Records published as "near Red Bluff" 1890-94 and as "near Norris" 1910 are not equivalent and are published as "near Norris" in WSP 1309.
REVISED RECORDS.--WSP 1559: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 4,689.03 ft (levels by U.S. Army Corps of Engineers) (NGVD 29). Prior to May 7, 1941, nonrecording gage in wooden stilling well at present site at different datum. May 7, 1941, to Jan. 13, 1945, nonrecording gages in concrete stilling well at present site and datum.
REMARKS.--Water-discharge records good. Flow regulated by Hebgen Lake (station number 06038000) and Ennis Lake (station number 06040500). Diversions for irrigation of about 23,000 acres upstream from station. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1150	1230	1210	1330	1190	1160	1440	1140	3600	1960	1250	1130
2	1160	1370	1320	1320	1180	1160	1380	1170	4300	1700	1230	1110
3	1170	1480	1370	1270	1140	1150	1320	1150	4310	1560	1210	1120
4	1170	1470	1360	1210	1130	1150	1320	1140	3420	1560	1210	1130
5	1170	1490	1350	1210	1160	1140	1310	1140	2720	1550	1280	1130
6	1200	1480	1350	1270	1180	1160	1290	1150	2340	1550	1190	1130
7	1240	1410	1350	1380	1180	1160	1290	1160	2640	1520	1130	1220
8	1250	1380	1350	1440	1180	1150	1300	1160	2850	1480	1130	1270
9	1350	1340	1350	1440	1180	1140	1300	1150	2950	1510	1150	1260
10	1430	1330	1350	1490	1180	1140	1300	1150	2460	1490	1160	1250
11	1430	1330	1350	1480	1180	1130	1330	1140	1990	1670	1160	1250
12	1430	1340	1350	1420	1180	1150	1300	1140	1870	1670	1150	1250
13	1420	1330	1330	1360	1180	1300	1300	1140	1870	1660	1140	1170
14	1410	1330	1330	1360	1180	1350	1290	1150	1790	1650	1120	1130
15	1410	1330	1340	1360	1170	1350	1210	1160	1660	1640	1110	1130
16	1410	1320	1330	1290	1170	1350	1170	1170	1900	1610	1120	1130
17	1380	1330	1250	1240	1170	1260	1170	1170	2080	1620	1130	1140
18	1360	1330	1130	1240	1180	1190	1200	1170	2080	1630	1130	1200
19	1370	1320	1180	1240	1200	1180	1410	1180	2290	1470	1130	1250
20	1370	1330	1180	1240	1270	1180	1420	1400	2400	1680	1130	1250
21	1370	1330	1200	1210	1330	1210	1400	1820	2010	1480	1120	1240
22	1360	1330	1210	1190	1370	1190	1380	2510	1680	1510	1120	1260
23	1360	1330	1210	1210	1370	1190	1380	2320	1640	1690	1120	1240
24	1240	1330	1220	1210	1370	1290	1310	1850	2090	1770	1130	1240
25	1190	1330	1220	1200	1360	1360	1200	1590	2780	1420	1130	1240
26	1210	1480	1210	1200	1290	1360	1140	1560	2030	1530	1120	1240
27	1210	1340	1210	1210	1180	1380	1150	1560	1690	1540	1120	1240
28	1220	1340	1210	1210	1160	1380	1140	1560	1890	1460	1140	1250
29	1230	1360	1210	1190	---	1370	1140	1570	1990	1490	1140	1250
30	1230	1360	1260	1190	---	1370	1140	1700	2090	1330	1130	1250
31	1230	---	1330	1190	---	1370	---	2320	---	1240	1130	---
TOTAL	40130	40800	39620	39800	34010	38420	38430	43690	71410	48640	35660	36100
MEAN	1295	1360	1278	1284	1215	1239	1281	1409	2380	1569	1150	1203
MAX	1430	1490	1370	1490	1370	1380	1440	2510	4310	1960	1280	1270
MIN	1150	1230	1130	1190	1130	1130	1140	1140	1640	1240	1110	1110
AC-FT	79600	80930	78590	78940	67460	76210	76230	86660	141600	96480	70730	71600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2002, BY WATER YEAR (WY)

MEAN	1938	2007	1523	1394	1397	1449	1560	2020	3000	1865	1530	1624
MAX	2963	3318	3243	2061	2336	2087	3008	4189	6135	3454	2339	2298
(WY)	1960	1960	1960	1999	1943	1939	1948	1969	1997	1965	1971	1972
MIN	810	961	974	767	781	891	717	859	1122	972	1044	934
(WY)	1942	1941	1940	1940	1940	1941	1941	1961	1992	1961	1961	1941

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1939 - 2002	
ANNUAL TOTAL	484600		506710			
ANNUAL MEAN	1328		1388		1775	
HIGHEST ANNUAL MEAN					2530	1997
LOWEST ANNUAL MEAN					1047	1941
HIGHEST DAILY MEAN	2410	May 16	4310	Jun 3	9210	Jun 11 1970
LOWEST DAILY MEAN	1100	Apr 10	1110	Aug 15	210	Aug 25 1959
ANNUAL SEVEN-DAY MINIMUM	1120	Apr 9	1120	Aug 21	390	Aug 23 1959
MAXIMUM PEAK FLOW			5180	Jun 2	9550	Jun 12 1970
MAXIMUM PEAK STAGE			5.96	Jun 2	8.01	Jun 12 1970
ANNUAL RUNOFF (AC-FT)	961200		1005000		1286000	
10 PERCENT EXCEEDS	1540		1690		2700	
50 PERCENT EXCEEDS	1290		1280		1570	
90 PERCENT EXCEEDS	1140		1140		1090	

06041000 MADISON RIVER BELOW ENNIS LAKE, NEAR MCALLISTER, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972-73, 1977 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: June 1977 to current year.

INSTRUMENTATION.--Temperature recorder since June 21, 1977.

REMARKS.--Missing temperature data for May 7-9 due to equipment problems. Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 24.0°C, several days in July in 1991, 1998 and 2002; minimum, 0.0°C several to many day during winter months most years.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 24.0°C, July 14; minimum, 0.0°C, Nov. 28 to Dec. 8.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	15.5	14.5	15.0	6.5	6.0	6.0	0.0	0.0	0.0	1.5	1.0	1.0
2	15.5	15.0	15.0	6.0	6.0	6.0	0.5	0.0	0.0	1.0	1.0	1.0
3	15.0	14.5	15.0	6.5	6.0	6.0	0.5	0.0	0.5	1.0	1.0	1.0
4	14.5	13.0	14.0	7.0	6.0	6.5	0.5	0.0	0.0	1.0	1.0	1.0
5	13.0	12.0	12.5	7.0	6.0	6.5	0.5	0.0	0.5	1.0	0.5	1.0
6	12.0	11.5	12.0	6.5	6.0	6.0	0.5	0.0	0.5	1.0	0.5	1.0
7	12.0	11.0	11.5	6.0	5.5	6.0	0.5	0.0	0.5	1.0	1.0	1.0
8	11.0	10.5	11.0	6.0	5.5	5.5	0.5	0.0	0.5	1.0	1.0	1.0
9	10.5	10.0	10.0	5.5	5.0	5.0	0.5	0.5	0.5	1.0	0.5	1.0
10	10.5	9.5	10.0	5.0	5.0	5.0	0.5	0.5	0.5	1.0	0.5	1.0
11	9.5	8.0	9.0	5.0	4.5	5.0	1.0	0.5	0.5	1.0	1.0	1.0
12	8.0	7.0	7.5	5.0	4.5	5.0	1.0	0.5	0.5	1.0	1.0	1.0
13	7.0	6.5	7.0	5.0	4.5	5.0	1.0	0.5	0.5	1.5	1.0	1.0
14	7.5	7.0	7.0	5.0	4.5	4.5	1.0	1.0	1.0	1.5	1.0	1.0
15	7.0	6.5	7.0	5.0	4.5	5.0	1.0	1.0	1.0	1.5	1.0	1.5
16	7.0	6.5	6.5	5.0	4.5	5.0	1.0	0.5	1.0	1.5	1.0	1.5
17	7.0	6.5	7.0	5.0	5.0	5.0	1.5	1.0	1.0	1.5	1.5	1.5
18	7.0	6.0	6.5	5.0	5.0	5.0	1.0	1.0	1.0	1.5	1.0	1.5
19	6.5	6.0	6.0	5.0	4.0	4.5	1.5	1.0	1.5	1.5	1.0	1.0
20	6.5	6.0	6.5	4.5	4.0	4.5	1.5	1.0	1.0	1.5	1.0	1.5
21	6.5	6.5	6.5	4.5	4.0	4.5	1.5	1.0	1.5	1.5	1.0	1.5
22	6.5	6.0	6.5	4.0	4.0	4.0	1.5	1.0	1.0	1.5	1.0	1.5
23	6.5	6.0	6.5	4.0	3.5	4.0	1.0	1.0	1.0	1.0	1.0	1.0
24	6.5	5.5	6.0	3.5	3.5	3.5	1.0	1.0	1.0	1.0	1.0	1.0
25	5.5	5.0	5.5	3.5	3.0	3.0	1.5	1.0	1.0	1.0	1.0	1.0
26	5.0	4.5	5.0	3.0	2.0	2.5	1.5	1.0	1.5	1.5	1.0	1.0
27	5.5	4.5	5.0	2.0	1.5	2.0	1.5	1.0	1.5	1.5	1.0	1.5
28	5.5	5.5	5.5	1.5	0.0	1.0	1.5	1.5	1.5	1.5	1.0	1.0
29	5.5	5.5	5.5	0.0	0.0	0.0	1.5	1.5	1.5	1.5	1.0	1.0
30	6.0	5.5	6.0	0.0	0.0	0.0	1.5	1.5	1.5	1.5	1.0	1.5
31	6.0	6.0	6.0	---	---	---	1.5	1.5	1.5	2.0	1.5	1.5
MONTH	15.5	4.5	8.5	7.0	0.0	4.5	1.5	0.0	1.0	2.0	0.5	1.0

MADISON RIVER BASIN

06041000 MADISON RIVER BELOW ENNIS LAKE, NEAR MCALLISTER, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.5	1.5	1.5	2.0	1.5	1.5	4.5	4.0	4.5	9.0	8.5	8.5
2	2.0	1.5	1.5	2.0	1.0	1.5	4.0	3.0	3.5	9.5	7.5	8.5
3	2.0	1.5	2.0	2.0	1.0	1.5	5.0	4.0	4.5	10.0	9.5	9.5
4	2.5	2.0	2.0	1.5	1.0	1.5	5.5	4.5	5.0	10.5	10.0	10.0
5	2.5	2.0	2.5	2.0	1.0	1.5	5.5	4.5	5.0	10.0	9.5	10.0
6	2.5	2.0	2.5	1.5	1.0	1.0	5.5	5.0	5.5	10.0	9.5	9.5
7	3.0	2.5	2.5	1.0	0.5	1.0	5.5	4.5	5.0	---	---	---
8	3.0	2.5	2.5	1.5	1.0	1.0	4.5	4.0	4.0	---	---	---
9	2.5	2.5	2.5	1.5	1.0	1.0	4.0	3.5	4.0	---	---	---
10	2.5	2.0	2.5	1.5	1.0	1.5	4.5	4.0	4.0	8.5	8.0	8.0
11	2.5	2.0	2.5	1.5	1.0	1.5	4.0	3.5	3.5	8.5	8.0	8.5
12	2.5	2.0	2.5	1.5	1.5	1.5	4.0	3.0	3.5	10.5	8.5	9.5
13	2.5	2.0	2.5	2.0	1.5	1.5	6.0	3.5	4.0	12.0	9.5	10.5
14	3.0	2.5	2.5	2.0	2.0	2.0	7.5	6.0	7.0	13.0	12.0	13.0
15	3.0	2.5	2.5	2.0	1.5	2.0	7.5	5.5	6.5	12.5	12.0	12.5
16	3.0	2.5	3.0	2.0	1.5	2.0	6.0	5.5	5.5	12.5	11.5	12.0
17	3.5	3.0	3.0	2.0	1.5	2.0	6.0	5.5	6.0	13.0	12.0	12.5
18	3.5	3.0	3.0	2.5	1.5	2.0	5.5	5.0	5.5	13.5	12.5	13.0
19	3.0	2.5	2.5	2.0	1.5	2.0	5.0	4.0	4.5	14.0	12.5	13.5
20	2.5	2.0	2.5	2.0	1.0	1.5	4.5	3.5	4.0	15.5	14.0	15.0
21	2.5	2.0	2.0	2.0	1.0	1.5	5.0	4.5	5.0	15.5	14.5	15.0
22	3.0	2.0	2.5	2.5	1.5	2.0	6.5	5.0	5.5	14.5	13.0	14.0
23	3.0	2.5	2.5	2.5	2.0	2.5	7.0	6.5	6.5	13.0	12.5	12.5
24	2.5	2.0	2.0	3.0	2.5	2.5	7.0	6.0	6.5	13.0	11.5	12.0
25	2.5	1.5	2.0	3.0	2.0	2.5	7.0	6.5	7.0	13.0	12.5	12.5
26	2.5	2.0	2.0	3.0	2.0	2.5	8.5	7.0	8.0	13.0	13.0	13.0
27	2.5	2.0	2.0	3.0	2.5	2.5	8.5	7.5	8.0	14.0	13.0	13.0
28	2.0	1.5	2.0	3.0	2.5	3.0	8.0	7.5	7.5	14.5	14.0	14.0
29	---	---	---	3.5	2.5	3.0	9.0	8.0	8.5	15.5	14.5	15.0
30	---	---	---	4.0	3.0	3.5	9.5	8.5	9.0	16.0	15.5	15.5
31	---	---	---	4.5	3.5	4.0	---	---	---	17.0	15.5	16.0
MONTH	3.5	1.5	2.5	4.5	0.5	2.0	9.5	3.0	5.5	---	---	---

		JUNE			JULY			AUGUST			SEPTEMBER	
1	17.5	16.0	16.5	21.0	20.5	21.0	20.5	20.0	20.0	17.5	17.0	17.5
2	16.5	15.5	16.0	21.0	20.0	20.5	20.0	19.5	20.0	18.0	17.0	17.5
3	16.0	15.0	15.5	21.0	20.0	20.5	19.5	19.0	19.5	18.5	17.5	18.0
4	15.5	15.0	15.0	20.5	19.5	20.0	19.5	19.0	19.5	18.5	18.0	18.0
5	16.0	13.5	14.5	20.5	20.0	20.0	19.5	19.0	19.0	18.0	17.5	18.0
6	16.5	15.0	15.5	21.0	20.0	20.5	19.5	19.0	19.5	17.5	17.0	17.0
7	16.5	15.0	15.5	21.0	20.5	20.5	19.5	18.5	19.0	17.0	16.0	16.5
8	16.5	14.5	15.0	21.0	20.5	20.5	18.5	18.0	18.5	16.5	16.0	16.0
9	14.5	13.5	13.5	21.0	20.5	21.0	18.0	17.5	17.5	16.5	16.0	16.0
10	13.5	12.5	12.5	21.5	20.5	21.0	18.5	17.5	18.0	16.5	16.0	16.5
11	13.0	12.0	12.5	22.0	21.0	21.5	19.0	18.0	18.5	16.0	15.5	15.5
12	13.0	12.5	12.5	22.5	21.0	22.0	18.5	18.0	18.0	16.0	15.5	16.0
13	13.0	12.0	12.5	23.5	22.0	22.5	19.0	17.5	18.0	16.5	15.5	16.0
14	15.0	12.5	13.5	24.0	22.5	23.5	19.5	19.0	19.0	17.5	16.5	17.0
15	17.0	13.0	15.0	23.5	23.5	23.5	19.0	19.0	19.0	17.5	17.0	17.5
16	18.0	16.0	16.5	23.5	23.0	23.5	19.0	18.5	19.0	17.5	17.0	17.0
17	18.0	16.5	17.0	23.5	22.5	23.0	18.5	18.0	18.5	17.0	16.0	16.5
18	17.5	17.0	17.0	23.5	23.0	23.0	19.0	18.0	18.5	16.0	16.0	16.0
19	17.0	16.0	16.5	23.5	22.5	23.0	18.5	18.0	18.5	16.0	15.5	16.0
20	17.5	16.5	17.0	23.0	22.0	22.5	18.5	17.5	18.0	15.5	15.5	15.5
21	17.5	16.5	17.0	22.5	21.5	22.0	18.0	17.5	17.5	15.5	14.5	15.0
22	17.5	16.5	16.5	22.0	21.5	21.5	17.5	17.0	17.5	15.0	14.0	14.5
23	18.0	16.5	17.0	22.5	21.0	21.5	17.5	17.0	17.0	14.5	14.0	14.5
24	19.0	17.5	18.0	21.5	20.5	21.0	17.5	17.0	17.0	14.5	14.0	14.5
25	19.5	18.5	19.0	21.5	21.0	21.0	18.0	17.0	17.5	14.0	13.0	13.5
26	20.5	18.0	19.0	21.5	20.0	20.5	18.0	17.5	18.0	13.0	12.5	13.0
27	21.0	19.0	20.5	20.5	20.0	20.0	17.5	17.0	17.5	13.0	12.0	12.5
28	21.0	20.0	20.5	20.0	19.5	20.0	17.0	17.0	17.0	12.0	11.5	11.5
29	21.0	20.5	20.5	21.0	19.0	20.5	17.5	16.5	17.0	11.5	11.0	11.5
30	21.0	20.0	20.5	21.0	20.5	21.0	17.5	17.0	17.5	11.5	11.0	11.0
31	---	---	---	21.0	20.5	21.0	17.5	17.0	17.5	---	---	---
MONTH	21.0	12.0	16.5	24.0	19.0	21.5	20.5	16.5	18.5	18.5	11.0	15.5

GALLATIN RIVER BASIN

06043500 GALLATIN RIVER NEAR GALLATIN GATEWAY, MT

LOCATION.--Lat 45°29'51", long 111°16'11" (NAD 27), in SE$^1/_4$SE$^1/_4$SE$^1/_4$ sec.7, T.4 S., R.4 E., Gallatin County, Hydrologic Unit 10020008, on left bank 0.3 mi downstream from Spanish Creek, 7.3 mi south of Gallatin Gateway and at river mile 47.7.

DRAINAGE AREA.--825 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1889 to September 1894, June 1930 to September 1969, annual maximum, water years 1970-71, October 1971 to September 1981, October 1984 to current year. Monthly discharge only for some periods, published in WSP 1309. Published as West Gallatin River near Bozeman 1889-94.

REVISED RECORDS.--WSP 1389: 1892(M), 1893-94. WSP 1559: Drainage area. WDR MT-85-1 (M), WDR MT-02-1: 1970-71 (M).

GAGE.--Water-stage recorder. Datum of gage is 5,167.67 ft (NGVD 29). Prior to Oct. 20, 1932, nonrecording gages at several different sites and datums within 0.8 mi of present site.

REMARKS.--Water-discharge records good. Diversions for irrigation of about 1,400 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	307	371	214	230	222	225	267	424	4250	1620	529	389
2	305	343	232	219	230	224	246	403	4960	1490	526	377
3	304	329	254	242	224	223	240	465	4030	1390	538	367
4	302	314	242	245	237	227	257	473	3320	1330	592	360
5	302	315	219	233	229	231	272	520	3100	1250	530	354
6	303	324	236	229	227	230	296	507	3550	1170	501	406
7	309	339	246	231	227	231	305	521	3490	1110	488	514
8	306	293	229	232	231	227	292	486	3250	1090	518	465
9	340	290	232	232	232	212	298	442	2750	1020	552	410
10	324	295	231	222	224	223	309	457	2410	948	506	392
11	338	301	199	211	222	225	308	446	2130	899	485	382
12	321	304	221	223	225	229	306	487	1970	859	476	376
13	348	309	219	225	225	229	339	589	1880	829	470	369
14	353	307	253	228	232	226	447	789	1940	830	453	361
15	343	301	250	231	227	213	555	905	2170	788	444	355
16	323	295	226	209	229	215	444	837	2430	806	434	351
17	345	297	237	210	237	216	384	842	2760	794	425	370
18	333	299	244	227	243	216	359	984	3170	747	422	434
19	330	272	243	226	240	222	324	1370	3190	735	418	400
20	365	277	240	231	238	221	305	1940	2540	727	414	379
21	349	307	243	245	227	217	307	2290	2330	708	414	366
22	336	302	240	240	228	226	318	1980	2410	667	415	363
23	347	299	213	225	238	236	334	1530	2350	649	405	359
24	327	285	197	229	239	237	318	1310	2520	630	410	354
25	296	287	193	227	205	235	321	1230	2400	630	409	353
26	308	288	204	228	190	240	334	1270	2280	656	396	353
27	322	269	215	236	230	244	345	1450	2140	634	403	353
28	333	201	230	235	238	244	339	1710	2010	652	417	362
29	327	230	247	221	---	240	354	2150	1930	590	403	354
30	335	247	243	216	---	249	421	2990	1780	561	396	370
31	375	---	241	222	---	255	---	3930	---	546	390	---
TOTAL	10156	8890	7133	7060	6396	7088	9944	35727	81440	27355	14179	11398
MEAN	327.6	296.3	230.1	227.7	228.4	228.6	331.5	1152	2715	882.4	457.4	379.9
MAX	375	371	254	245	243	255	555	3930	4960	1620	592	514
MIN	296	201	193	209	190	212	240	403	1780	546	390	351
AC-FT	20140	17630	14150	14000	12690	14060	19720	70860	161500	54260	28120	22610

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1889 - 2002, BY WATER YEAR (WY)*

MEAN	456.0	383.2	321.6	308.1	304.7	311.8	502.0	1803	2945	1294	611.2	492.3
MAX	743	589	549	468	430	465	899	3135	5110	3669	1162	788
(WY)	1893	1960	1893	1893	1893	1960	1990	1976	1997	1975	1993	1968
MIN	238	247	214	200	220	206	263	873	643	345	269	233
(WY)	1932	1937	1935	1931	1935	1935	1937	1953	1934	1934	1934	1931

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1889 - 2002*	
ANNUAL TOTAL	205146		226766			
ANNUAL MEAN	562.0		621.3		813.6	
HIGHEST ANNUAL MEAN					1184	1976
LOWEST ANNUAL MEAN					408	1934
HIGHEST DAILY MEAN	3480	May 15	4960	Jun 2	8970	Jun 17 1974
LOWEST DAILY MEAN	193	Dec 25	190	Feb 26	174	Nov 21 1931
ANNUAL SEVEN-DAY MINIMUM	213	Dec 22	213	Dec 22	182	Jan 18 1931
MAXIMUM PEAK FLOW			5260	Jun 2	b9160	Jun 2 1997
MAXIMUM PEAK STAGE			5.03	Jun 2	7.38	Jun 17 1974
INSTANTANEOUS LOW FLOW			a168	Dec 11	c117	Jan 19 1935
ANNUAL RUNOFF (AC-FT)	406900		449800		589400	
10 PERCENT EXCEEDS	1470		1740		2040	
50 PERCENT EXCEEDS	323		330		430	
90 PERCENT EXCEEDS	255		224		268	

*--During periods of operation (August 1889 to September 1894, June 1930 to September 1969, October 1971 to September 1981, October 1984 to current year).
a--Gage height, 0.97 ft, result of freezeup.
b--Gage height, 6.71 ft.
c--Gage height, 0.68 ft, result of freezeup.

GALLATIN RIVER BASIN

06043500 GALLATIN RIVER NEAR GALLATIN GATEWAY, MT

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: (Seasonal records) May 2001 to current year.

INSTRUMENTATION.--Temperature probe installed May 3, 2001.

REMARKS--Unpublished records of instantaneous specific conductance and temperature data are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records): Maximum, 19.5°C, July 13, 2002; minimum, 0.0°C, April 2, 2002.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum, 19.5°C, July 13; minimum, 0.0°C, April 2.

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	5.0	2.0	3.5	8.5	5.0	6.5	9.0	5.5	7.5	15.0	10.0	12.5
2	3.0	0.0	1.5	10.5	4.5	7.5	7.5	5.0	6.0	15.0	9.5	12.5
3	4.5	0.5	2.5	9.0	7.0	8.0	7.0	4.5	6.0	14.5	10.5	12.5
4	6.0	2.0	4.0	9.5	4.5	7.0	8.5	4.5	6.5	16.5	11.0	13.5
5	7.5	2.5	5.0	9.0	6.5	7.5	10.0	6.0	8.0	16.0	11.0	13.5
6	7.0	4.5	5.5	7.0	5.0	6.0	10.5	6.0	8.5	16.0	11.5	13.5
7	7.0	4.5	6.0	6.0	1.0	4.0	10.0	5.5	8.0	15.0	11.5	13.5
8	8.5	4.5	6.5	7.0	1.0	3.5	9.0	5.0	7.0	18.0	12.0	15.0
9	7.0	5.5	6.0	6.5	2.5	4.5	7.0	5.0	6.0	16.5	11.0	14.0
10	7.5	5.0	6.5	8.5	5.0	6.5	5.0	4.0	4.5	17.0	10.5	14.0
11	8.0	4.5	6.0	10.5	6.0	8.0	8.5	4.0	6.0	18.0	11.0	14.5
12	9.5	5.5	7.5	11.5	6.5	9.0	9.0	6.0	7.5	18.5	11.5	15.0
13	9.0	6.5	7.5	12.0	7.0	9.5	11.5	6.0	8.5	19.5	13.5	16.5
14	9.5	6.5	8.0	11.0	7.5	9.0	12.5	7.0	9.5	19.0	14.0	16.5
15	6.5	2.5	4.0	9.0	6.0	7.5	12.5	8.0	10.0	18.5	14.0	16.0
16	6.5	2.0	4.0	9.5	5.5	7.5	12.0	7.5	9.5	16.5	14.0	15.5
17	5.0	3.0	4.0	10.5	6.0	8.5	10.5	8.0	9.5	18.5	13.0	15.5
18	4.0	3.0	3.5	11.0	7.0	9.0	9.0	7.5	8.5	17.0	13.5	15.5
19	6.5	2.0	4.0	12.0	7.5	9.5	9.0	5.0	7.0	16.0	13.0	14.5
20	6.5	2.5	4.5	10.5	7.0	8.5	10.5	6.0	8.5	16.0	12.5	14.5
21	7.0	2.5	4.5	9.0	5.5	7.0	12.0	7.5	9.5	18.0	12.5	15.0
22	10.0	4.0	7.0	6.5	3.0	4.5	10.5	9.0	9.5	17.5	12.5	15.0
23	8.5	4.5	6.0	6.5	2.5	4.5	13.0	8.5	10.5	17.0	12.5	15.0
24	8.0	3.0	5.5	9.5	5.0	7.0	12.5	8.5	10.5	18.5	12.5	15.5
25	7.5	3.5	5.5	9.0	5.0	7.5	14.0	9.0	11.5	17.5	14.0	15.0
26	9.0	5.0	6.5	8.5	6.5	7.5	14.0	10.0	12.0	15.0	11.5	13.5
27	7.0	5.5	6.0	11.0	6.0	8.5	14.5	10.5	12.5	14.0	11.5	12.5
28	9.5	4.5	6.5	9.5	7.0	8.0	13.5	10.5	12.0	16.0	10.0	13.0
29	10.5	5.0	8.0	11.0	6.5	8.5	12.5	10.0	11.5	17.5	11.5	14.5
30	8.5	6.5	7.0	9.5	6.0	7.5	14.5	9.0	11.5	16.0	12.0	14.5
31	---	---	---	10.5	5.0	7.5	---	---	---	15.5	12.0	14.0
MONTH	10.5	0.0	5.5	12.0	1.0	7.5	14.5	4.0	9.0	19.5	9.5	14.5

GALLATIN RIVER BASIN

06043500 GALLATIN RIVER NEAR GALLATIN GATEWAY, MT

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
	AUGUST			SEPTEMBER		
1	16.0	10.0	13.0	14.5	10.5	12.5
2	14.0	11.0	12.5	16.0	11.5	13.5
3	14.5	10.5	12.5	16.0	12.0	14.0
4	16.5	11.5	14.0	15.5	12.0	13.5
5	17.0	11.5	14.5	14.0	11.5	13.0
6	17.0	12.0	14.5	13.0	11.0	11.5
7	16.0	12.5	14.0	11.5	10.0	11.0
8	14.5	11.0	12.5	13.5	9.5	11.0
9	13.5	8.5	11.0	13.0	9.0	11.0
10	16.0	9.5	13.0	13.0	8.5	11.0
11	14.5	11.5	13.5	13.5	9.0	11.5
12	15.0	11.5	13.5	13.5	9.5	11.5
13	15.5	10.0	13.0	13.0	9.0	11.0
14	16.5	11.0	14.0	13.0	8.5	11.0
15	16.5	11.5	14.0	13.0	9.5	11.5
16	16.0	11.5	14.0	12.5	10.0	11.5
17	15.0	10.0	12.5	12.0	10.0	11.0
18	15.0	10.5	12.5	10.5	9.0	10.0
19	14.5	10.0	12.5	12.0	8.0	10.0
20	15.0	10.5	13.0	11.0	8.5	9.5
21	13.5	10.5	12.0	9.5	7.0	8.5
22	14.0	10.0	12.0	9.5	5.0	7.5
23	13.5	10.0	12.0	10.5	6.5	8.5
24	12.5	10.0	11.5	11.0	8.0	9.5
25	14.5	9.5	12.0	10.5	8.5	9.5
26	14.0	10.5	12.5	9.5	6.5	8.0
27	12.5	10.0	11.5	8.5	7.5	8.0
28	13.5	9.5	12.0	10.0	6.5	8.0
29	14.0	10.5	12.5	9.5	7.0	8.5
30	14.5	10.5	12.5	9.0	7.0	8.0
31	14.0	12.0	13.0	---	---	---
MONTH	17.0	8.5	13.0	16.0	5.0	10.5

GALLATIN RIVER BASIN

06048700 EAST GALLATIN RIVER BELOW BRIDGER CREEK, NEAR BOZEMAN, MT

LOCATION.--Lat 45°43'30", long 111°04'08" (NAD 27), in NE$^1/_4$SW$^1/_4$NE$^1/_4$ sec.26, T.1 S., R.5 E., Gallatin County, Hydrologic Unit 10020008, on left bank 600 ft downstream from Bozeman Wastewater Treatment Plant, 0.2 mi downstream from bridge on Montana Secondary Highway 411, 3.2 mi downstream from Bridger Creek, 2.0 mi northwest of Bozeman, and at river mile 33.0.

DRAINAGE AREA.--226 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 2001 to September 2002.

GAGE.--Water-stage recorder. Datum of gage is 4,610 ft (NGVD 1920).

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Some regulation or diurnal effect from wastewater treatment plant upstream. Numerous diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	48	35	e31	e36	e32	65	93	314	131	39	30
2	23	48	36	e33	e35	e30	50	91	385	119	39	28
3	23	46	38	36	e34	e32	46	99	447	111	41	26
4	25	44	37	37	e35	34	51	104	367	109	59	24
5	30	46	35	36	e35	37	64	104	316	103	53	23
6	33	45	35	36	e36	33	80	117	281	91	43	37
7	30	44	35	38	37	e28	90	126	247	94	37	53
8	31	43	35	40	35	e30	85	118	247	98	45	46
9	34	41	36	40	34	e33	87	112	256	82	60	40
10	35	43	35	e37	e33	35	102	124	326	75	49	37
11	39	41	30	38	e34	37	110	121	374	69	43	34
12	45	42	31	37	e33	39	105	123	346	67	41	34
13	41	42	31	37	e33	36	114	131	336	62	38	32
14	48	43	34	36	35	35	178	158	310	59	33	31
15	57	42	e33	e34	e33	33	261	185	287	60	32	33
16	46	41	34	e34	e33	33	169	173	262	61	31	31
17	42	40	35	e35	34	32	141	158	259	61	34	35
18	42	39	35	e35	33	34	123	163	252	54	35	52
19	42	37	34	e36	32	34	105	198	298	54	34	48
20	51	36	34	38	31	31	99	256	249	56	31	38
21	54	40	e33	37	30	28	94	278	216	57	29	36
22	47	42	e33	e36	33	37	93	431	203	54	32	36
23	47	42	e32	37	35	36	100	343	204	51	29	36
24	51	42	e30	37	31	37	93	282	191	48	30	36
25	48	41	e28	37	e29	36	86	305	181	45	33	35
26	46	39	e27	37	33	46	86	356	171	54	29	38
27	46	36	e28	37	36	56	86	412	155	58	30	38
28	45	33	29	e35	35	50	82	397	150	67	34	41
29	45	35	31	e32	---	48	80	358	158	54	33	41
30	44	36	33	e33	---	50	88	320	152	45	34	45
31	46	---	e32	e35	---	56	---	342	---	41	32	---
TOTAL	1258	1237	1024	1117	943	1148	3013	6578	7940	2190	1162	1094
MEAN	40.58	41.23	33.03	36.03	33.68	37.03	100.4	212.2	264.7	70.65	37.48	36.47
MAX	57	48	38	40	37	56	261	431	447	131	60	53
MIN	22	33	27	31	29	28	46	91	150	41	29	23
AC-FT	2500	2450	2030	2220	1870	2280	5980	13050	15750	4340	2300	2170

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2002, BY WATER YEAR (WY)

MEAN	40.58	41.23	33.03	36.03	33.68	37.03	100.4	212.2	264.7	70.65	37.48	36.47
MAX	40.6	41.2	33.0	36.0	33.7	37.0	100	212	265	70.6	37.5	36.5
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
MIN	40.6	41.2	33.0	36.0	33.7	37.0	100	212	265	70.6	37.5	36.5
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002

SUMMARY STATISTICS	FOR 2002 WATER YEAR	
ANNUAL TOTAL	28704	
ANNUAL MEAN	78.64	
HIGHEST DAILY MEAN	447	Jun 3
LOWEST DAILY MEAN	22	Oct 1
ANNUAL SEVEN-DAY MINIMUM	27	Oct 1
MAXIMUM PEAK FLOW	500	May 22
MAXIMUM PEAK STAGE	3.64	May 22
INSTANTANEOUS LOW FLOW	a12	Feb 25
ANNUAL RUNOFF (AC-FT)	56930	
10 PERCENT EXCEEDS	200	
50 PERCENT EXCEEDS	41	
90 PERCENT EXCEEDS	31	

a--Gage height, 1.55 ft, result of freezeup.
e--Estimated.

06048700 EAST GALLATIN RIVER BELOW BRIDGER CREEK, NEAR BOZEMAN, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 2001 to September 2002.

INSTRUMENTATION.--Temperature recorder installed Sept. 27, 2001.

REMARKS--Missing temperature data for Mar. 26 and 27 due to equipment problems. Unpublished records of instantaneous specific conductance and water temperature are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 25.5°C, July 13, 2002; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 25.5°C, July 13; minimum, 0.0°C many days November through April.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	15.5	10.0	12.5	7.5	6.0	6.5	2.5	0.0	0.5	1.0	0.0	0.0
2	14.5	10.0	12.0	8.0	5.5	7.0	2.5	0.0	0.5	1.0	0.0	0.0
3	14.0	9.5	11.5	8.0	5.0	6.0	3.5	1.5	2.0	1.0	0.0	0.0
4	11.0	7.0	9.0	7.0	4.0	5.5	3.0	0.5	1.5	1.0	0.0	0.0
5	9.0	4.0	6.5	7.0	4.0	5.5	2.0	0.0	0.5	1.0	0.0	0.0
6	9.5	4.5	7.0	6.0	4.0	5.0	1.0	0.0	0.0	1.0	0.0	0.0
7	9.5	6.0	8.0	7.0	4.0	5.5	2.5	0.5	1.0	1.0	0.0	0.0
8	11.0	8.0	9.0	4.5	1.5	3.0	2.5	0.0	0.5	1.0	0.0	0.0
9	9.0	7.5	8.5	4.5	1.5	3.0	1.5	0.0	0.5	1.0	0.0	0.0
10	10.0	6.0	8.0	5.0	1.5	3.0	1.5	0.0	0.5	1.0	0.0	0.0
11	8.5	6.0	7.5	5.0	1.5	3.0	1.0	0.0	0.0	1.0	0.0	0.0
12	6.5	5.0	5.5	5.5	2.5	3.5	1.0	0.0	0.0	2.0	0.0	0.5
13	9.0	6.0	7.0	6.0	3.5	4.5	1.0	0.0	0.0	2.0	0.5	1.0
14	7.0	6.0	6.5	6.0	3.5	4.5	1.5	0.0	0.5	2.0	0.0	0.5
15	8.0	4.0	6.0	7.0	4.0	5.0	1.0	0.0	0.0	1.0	0.0	0.0
16	8.0	4.5	6.0	6.0	4.0	5.0	1.5	0.0	0.0	1.0	0.0	0.0
17	9.0	6.5	7.5	6.5	4.0	5.0	1.5	0.0	0.5	1.0	0.0	0.0
18	7.0	4.5	6.0	6.0	2.5	5.0	1.0	0.0	0.0	1.0	0.0	0.0
19	7.5	6.0	6.5	3.5	0.5	2.0	1.5	0.0	0.5	1.0	0.0	0.0
20	9.0	6.5	7.5	4.5	1.0	2.5	1.0	0.0	0.0	1.0	0.0	0.0
21	7.5	5.5	6.5	5.0	3.0	4.0	1.0	0.0	0.0	1.0	0.0	0.0
22	8.0	5.5	6.5	5.5	3.0	4.0	1.0	0.0	0.0	1.0	0.0	0.0
23	7.5	5.0	6.5	5.0	3.5	4.0	1.5	0.0	0.0	1.0	0.0	0.0
24	5.5	3.5	4.5	4.5	2.5	3.5	1.0	0.0	0.0	1.0	0.0	0.0
25	4.5	2.5	3.5	3.0	1.0	2.0	1.0	0.0	0.0	2.0	0.0	1.0
26	6.5	2.5	4.0	2.5	0.5	1.0	1.0	0.0	0.0	3.5	1.0	2.0
27	7.5	4.0	5.5	2.0	0.0	1.0	1.0	0.0	0.0	2.5	0.5	1.0
28	7.5	6.5	7.0	1.0	0.0	0.0	1.0	0.0	0.0	1.5	0.0	0.5
29	8.0	6.0	7.0	1.5	0.0	0.5	1.0	0.0	0.0	1.0	0.0	0.0
30	8.5	6.5	7.5	3.0	1.0	1.5	1.0	0.0	0.0	1.0	0.0	0.0
31	9.0	7.5	8.0	---	---	---	1.0	0.0	0.0	1.0	0.0	0.0
MONTH	15.5	2.5	7.0	8.0	0.0	3.5	3.5	0.0	0.5	3.5	0.0	0.0

GALLATIN RIVER BASIN

06048700 EAST GALLATIN RIVER BELOW BRIDGER CREEK, NEAR BOZEMAN, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.0	0.0	0.0	1.0	0.0	0.0	5.5	1.5	4.0	10.0	6.0	7.5
2	1.0	0.0	0.0	1.0	0.0	0.0	5.0	0.0	2.0	12.5	5.0	8.5
3	1.5	0.0	0.0	1.0	0.0	0.0	6.0	0.0	3.0	11.5	8.5	10.0
4	1.0	0.0	0.0	1.0	0.0	0.0	9.0	2.0	5.0	11.0	6.0	8.5
5	1.0	0.0	0.0	1.0	0.0	0.5	9.5	3.5	7.0	9.5	7.5	8.0
6	1.5	0.0	0.0	1.5	0.0	0.5	9.0	5.5	7.0	8.5	5.5	7.0
7	1.0	0.0	0.5	1.0	0.0	0.0	7.0	4.0	5.5	7.0	2.0	4.5
8	2.0	0.0	0.5	1.0	0.0	0.0	9.5	3.5	6.5	8.5	1.0	4.5
9	3.0	0.0	1.0	1.0	0.0	0.0	8.0	5.5	6.5	9.5	3.0	6.5
10	1.5	0.0	0.5	1.0	0.0	0.0	8.0	5.0	6.5	9.5	6.0	7.5
11	2.5	0.0	0.5	3.0	0.0	1.0	8.5	4.0	6.5	12.5	6.0	9.0
12	1.5	0.0	0.5	3.5	1.0	2.0	8.5	5.5	7.0	14.5	7.5	11.0
13	1.5	0.0	0.0	4.0	0.0	1.5	10.0	5.5	7.5	15.0	8.5	12.0
14	1.5	0.0	0.5	4.5	0.5	2.0	9.0	6.5	8.0	13.5	10.0	11.5
15	1.5	0.0	0.0	5.5	0.0	2.5	6.5	2.5	3.5	11.0	7.5	9.5
16	1.0	0.0	0.0	4.5	0.0	2.0	7.5	1.5	4.0	12.5	7.0	9.5
17	3.5	0.0	1.5	2.5	0.0	1.0	6.0	3.5	5.0	13.0	7.5	10.0
18	4.5	0.5	2.0	2.0	0.0	0.5	5.0	3.5	4.5	14.0	9.0	11.5
19	3.5	0.5	1.5	4.5	0.0	2.0	8.0	1.5	4.5	17.0	10.5	13.5
20	4.5	0.5	2.0	3.5	0.0	1.5	8.0	2.5	5.5	15.0	11.0	13.5
21	3.5	0.0	1.5	1.5	0.0	0.5	8.0	3.5	5.5	14.0	10.5	11.5
22	4.5	2.0	3.0	4.0	0.0	1.5	12.0	5.5	8.5	10.5	4.5	6.5
23	3.5	0.5	2.5	6.5	0.5	3.0	10.0	4.5	7.0	8.5	3.0	5.5
24	1.5	0.0	0.0	5.5	2.0	3.5	8.5	2.5	5.0	12.0	6.5	9.0
25	1.5	0.0	0.0	5.5	0.5	3.0	8.5	3.0	5.5	11.0	7.0	9.5
26	1.0	0.0	0.0	---	---	---	10.0	3.5	6.5	11.0	8.5	10.0
27	1.0	0.0	0.0	---	---	---	7.5	5.0	6.0	13.0	7.5	10.5
28	1.0	0.0	0.0	5.5	3.0	4.0	10.5	4.0	7.0	12.5	9.0	10.5
29	---	---	---	6.0	3.0	4.5	12.5	5.0	8.5	14.0	9.0	11.0
30	---	---	---	6.5	3.5	5.0	10.5	7.5	9.0	14.5	10.5	12.5
31	---	---	---	6.5	2.5	5.0	---	---	---	15.0	10.0	12.0
MONTH	4.5	0.0	0.5	---	---	---	12.5	0.0	6.0	17.0	1.0	9.5

		JUNE			JULY			AUGUST			SEPTEMBER	
1	15.0	11.5	13.5	20.0	14.0	16.5	20.5	13.0	16.5	18.0	13.0	15.5
2	14.0	10.0	11.5	19.5	13.5	16.5	17.5	13.0	15.0	20.0	13.0	16.5
3	12.5	8.5	10.0	18.0	14.5	16.0	18.5	13.0	15.5	19.5	14.0	16.5
4	14.0	8.5	11.0	20.0	14.0	17.0	19.0	13.5	16.0	20.0	14.0	17.0
5	15.0	10.0	12.5	20.5	15.0	17.5	21.5	14.0	17.5	17.5	14.0	16.0
6	16.0	11.0	13.5	20.5	15.0	18.0	21.5	15.0	18.0	15.0	13.0	13.5
7	16.0	11.0	13.5	19.5	15.5	17.0	21.0	16.0	18.0	14.5	12.5	13.5
8	15.5	9.5	12.0	22.0	15.0	18.0	17.5	13.0	15.0	16.5	11.0	13.5
9	12.0	9.0	10.0	21.0	14.5	18.0	17.5	10.5	14.0	16.0	10.5	13.0
10	9.5	7.0	8.0	22.5	14.5	18.5	20.0	12.5	16.0	17.0	10.5	13.5
11	10.0	5.5	7.0	24.0	15.5	19.5	19.0	14.5	16.5	17.5	11.5	14.5
12	13.0	8.0	10.0	24.0	16.5	20.5	18.5	13.5	16.0	17.5	12.0	14.5
13	14.5	9.0	11.5	25.5	17.5	21.5	20.0	12.5	16.0	18.0	11.5	14.5
14	15.5	10.5	12.5	24.5	18.5	21.5	20.5	14.0	17.0	18.5	12.0	15.0
15	16.5	11.5	14.0	23.5	17.5	20.5	20.5	13.5	17.0	17.5	12.5	15.0
16	17.0	12.0	14.5	21.0	18.0	19.5	19.5	13.5	16.5	17.0	12.5	15.0
17	17.0	13.0	15.0	24.0	16.5	20.0	18.0	12.0	15.0	15.0	12.5	13.5
18	16.0	12.5	14.0	22.5	17.0	20.5	19.0	12.5	15.5	13.5	11.5	12.0
19	14.0	9.5	11.5	22.5	17.5	20.0	19.5	12.5	16.0	15.0	10.0	12.5
20	15.0	9.5	11.5	21.5	16.0	19.0	20.0	13.0	16.5	14.5	11.0	12.5
21	17.0	11.5	14.0	22.5	16.5	19.0	18.0	14.0	16.0	13.0	8.5	10.5
22	17.0	13.5	14.5	20.5	15.5	18.0	19.0	12.5	15.5	13.0	7.0	10.0
23	18.5	12.5	14.0	21.5	15.0	18.0	18.5	13.0	16.0	13.5	8.0	10.5
24	18.5	13.5	16.0	23.0	15.5	19.0	17.5	13.0	15.0	14.5	9.5	11.5
25	20.0	14.5	17.0	22.0	17.0	19.0	19.0	12.5	15.5	13.0	9.5	11.0
26	19.5	15.5	17.5	19.5	14.5	17.5	19.0	13.0	16.0	12.5	7.5	10.0
27	19.5	15.5	17.5	17.5	15.0	16.0	16.5	13.5	15.0	10.5	8.0	9.5
28	18.5	14.5	16.5	20.0	13.0	16.5	17.5	12.0	14.5	12.0	7.0	9.5
29	16.5	14.0	15.5	21.5	14.5	18.0	18.0	13.0	15.5	11.5	7.5	9.5
30	19.5	13.0	16.0	21.0	14.5	18.0	19.5	13.0	16.0	11.0	9.0	10.0
31	---	---	---	20.5	15.0	18.0	18.5	15.0	16.5	---	---	---
MONTH	20.0	5.5	13.0	25.5	13.0	18.5	21.5	10.5	16.0	20.0	7.0	13.0

GALLATIN RIVER BASIN

06052500 GALLATIN RIVER AT LOGAN, MT

LOCATION.--Lat 45°53'07", long 111°26'15" (NAD 27), in SE$^1/_4$NW$^1/_4$NE$^1/_4$ sec.35, T.2 N., R.2 E., Gallatin County, Hydrologic Unit 10020008, on right bank at former county road bridge site, 0.2 mi upstream from present county bridge, 0.5 mi west of Logan, and at river mile 6.3.

DRAINAGE AREA.--1,795 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1893 to December 1905, August 1928 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1389: 1898-99, 1903, 1905, 1929(M), 1935-36(M), 1938-39(M), 1941(M). WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,086.42 ft (NGVD 1920). Prior to Aug. 10, 1928, nonrecording gages at several sites within 0.5 mi of present site at various datums. Aug. 10, 1928, to Oct. 7, 1941, nonrecording gage at present site and datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Some regulation by Middle Creek Reservoir (station number 06049500). Diversions for irrigation of about 110,000 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	391	653	599	e570	e540	e520	575	592	4030	1410	279	324
2	388	644	593	e560	e530	e520	603	544	4990	1190	266	314
3	392	630	615	e580	e520	e520	585	513	5200	1060	265	306
4	402	621	620	e600	e530	e530	595	494	4020	944	294	298
5	450	612	585	579	e540	e530	618	477	3440	852	319	286
6	464	625	576	568	e550	e530	639	551	3500	739	284	318
7	465	624	608	582	561	e530	671	601	3580	639	262	410
8	467	617	597	592	548	e520	677	663	3440	648	280	448
9	493	586	590	578	534	e500	665	647	3220	590	340	414
10	523	590	593	558	498	e520	719	624	3060	510	341	396
11	551	589	e550	541	514	588	724	584	2780	404	325	385
12	577	604	558	546	514	666	707	554	2450	349	314	381
13	551	646	558	550	546	646	711	552	2240	300	302	380
14	552	644	579	552	539	583	760	584	2140	288	285	365
15	585	646	601	549	526	555	959	687	2170	292	273	351
16	555	643	e590	e540	535	500	987	758	2250	290	257	363
17	544	645	588	544	536	476	870	726	2490	288	258	368
18	558	646	589	548	524	474	834	717	2810	271	269	422
19	569	639	587	e560	506	489	768	849	3320	284	265	442
20	589	623	e590	e570	525	482	669	1320	2780	324	256	426
21	597	643	e590	560	510	481	646	1900	2390	351	268	416
22	578	667	e590	574	516	471	636	2370	2340	332	272	422
23	585	663	e580	e560	562	494	590	2140	2290	300	275	423
24	592	660	e550	558	560	501	628	1680	2310	298	284	420
25	579	654	e540	567	e480	473	572	1440	2220	279	286	421
26	565	659	e540	563	e450	491	555	1380	2040	299	290	434
27	587	643	e560	569	e500	653	564	1570	1930	330	293	461
28	597	e600	e580	559	e540	592	577	1710	1750	365	315	478
29	615	e590	e610	e540	---	566	552	1930	1680	351	322	452
30	615	615	e600	e530	---	574	553	2470	1610	306	326	448
31	626	---	e580	e540	---	573	---	3580	---	288	320	---
TOTAL	16602	18921	18086	17387	14734	16548	20209	35207	84470	15171	8985	11772
MEAN	535.5	630.7	583.4	560.9	526.2	533.8	673.6	1136	2816	489.4	289.8	392.4
MAX	626	667	620	600	562	666	987	3580	5200	1410	341	478
MIN	388	586	540	530	450	471	552	477	1610	271	256	286
AC-FT	32930	37530	35870	34490	29220	32820	40080	69830	167500	30090	17820	23350

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1894 - 2002, BY WATER YEAR (WY)*

MEAN	770.5	817.5	745.1	688.1	702.2	789.9	1043	2130	2983	1016	489.5	644.6
MAX	1265	1186	1049	971	1249	1290	1993	4686	5957	3899	1658	1269
(WY)	1983	1976	1976	1976	1963	1960	1952	1901	1997	1975	1993	1968
MIN	333	328	450	400	385	478	429	176	280	162	167	238
(WY)	1935	1935	1894	1894	1936	1904	1934	1934	1934	1934	1934	1934

06052500 GALLATIN RIVER AT LOGAN, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1894 - 2002*	
ANNUAL TOTAL	232233		278092			
ANNUAL MEAN	636.3		761.9		1068	
HIGHEST ANNUAL MEAN					1673	1997
LOWEST ANNUAL MEAN					454	1934
HIGHEST DAILY MEAN	2260	May 16	5200	Jun 3	b9840	Jun 21 1899
LOWEST DAILY MEAN	249	Aug 24	256	Aug 20	c130	Jul 19 1939
ANNUAL SEVEN-DAY MINIMUM	255	Aug 18	264	Aug 16	147	Jul 16 1934
MAXIMUM PEAK FLOW			5580	Jun 3	b9840	Jun 21 1899
MAXIMUM PEAK STAGE			8.11	Jun 3	d11.88	Feb 5 1963
INSTANTANEOUS LOW FLOW			a241	Aug 17	c130	Jul 19 1939
ANNUAL RUNOFF (AC-FT)	460600		551600		774000	
10 PERCENT EXCEEDS	906		1680		2120	
50 PERCENT EXCEEDS	584		561		758	
90 PERCENT EXCEEDS	324		304		420	

*--During periods of operation (October 1893 to December 1905, August 1928 to current year).
a--Gage height, 3.57 ft.
b--Observed, gage height, 6.25 ft, site and datum then in use.
c--Observed, gage height, 2.04 ft.
d--From floodmark, backwater from ice.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949, 1951, 1957, 1965, 1979-86, May to September 1999.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: August 1979 to September 1985, October 1999 to present (seasonal records).
INSTRUMENTATION.--Temperature probe installed Sept. 14, 1999.
REMARKS--Unpublished records of instantaneous specific conductance and temperature data are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 28.0°C, July 14, 2002; minimum, 0.0°C, on many days during winter periods.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum, 28.0°C, July 14; minimum 0.0°C, April 2.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT									
24...	1330	588	8.5	376	6.0	4.5	.18	.337	.003
APR									
03...	1345	581	8.5	377	5.0	6.0	.33	.538	.005
MAY									
21...	1130	1940	7.8	245	20.0	12.0	1.8	.229	.005
JUL									
30...	1430	321	8.8	351	30.0	20.5	.21	.065	.004

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT					
24...	.008	.019	85	5	7.9
APR					
03...	.022	.070	88	28	43.9
MAY					
21...	.019	.38	86	289	1510
JUL					
30...	E.006	.027	76	8	6.9

E--Estimated.

GALLATIN RIVER BASIN

06052500 GALLATIN RIVER AT LOGAN, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT											
24...	1330	180	47.8	14.2	2.75	.3	8.82	165	5.13	.3	16.0
MAY											
21...	1130	120	32.5	8.80	1.71	.2	4.91	105	1.88	.2	14.2

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT											
24...	35.5	.31	366	231	E1	<.1	<.8	.8	<1	<1	1
MAY											
21...	18.9	.20	772	147	3	E.1	4.6	7.5	4	6	18

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	7.5	1.0	4.5	12.5	6.5	9.5	13.5	11.0	12.5	20.5	14.0	17.0
2	5.5	0.0	2.5	14.0	7.0	10.5	11.5	9.5	10.0	21.0	14.0	17.5
3	8.0	1.5	5.0	12.0	9.5	10.5	12.5	8.5	10.5	18.5	15.0	17.0
4	10.5	3.5	7.0	14.0	7.0	10.5	14.0	8.5	11.0	21.0	15.0	18.0
5	11.5	5.5	8.5	11.5	9.0	10.0	15.5	10.0	12.5	21.5	15.5	18.5
6	11.5	8.0	9.5	12.5	8.0	10.0	16.0	10.5	13.0	22.0	16.5	19.0
7	9.0	7.0	8.0	10.5	5.0	7.5	15.0	10.5	12.5	21.0	17.0	19.0
8	11.0	5.0	8.0	8.5	4.0	6.5	12.5	9.5	11.0	23.0	16.5	19.5
9	10.0	7.5	8.5	12.0	5.0	8.5	10.5	9.0	9.5	22.5	16.0	19.0
10	11.5	7.0	9.0	12.0	9.0	10.5	9.0	7.5	8.0	23.5	16.5	20.0
11	10.5	6.5	9.0	14.5	7.5	11.0	11.0	7.0	9.0	25.0	18.0	21.5
12	11.5	7.5	9.5	17.0	10.0	13.5	14.0	9.0	11.5	26.0	18.5	22.5
13	12.5	8.5	10.5	17.5	11.0	14.5	16.5	10.0	13.0	27.5	19.5	23.5
14	11.5	9.0	10.0	16.0	12.0	13.5	17.5	11.5	14.5	28.0	20.5	23.5
15	9.0	6.0	7.0	13.5	10.0	12.0	18.5	13.0	15.5	25.0	20.0	22.0
16	8.0	4.5	6.5	15.5	9.5	12.5	18.0	13.0	15.5	25.0	19.5	21.5
17	7.5	5.5	6.5	16.0	10.0	13.0	16.5	13.0	15.0	25.5	18.0	21.5
18	6.5	5.0	6.0	16.5	11.5	14.0	15.5	12.0	14.0	25.5	19.0	22.5
19	9.0	3.5	6.5	19.0	12.0	15.5	13.5	10.0	11.5	23.5	19.5	21.0
20	10.5	4.5	7.5	16.5	13.5	15.5	16.0	9.5	12.5	23.5	17.5	20.5
21	8.5	5.5	7.5	15.0	10.5	12.5	17.5	11.5	14.5	24.5	17.5	21.0
22	13.0	6.5	9.5	10.5	7.0	8.5	15.5	13.0	14.0	24.0	18.0	21.0
23	11.5	6.0	9.0	9.5	5.0	7.0	18.5	12.5	15.0	25.5	18.0	21.0
24	9.5	3.5	6.5	14.0	8.0	11.0	19.5	13.0	16.0	25.5	17.5	21.5
25	10.5	5.0	7.5	14.0	9.5	12.0	20.5	14.0	17.0	23.0	18.0	20.5
26	12.5	6.5	9.5	14.5	10.5	12.5	20.0	15.0	17.5	21.0	15.5	18.0
27	9.5	7.0	8.0	16.0	10.5	13.5	20.5	15.5	17.5	19.5	16.5	17.5
28	12.0	5.0	8.5	15.0	11.5	13.5	19.5	15.0	17.0	21.0	14.5	18.0
29	13.5	7.0	10.5	16.0	11.0	13.5	18.0	14.0	16.0	22.5	16.0	19.0
30	11.5	8.5	10.0	15.0	12.0	13.5	20.0	13.5	16.5	22.5	16.0	19.0
31	---	---	---	15.0	10.5	12.5	---	---	---	22.5	16.0	19.0
MONTH	13.5	0.0	8.0	19.0	4.0	11.5	20.5	7.0	13.5	28.0	14.0	20.0

GALLATIN RIVER BASIN

06052500 GALLATIN RIVER AT LOGAN, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER	
1	22.5	14.0	18.0	19.0	14.0	16.0
2	20.5	15.5	17.5	20.5	13.5	17.0
3	22.0	14.0	18.0	18.5	14.5	17.0
4	21.0	15.5	18.0	20.0	14.5	17.5
5	23.0	15.5	18.5	17.5	15.0	16.5
6	23.0	16.5	19.5	15.0	13.0	13.5
7	23.0	17.0	19.0	13.5	12.5	13.0
8	17.5	14.0	16.0	16.5	11.5	14.0
9	19.0	11.5	15.5	17.0	11.5	14.0
10	22.0	13.5	17.5	17.5	11.5	14.5
11	21.0	16.0	18.5	18.5	12.0	15.0
12	20.0	14.5	17.5	18.5	12.5	15.5
13	21.5	13.5	17.5	18.5	12.5	15.5
14	21.5	15.0	18.0	18.5	12.5	15.5
15	22.0	14.0	18.0	17.5	13.0	15.0
16	20.0	15.0	17.5	16.0	12.5	14.5
17	20.0	12.5	16.5	14.5	12.0	13.0
18	20.5	13.0	17.0	14.5	11.0	12.5
19	21.0	13.5	17.5	15.5	10.0	12.5
20	21.0	14.0	17.0	15.0	11.5	13.0
21	19.0	14.5	16.5	14.0	9.5	11.5
22	20.0	13.5	16.5	13.5	8.5	11.0
23	20.5	13.5	16.5	15.0	9.5	12.0
24	19.5	13.5	16.5	15.5	11.0	13.0
25	20.5	14.0	17.0	14.5	11.5	12.5
26	20.5	14.5	17.5	13.0	9.0	11.0
27	18.5	14.5	16.5	11.5	10.0	10.5
28	19.5	13.0	16.5	13.5	9.0	11.0
29	20.0	14.5	17.0	13.0	9.0	11.0
30	20.5	14.0	17.0	11.5	9.5	10.5
31	19.5	15.5	17.5	---	---	---
MONTH	23.0	11.5	17.5	20.5	8.5	13.5

MISSOURI RIVER MAIN STEM

06054500 MISSOURI RIVER AT TOSTON, MT

LOCATION.--Lat 46°08'46", long 111°25'11" (NAD 27), in NW$^1/_4$SE$^1/_4$NW$^1/_4$ sec.36, T.5 N., R.2 E., Broadwater County, Hydrologic Unit 10030101, on left bank 2.2 mi southeast of Toston, 4.8 mi upstream from Crow Creek, 7.8 mi downstream from Sixteenmile Creek, and at river mile 2,296.1.
DRAINAGE AREA.--14,669 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1890 to February 1891, April 1910 to December 1916, April 1941 to current year. Monthly discharge only for some periods, published in WSP 1309.
GAGE.--Water-stage recorder. Datum of gage is 3,905.68 ft (NGVD 29). Prior to Dec. 20, 1916, nonrecording gages at site 2.5 mi downstream at different datums.
REMARKS.--Water-discharge records good. Some regulation by six reservoirs on tributaries and Clark Canyon Reservoir (station 06015300). Diversions for irrigation of about 555,400 acres of which 12,000 acres lies downstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1620	2960	2770	2610	2530	2590	3060	2700	9450	5100	1600	1640
2	1670	2980	2770	2580	2490	2570	3150	2630	12500	4550	1540	1660
3	1710	3180	3170	2230	2580	2520	3030	2570	15400	3970	1460	1630
4	1760	3230	3090	2760	2590	2720	3010	2470	13900	3790	1450	1620
5	1820	3240	2770	2840	2650	2920	3040	2460	12500	3720	1480	1590
6	1880	3260	2770	2800	2570	2760	3070	2540	11100	3480	1530	1650
7	1970	3220	3080	2980	2730	2330	3140	2670	10300	3220	1400	1810
8	2060	3170	3090	3350	2930	1690	3240	2860	10200	3130	1370	2010
9	2130	3110	3010	3430	2790	2070	3480	2800	10300	2950	1490	2100
10	2330	3070	2890	3180	2770	2500	3670	2740	10500	2730	1630	2080
11	2440	3060	2560	3150	2700	2910	3810	2610	10000	2550	1640	2090
12	2560	3050	2630	3180	2720	3400	3890	2470	9440	2530	1650	2050
13	2630	3070	2520	3190	2690	3410	3900	2410	8710	2380	1590	2020
14	2640	3120	2910	2990	2730	3330	3910	2340	7940	2260	1510	1890
15	2700	3130	3020	2990	2780	3250	4210	2250	7150	2200	1430	1840
16	2710	3140	2640	2720	2680	3170	4430	2270	6830	2150	1400	1800
17	2760	3150	2730	2760	2760	3010	4450	2260	7320	2100	1360	1810
18	2770	3140	2880	2660	2880	2810	4270	2250	7600	2100	1350	1910
19	2790	3130	2710	2500	2920	2820	3970	2300	8280	2080	1330	2070
20	2880	3140	2580	2470	2850	2710	3950	2530	8460	2050	1270	2150
21	2910	3190	2570	2560	2920	2210	3720	3430	7840	2270	1270	2110
22	2930	3180	2720	2740	3050	2720	3630	5210	7040	2020	1300	2110
23	2950	3160	2500	2450	3200	3290	3550	6700	6800	2030	1300	2130
24	2950	3190	2260	2470	2630	3010	3500	6010	6860	2380	1310	2090
25	2780	3200	2130	2700	2060	3070	3320	5320	7660	2030	1350	2080
26	2820	3210	2230	2880	2040	3080	3060	4770	7090	1800	1340	2100
27	2860	3270	2170	2940	2200	3170	2940	4610	6200	2080	1350	2130
28	2860	3010	2250	2790	2700	3120	2900	4600	5610	2070	1420	2240
29	2900	2900	2410	2600	---	3100	2790	4770	5470	2070	1440	2250
30	2920	3080	2550	2190	---	3040	2720	5240	5410	1990	1500	2300
31	3000	---	2580	2140	---	3070	---	6810	---	1690	1630	---
TOTAL	77710	93940	82960	85830	75140	88370	104810	107600	263860	81470	44690	58960
MEAN	2507	3131	2676	2769	2684	2851	3494	3471	8795	2628	1442	1965
MAX	3000	3270	3170	3430	3200	3410	4450	6810	15400	5100	1650	2300
MIN	1620	2900	2130	2140	2040	1690	2720	2250	5410	1690	1270	1590
AC-FT	154100	186300	164600	170200	149000	175300	207900	213400	523400	161600	88640	116900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1890 - 2002, BY WATER YEAR (WY)*

MEAN	4418	4717	3759	3379	3708	4124	5607	8817	12440	5216	2747	3413
MAX	6778	7028	5968	4893	5217	6900	10090	18400	24520	14240	5729	5813
(WY)	1977	1984	1960	1984	1915	1916	1969	1976	1997	1975	1975	1984
MIN	2507	2815	2569	2165	2268	2835	2388	3127	3175	1243	896	1448
(WY)	2002	1891	1891	1891	1989	1955	1961	1961	1987	1988	1988	1994

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1890 - 2002*	
ANNUAL TOTAL	1048417		1165340			
ANNUAL MEAN	2872		3193		5217	
HIGHEST ANNUAL MEAN					7742	1997
LOWEST ANNUAL MEAN					2927	1961
HIGHEST DAILY MEAN	7080	Jun 15	15400	Jun 3	33400	Jun 12 1997
LOWEST DAILY MEAN	958	Aug 29	1270	Aug 20	700	Jan 12 1963
ANNUAL SEVEN-DAY MINIMUM	1010	Aug 26	1300	Aug 18	811	Jul 31 1961
MAXIMUM PEAK FLOW			16200	Jun 3	34000	Jun 12 1997
MAXIMUM PEAK STAGE			8.68	Jun 3	12.22	Jun 12 1997
INSTANTANEOUS LOW FLOW			a1120	Aug 20	b450	Jul 31 1989
ANNUAL RUNOFF (AC-FT)	2080000		2311000		3779000	
10 PERCENT EXCEEDS	3800		5140		9390	
50 PERCENT EXCEEDS	3020		2760		4110	
90 PERCENT EXCEEDS	1370		1650		2400	

*--During periods of operation (1911-16, 1942 to current year).
a--Gage height, 2.55 ft, result of regulation.
b--Gage height, 1.68 ft, result of regulation.

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949-53, 1965, 1972 to current year. Sampling location moved in October 1978, from old bridge on U. S. Highway 287 at Toston, to cableway 2.4 miles upstream.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1973 to September 1981.
WATER TEMPERATURE: May 1949 to June 1953, April 1973 to current year.
SUSPENDED-SEDIMENT DISCHARGE: March 1949 to June 1953.

INSTRUMENTATION.--Temperature recorder since July 6, 1977.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1973-81): Maximum daily, 524 microsiemens per centimeter (µS/cm) at 25°C, Mar. 4, 1978; minimum daily, 159 µS/cm at 25°C, May 28, 1979.
WATER TEMPERATURE: Maximum, 29.0°C, July 31, 1988, July 20, 1989; minimum, 0.0°C on many days during winter.
SEDIMENT CONCENTRATION (water years 1949-53): Maximum daily mean, 670 mg/L, Mar. 22, 25, 1951; minimum daily mean, 5 mg/L, Jul. 12, 1951.
SEDIMENT LOAD (water years 1949-53): Maximum daily, 16,100 tons, May 5, 1952; minimum daily, 51 tons Feb. 1, 1951.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 26.5°C, July 14; minimum, 0.0°C, many days November through March.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT									
12...	0930	2510	8.2	384	5.0	7.0	.24	.041	E.002
APR									
03...	0925	3020	8.6	382	-3.0	2.5	.23	.147	E.002
MAY									
21...	0945	3270	8.4	326	17.0	17.0	.42	.073	E.002
JUL									
30...	1030	1950	8.7	338	26.0	21.5	.33	.014	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT					
12...	.008	.021	96	9	61.0
APR					
03...	.007	.025	94	7	57.1
MAY					
21...	.011	.063	98	20	177
JUL					
30...	.012	.044	96	16	84.2

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT											
12...	0930	140	36.9	12.1	4.25	.9	25.4	147	15.3	1.6	24.5
MAY											
21...	0945	120	33.8	9.86	3.09	.8	19.8	125	9.79	1.0	23.5

E--Estimated.

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WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
OCT											
12...	35.8	.33	1650	244	46	<.1	<.8	1.7	<1	1	5
MAY											
21...	26.9	.28	1790	203	37	E.1	E.5	2.6	<1	1	4

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	16.5	14.5	15.5	8.5	7.5	8.0	0.5	0.0	0.5	0.0	0.0	0.0
2	15.5	14.0	14.5	7.5	6.5	7.0	0.5	0.0	0.0	0.0	0.0	0.0
3	14.5	13.5	14.0	7.5	7.0	7.0	0.5	0.0	0.0	0.5	0.0	0.0
4	13.5	11.0	12.5	7.0	6.5	6.5	0.5	0.0	0.5	0.5	0.0	0.0
5	11.0	8.0	9.5	6.5	5.5	6.0	0.0	0.0	0.0	0.5	0.0	0.0
6	9.5	8.0	8.5	7.0	6.0	6.5	0.5	0.0	0.0	0.5	0.0	0.0
7	10.0	9.0	9.5	6.5	5.5	6.0	0.5	0.0	0.0	0.5	0.0	0.5
8	11.0	10.0	10.5	6.0	4.0	5.0	0.5	0.0	0.0	0.5	0.0	0.0
9	10.5	9.0	10.5	4.0	3.5	4.0	0.5	0.0	0.0	0.0	0.0	0.0
10	10.0	8.5	9.5	4.5	3.5	4.0	0.5	0.0	0.0	0.5	0.0	0.0
11	9.0	8.0	9.0	4.0	3.5	4.0	0.5	0.0	0.0	0.5	0.0	0.0
12	8.0	6.5	7.0	4.5	3.5	4.0	0.5	0.0	0.0	0.5	0.0	0.0
13	7.0	6.0	6.5	5.0	4.0	4.5	0.5	0.0	0.0	0.5	0.0	0.0
14	8.5	7.0	8.0	5.5	4.5	5.0	0.5	0.0	0.0	0.5	0.0	0.0
15	8.0	6.5	7.0	6.5	5.5	6.0	0.5	0.0	0.0	0.5	0.0	0.0
16	8.0	7.0	7.5	6.0	5.5	5.5	0.5	0.0	0.0	0.5	0.0	0.0
17	8.5	7.5	8.0	6.0	5.5	5.5	0.5	0.0	0.0	0.5	0.0	0.0
18	8.0	6.5	7.5	6.0	5.0	5.5	0.5	0.0	0.0	0.5	0.0	0.0
19	7.0	6.5	6.5	5.0	3.0	4.0	0.5	0.0	0.0	0.5	0.0	0.0
20	8.0	7.0	7.5	3.5	2.5	3.0	0.5	0.0	0.0	0.5	0.0	0.0
21	8.5	8.0	8.0	5.0	3.5	4.0	0.5	0.0	0.0	0.5	0.0	0.0
22	8.5	7.5	7.5	5.0	4.5	4.5	0.5	0.0	0.0	0.5	0.0	0.0
23	8.0	6.5	7.5	5.0	4.5	4.5	0.5	0.0	0.0	0.5	0.0	0.0
24	6.5	5.5	6.0	4.5	3.5	4.0	0.5	0.0	0.0	0.5	0.0	0.5
25	5.5	4.0	4.5	3.5	2.5	3.0	0.5	0.0	0.0	0.5	0.0	0.0
26	4.5	3.5	4.0	3.0	1.5	2.0	0.5	0.0	0.0	0.5	0.0	0.0
27	6.0	4.5	5.0	1.5	1.5	1.5	0.5	0.0	0.0	0.5	0.0	0.0
28	7.0	6.0	7.0	1.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0
29	7.0	6.5	7.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0
30	8.0	7.0	7.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0
31	8.5	8.0	8.0	---	---	---	0.5	0.0	0.0	0.5	0.0	0.0
MONTH	16.5	3.5	8.5	8.5	0.0	4.5	0.5	0.0	0.0	0.5	0.0	0.0

MISSOURI RIVER MAIN STEM

06054500 MISSOURI RIVER AT TOSTON, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	0.5	0.0	0.0	1.0	0.0	0.5	6.5	4.0	5.5	11.0	10.0	10.5
2	0.5	0.0	0.0	1.0	0.0	0.5	4.0	1.5	2.5	12.0	10.0	11.0
3	0.5	0.0	0.0	1.0	0.0	0.5	4.5	2.0	3.0	12.5	11.5	12.0
4	1.0	0.0	0.5	1.0	0.0	0.5	6.5	4.5	5.5	11.5	10.5	11.0
5	1.0	0.0	0.5	1.0	0.0	0.5	8.5	6.5	7.5	11.5	11.0	11.5
6	1.0	0.0	0.5	0.5	0.0	0.0	10.0	8.5	9.5	11.5	10.5	11.0
7	1.0	0.0	0.5	0.5	0.0	0.0	10.0	8.5	9.5	11.0	8.5	10.0
8	0.5	0.0	0.5	1.5	0.0	0.5	9.0	7.5	8.5	8.5	6.5	7.0
9	1.0	0.0	0.5	1.5	0.0	0.5	9.5	9.0	9.0	9.5	7.0	8.0
10	1.0	0.0	0.5	1.0	0.0	0.5	9.0	8.0	8.5	11.0	9.5	10.5
11	0.5	0.0	0.5	1.0	0.5	0.5	9.5	9.0	9.0	11.5	10.5	11.0
12	1.0	0.0	0.5	1.0	0.5	0.5	9.5	9.0	9.5	14.0	11.5	12.5
13	1.0	0.0	0.5	1.0	0.0	0.5	10.5	9.5	10.0	15.5	13.5	14.5
14	1.0	0.0	0.5	1.0	0.0	0.5	11.0	10.0	10.5	16.0	14.0	15.0
15	1.0	0.0	0.5	1.0	0.0	0.5	10.5	7.5	9.0	14.5	12.5	13.5
16	1.0	0.0	0.5	1.0	0.0	0.5	8.0	7.0	7.0	13.5	12.5	13.0
17	1.0	0.0	0.5	1.0	0.0	0.5	8.0	6.5	7.0	15.0	12.5	14.0
18	1.0	0.0	0.5	1.0	0.0	0.5	7.0	6.0	6.0	16.0	14.0	15.0
19	0.5	0.0	0.5	1.0	0.0	0.5	7.0	5.5	6.0	17.5	15.5	16.5
20	1.0	0.0	0.5	0.5	0.0	0.0	8.0	7.0	7.5	19.0	17.0	18.0
21	1.0	0.0	0.5	1.5	0.0	0.5	8.5	7.5	8.0	18.0	15.0	17.0
22	1.0	0.0	0.5	1.5	0.0	0.5	9.5	7.0	8.0	15.0	10.0	12.5
23	0.5	0.0	0.0	1.0	0.0	0.5	10.5	9.5	10.0	10.5	9.0	9.5
24	0.5	0.0	0.0	1.0	0.0	0.5	9.5	7.0	8.0	13.0	10.5	11.5
25	1.0	0.0	0.0	1.5	0.5	1.0	9.0	7.5	8.0	13.5	13.0	13.5
26	0.5	0.0	0.0	3.0	1.0	2.0	10.0	8.5	9.0	14.5	13.5	14.0
27	1.0	0.0	0.5	5.5	3.0	4.0	10.0	8.0	9.0	15.5	14.5	15.0
28	0.5	0.0	0.0	6.0	5.0	5.5	8.5	7.5	8.0	16.5	15.5	16.0
29	---	---	---	5.5	5.0	5.5	11.0	8.5	10.0	16.5	15.5	15.5
30	---	---	---	7.0	5.5	6.0	12.0	11.0	11.5	17.0	16.0	16.5
31	---	---	---	7.0	6.0	6.5	---	---	---	17.0	15.5	16.0
MONTH	1.0	0.0	0.5	7.0	0.0	1.5	12.0	1.5	8.0	19.0	6.5	13.0

		JUNE			JULY			AUGUST			SEPTEMBER	
1	17.0	15.5	16.5	20.0	19.5	19.5	21.0	18.5	20.0	20.0	17.5	18.5
2	16.0	13.5	14.5	20.5	19.5	20.0	21.0	18.0	19.5	19.0	17.5	18.0
3	15.0	12.5	13.5	20.5	19.5	20.0	21.0	18.5	19.5	20.5	17.5	18.5
4	16.0	13.0	14.0	21.0	18.5	19.5	20.5	17.5	18.5	20.5	18.5	19.5
5	16.5	14.5	15.5	21.0	20.5	20.5	21.0	18.0	19.0	20.0	18.5	19.0
6	17.0	15.5	16.0	22.0	20.5	21.5	21.5	18.5	20.0	18.5	16.0	17.5
7	17.0	15.0	16.0	22.5	21.0	21.5	22.0	19.0	20.0	16.0	14.5	15.5
8	17.0	13.5	15.0	22.0	21.0	21.5	20.0	17.5	19.0	16.0	14.5	15.0
9	14.0	11.5	12.5	21.5	20.5	21.0	18.5	16.5	17.5	16.5	14.5	15.5
10	11.5	10.0	10.5	22.5	21.0	22.0	19.5	16.0	17.5	17.0	15.5	16.0
11	11.5	9.5	10.5	24.0	22.5	23.0	20.5	18.0	19.5	18.0	16.0	17.0
12	14.0	11.5	12.5	25.0	23.5	24.0	20.5	18.0	19.5	18.5	17.0	17.5
13	16.0	14.0	14.5	26.0	24.0	25.0	20.5	17.5	19.0	18.0	16.5	17.0
14	17.5	15.5	16.5	26.5	24.5	25.5	21.0	18.5	19.5	18.5	17.0	17.5
15	19.0	17.5	18.0	25.5	24.0	24.5	21.0	18.5	19.5	18.5	17.0	17.5
16	19.0	18.5	18.5	24.5	23.0	24.0	20.0	17.5	19.0	18.5	17.0	17.5
17	19.5	18.5	19.0	24.5	22.5	23.5	20.0	17.0	18.5	17.0	15.5	16.5
18	18.5	16.5	17.5	25.5	23.0	24.0	20.0	16.0	18.0	15.5	14.0	14.5
19	16.5	14.5	15.5	25.0	23.0	24.0	20.5	17.0	18.5	15.0	13.5	14.0
20	17.0	15.0	15.5	23.5	22.0	22.5	21.0	17.5	19.0	15.5	14.0	14.5
21	18.0	17.0	17.5	23.5	21.5	22.5	20.0	17.5	18.5	15.0	13.0	14.0
22	18.5	17.5	18.0	23.0	21.5	22.0	20.0	17.0	18.0	13.5	12.5	13.0
23	18.5	16.5	17.5	24.0	21.5	22.5	20.0	16.5	18.0	14.0	12.5	13.0
24	20.0	18.5	19.0	23.5	22.0	22.5	20.5	17.0	18.0	14.5	13.0	14.0
25	21.0	19.5	20.0	23.5	22.0	22.5	20.5	17.0	18.5	14.5	13.5	14.0
26	22.0	21.0	21.5	22.0	19.5	21.0	20.5	17.5	18.5	14.5	13.0	13.5
27	22.0	21.5	21.5	20.5	19.5	20.0	21.0	18.0	19.0	13.0	11.5	12.5
28	22.0	21.0	21.5	20.0	19.0	19.5	20.5	17.5	19.0	12.0	11.0	11.5
29	21.0	19.5	20.0	21.5	19.5	20.5	20.0	17.0	18.5	13.0	11.0	12.0
30	19.5	19.0	19.0	22.0	20.5	21.0	20.5	18.0	19.0	12.5	11.0	12.0
31	---	---	---	22.5	19.5	21.0	20.5	18.5	19.0	---	---	---
MONTH	22.0	9.5	16.5	26.5	18.5	22.0	22.0	16.0	19.0	20.5	11.0	15.5

06058500 CANYON FERRY LAKE NEAR HELENA, MT

LOCATION.--Lat 46°38'57", long 111°43'39" (NAD 27), in SE$^1/_4$SE$^1/_4$ sec.4, T.10 N., R.1 W., Lewis and Clark County, Hydrologic Unit 10030101, in block 17 of Canyon Ferry Dam, 15 mi east of Helena, and at river mile 2,252.8.

DRAINAGE AREA.--15,904 mi^2.

PERIOD OF RECORD.--April 1953 to current year (monthend contents only). Prior to October 1981, published as Canyon Ferry Reservoir near Helena. Records of monthend contents in Lake Sewell, submerged by present reservoir Apr. 8, 1953, available January 1936 to March 1953. Scattered daily elevations and contents for April to July 1953, published in WSP 1320-B. Daily elevations and contents for May to June 1964, published in WSP 1840-B. Daily elevations and contents on file in Helena district office.

REVISED RECORDS.--WSP 1559: Drainage area.

GAGE.--Water-stage recorder in powerhouse control room. Datum of gage is 3650.0 (NGVD 29).

REMARKS.--Reservoir is formed by concrete dam; construction began in 1949, completed in 1953. Storage began in March 1953. All elevations are referenced to the National Geodetic Vertical Datum of 1929. Usable capacity, 1,993,000 acre-ft between elevation 3,770.00 ft, invert of outlet works, and 3,800.00 ft, controlled spillway elevation. Dead storage, 1,060 acre-ft, below elevation 3,650.00 ft. Minimum operating level, 396,000 acre-ft, at elevation 3,728.00 ft, for on-site power generation. Figures given herein represent usable contents. Water is used for power production, flood control, irrigation, recreation, and supplemental water supply for city of Helena.

COOPERATION.--Elevations and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 2,043,000 acre-ft, July 15-29, 31, 1955, July 2, 5, 6, 8, 1956, July 16, 17, 1962, June 23, 1964, elevation, 3,800.0 ft; minimum since first filling, 1,017,000 acre-ft, Apr. 11, 1967, elevation, 3,764.70 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,874,000 acre-ft, July 8, elevation, 3,796.49 ft; minimum, 1,377,000 acre-ft, Oct. 13, 14, elevation, 3,780.66 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, SEPTEMBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in Contents (acre-feet)
Sept. 30	3,781.24	1,394,000	--
Oct. 31	3,780.83	1,382,000	-12,000
Nov. 30	3,781.60	1,404,000	+22,000
Dec. 31	3,781.19	1,392,000	-12,000
CAL YR 2001			-53,000
Jan. 31	3,781.34	1,396,000	+4,000
Feb. 28	3,781.09	1,389,000	-7,000
Mar. 31	3,781.30	1,395,000	+6,000
Apr. 30	3,782.65	1,435,000	+40,000
May 31	3,783.79	1,469,000	+34,000
June 30	3,796.04	1,859,000	+390,000
July 31	3,795.23	1,832,000	-27,000
Aug. 31	3,792.32	1,737,000	-95,000
Sept. 30	3,790.75	1,687,000	-50,000
WTR YR 2002			+293,000

PRICKLY PEAR CREEK BASIN

06061500 PRICKLY PEAR CREEK NEAR CLANCY, MT

LOCATION.--Lat 46°31'09", long 111°56'45" (NAD 27), in NE$^1/_4$SE$^1/_4$SW$^1/_4$ sec. 23, T.9 N., R.3 W., Jefferson County, Hydrologic Unit 10030101, on right bank 3.5 mi downstream from Lump Gulch Creek, 4 mi northeast of Clancy, 7 mi southeast of Helena, and at river mile 24.4.

DRAINAGE AREA.--192 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1908 to September 1916, July 1921 to September 1933, October 1945 to October 1953, October 1954 to September 1969, October 1978 to 2002 (discontinued). October 1969 to September 1980 record collected by Montana Department of Natural Resources and Conservation. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1086: 1946(m). WSP 1309: 1925, 1927, 1931(M), 1933, 1948(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,067.1 ft (NGVD 29). Prior to July 12, 1910, nonrecording gage at site 1.2 mi upstream at different datum. July 12, 1910, to Sept. 30, 1916, and July 28, 1921, to Aug. 12, 1933, nonrecording gage at site 2.2 mi upstream at different datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 700 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 19, 1975 reached a discharge of 1,200 ft^3/s, gage height, 6.56 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.9	13	e12	e9.0	e11	e9.0	16	24	101	54	19	14
2	8.6	12	12	e8.5	e10	e9.0	e15	24	145	49	20	14
3	8.6	12	12	e9.0	e10	e10	e14	29	131	48	19	13
4	8.9	12	12	e10	e10	e13	14	27	106	47	20	13
5	9.6	12	e11	e10	e10	e11	17	28	93	43	22	13
6	9.9	11	e11	e11	e11	e10	32	30	89	40	20	15
7	9.9	12	11	e13	e12	e9.0	35	28	79	38	18	19
8	9.9	12	e11	e11	8.8	e8.5	26	25	102	44	45	19
9	11	12	11	e11	9.1	e9.0	25	23	119	45	40	16
10	10	12	e10	e10	e9.0	e10	26	25	138	37	27	15
11	10	11	e9.5	12	9.3	e11	27	24	125	32	22	14
12	11	12	e10	12	e9.0	e13	29	24	133	28	22	13
13	12	12	e10	11	e9.0	e15	33	29	138	26	21	13
14	13	11	11	e10	9.3	e13	51	38	138	29	19	12
15	13	11	e10	e10	e9.0	e12	55	41	141	37	19	12
16	13	11	e10	e9.5	e9.0	11	37	35	137	38	17	11
17	13	11	10	e10	e9.5	e10	29	33	131	35	16	15
18	13	12	e9.5	e11	e9.5	e10	23	38	123	30	15	20
19	12	12	e9.5	e10	e9.5	e11	22	55	122	33	14	17
20	12	12	e9.5	10	9.0	e12	26	82	102	34	15	15
21	13	12	e9.5	10	e9.5	e11	26	83	94	30	22	15
22	13	12	e9.5	e10	9.6	e12	25	86	114	26	26	15
23	12	12	e9.0	e9.5	10	e12	33	67	112	25	21	15
24	12	12	e9.0	e10	e9.0	12	27	62	92	29	19	15
25	12	12	e9.0	10	e8.5	12	25	74	80	27	28	15
26	12	11	e9.0	9.8	e8.0	16	24	80	74	41	22	15
27	12	e11	e8.5	e9.5	e9.0	19	25	84	73	29	19	17
28	12	e10	e9.0	e9.5	e9.0	16	22	90	68	25	18	20
29	13	12	e10	e9.0	---	16	25	96	65	22	17	19
30	13	12	e9.5	e9.0	---	16	27	107	60	20	16	17
31	13	---	e9.0	e10	---	16	---	105	---	21	15	---
TOTAL	354.3	351	313.0	314.3	265.6	374.5	811	1596	3225	1062	653	456
MEAN	11.43	11.70	10.10	10.14	9.486	12.08	27.03	51.48	107.5	34.26	21.06	15.20
MAX	13	13	12	13	12	19	55	107	145	54	45	20
MIN	8.6	10	8.5	8.5	8.0	8.5	14	23	60	20	14	11
AC-FT	703	696	621	623	527	743	1610	3170	6400	2110	1300	904

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 2002, BY WATER YEAR (WY)*

MEAN	30.73	28.58	23.50	20.96	23.52	30.92	51.95	108.5	129.4	56.96	30.10	28.88
MAX	70.0	60.0	43.8	36.7	57.2	80.0	131	453	450	141	88.8	71.4
(WY)	1909	1910	1981	1983	1963	1910	1930	1981	1927	1915	1993	1915
MIN	11.4	11.7	10.1	9.94	8.55	12.1	22.9	21.4	20.2	9.89	4.69	7.33
(WY)	2002	2002	2002	1957	1989	2002	1931	2000	2000	2000	2000	2000

PRICKLY PEAR CREEK BASIN

06061500 PRICKLY PEAR CREEK NEAR CLANCY, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1908 - 2002*	
ANNUAL TOTAL	7598.0		9775.7			
ANNUAL MEAN	20.82		26.78		47.01	
HIGHEST ANNUAL MEAN					117	1981
LOWEST ANNUAL MEAN					15.2	2000
HIGHEST DAILY MEAN	95	Jun 14	145	Jun 2	1930	May 22 1981
LOWEST DAILY MEAN	5.8	Sep 4	a8.0	Feb 26	4.1	Aug 12 1931
ANNUAL SEVEN-DAY MINIMUM	6.6	Aug 30	8.8	Feb 24	4.3	Aug 24 2000
MAXIMUM PEAK FLOW			163	Jun 2	b2300	May 22 1981
MAXIMUM PEAK STAGE			2.13	Jun 2	8.82	May 22 1981
INSTANTANEOUS LOW FLOW					c0.5	Jan 26 1958
ANNUAL RUNOFF (AC-FT)	15070		19390		34050	
10 PERCENT EXCEEDS	49		73		100	
50 PERCENT EXCEEDS	13		13		30	
90 PERCENT EXCEEDS	9.0		9.4		15	

*--During periods of operation (July 1908 to September 1916, July 1921 to September 1933, October 1945 to October 1953, October 1954 to September 1969, October 1978 to current year).
a--Backwater from ice.
b--From culvert computation of peak flow.
c--Gage height, 0.40 ft, result of ice jam upstream.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1999 to current year.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT									
23...	0845	12	7.7	297	3.5	5.5	.11	.101	<.002
APR									
05...	1030	14	8.1	303	5.0	3.0	.12	.254	<.002
MAY									
20...	1110	88	7.4	148	20.0	9.0	.72	.067	<.002
JUL									
29...	1345	23	8.4	263	24.0	19.0	.15	.066	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT					
23...	<.007	.006	86	1	.03
APR					
05...	<.007	.015	77	3	.11
MAY					
20...	E.004	.124	69	58	13.8
JUL					
29...	E.004	.013	79	5	.31

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT											
23...	0845	97	27.8	6.66	2.98	.9	19.9	88	5.05	.6	20.0
MAY											
20...	1110	55	16.1	3.52	1.65	.4	6.26	38	1.75	.2	14.8

E--Estimated.

PRICKLY PEAR CREEK BASIN

06061500 PRICKLY PEAR CREEK NEAR CLANCY, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
OCT											
23...	52.8	.26	6.12	189	5	E.1	<.8	1.7	<1	<1	61
MAY											
20...	27.2	.13	22.5	95	16	<.1	E.8	15.2	37	1	202

E--Estimated.

TENMILE CREEK BASIN

462516112171201 08N05W30BBBB03

LOCATION.--Lat 46°25'16.2", long 112°17'12.4" (NAD 83), in NW$^1/_4$NW$^1/_4$NW$^1/_4$ sec. 30, T.8 N., R.5 W., Lewis and Clark County, Hydrologic Unit 10030101.
HYDROGEOLOGIC UNIT.--Tertiary volcanics.
WELL CHARACTERISTICS.--Drilled in June 2000, casing diameter 2 in., depth 20 ft. Measuring point, top of PVC casing, 2.60 ft above land surface datum.
DATUM.--Elevation of land-surface datum is 7,682.73 ft (NGVD 29).
REMARKS.--All water levels are reported as distance, in feet, below land-surface datum.
PERIOD OF RECORD.--October 2001 to September 2002.

MEASURED WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 11	11.64	Jun 26	7.20	Aug 05	9.84
Oct 19	12.75	Jul 02	7.70	Sep 09	11.51

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	FLOW RATE (G/M) (00059)	PUMP OR FLOW PERIOD PRIOR TO SAM-PLING (MIN) (72004)	SAM-PLING DEPTH (FEET) (00003)	TUR-BID-ITY FIELD WATER UNFLTRD (NTU) (61028)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)
OCT											
19...	1400	12.75	.30	15	18	470	9.8	5.0	188	4.5	53
JUN											
26...	1000	7.20	.30	24	18	630	10.9	4.9	186	8.5	50

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT											
19...	13.9	4.36	7.90	.2	3.28	2	0	.67	<.1	13.2	65.9
JUN											
26...	13.1	4.19	9.92	.3	4.22	2	0	E.30	E.1	10.6	65.5

DATE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)
OCT											
19...	.16	121	<.04	2.28	<.008	<.02	51	<.05	E.2	7.16	3.22
JUN											
26...	--	--	--	--	--	--	90	<.05	.3	6.53	3.79

DATE	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT												
19...	<.8	16.9	10.5	E6	15.1	443	14.4	.6	<1	.75	<.2	615
JUN												
26...	<.8	19.9	13.5	E8	15.8	529	16.0	.7	<1	.76	<.2	642

E--Estimated.

TENMILE CREEK BASIN

462518112171202 08N05W30BBBB02

LOCATION.--Lat 46°25'18.2", long 112°17'12.0" (NAD 83), in NW$^1/_4$NW$^1/_4$NW$^1/_4$ sec. 30, T.8 N., R.5 W., Lewis and Clark County, Hydrologic Unit 10030101.
HYDROGEOLOGIC UNIT.--Tertiary volcanics.
WELL CHARACTERISTICS.--Drilled in June 2000, casing diameter 2 in., depth 69.5 ft. Measuring point, top of PVC casing,2.40 ft above land surface datum.
DATUM.--Elevation of land-surface datum is 7,684.28 ft (NGVD 29).
REMARKS.--All water levels are reported as distance, in feet, below land-surface datum. Oct. 19 samples obtained using a bailer. Both samples had substantial slime (possibly biofilm).
PERIOD OF RECORD.--June 2000 to September 2002.

MEASURED WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 11	29.71	Jun 26	10.62	Aug 05	13.50
Oct 19	29.69	Jul 02	11.37	Sep 09	29.78

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	FLOW RATE (G/M) (00059)	PUMP OR FLOW PERIOD PRIOR TO SAM-PLING (MIN) (72004)	SAM-PLING DEPTH (FEET) (00003)	TUR-BID-ITY FIELD WATER UNFLTRD (NTU) (61028)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)
OCT 2001											
19...	1100	29.69	--	--	--	68	8.5	5.8	17	3.2	--
JUN 2002											
26...	1200	10.62	.90	30	67	430	9.1	6.1	10	8.5	.24

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT 2001											
19...	.07	E.005	2.07	E.7	.67	4	3	E.29	<.1	10.5	.6
JUN 2002											
26...	.07	.014	2.20	.4	.50	4	3	E.24	<.1	11.3	.6

Date	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)
OCT 2001											
19...	<.04	.09	<.008	<.02	3	<.05	<.2	<.06	<.04	<.8	<.02
JUN 2002											
26...	--	--	--	--	3	<.05	.2	<.06	E.02	<.8	.14

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT 2001										
19...	E.1	<10	<.08	.3	E.05	<.3	<1	.04	<.2	1
JUN 2002										
26...	.5	62	.09	2.3	1.15	<.3	<1	.13	<.2	3

E--Estimated.

TENMILE CREEK BASIN

462522112172402 08N06W24DDCD02

LOCATION.--Lat 46°25'21.8", long 112°17'23.5", (NAD 83) in SW$^1/_4$SE$^1/_4$SE$^1/_4$ sec. 24, T.8 N., R.6 W., Lewis and Clark County, Hydrologic Unit 10030101.
HYDROGEOLOGIC UNIT.--Tertiary volcanics.
WELL CHARACTERISTICS.--Drilled in June 2000, casing diameter 2 in., depth 84 ft. Measuring point, top of PVC casing, 3.10 ft above land surface datum.
DATUM.--Elevation of land-surface datum is 7,579.6 ft (NGVD 29).
REMARKS.--All water levels are reported as distance, in feet, below land-surface datum.
PERIOD OF RECORD.--June 2000 to September 2002.

MEASURED WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 10	61.36	Jun 06	25.61	Aug 05	47.55
Oct 24	64.49	Jul 01	29.86	Sep 09	58.58

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	FLOW RATE (G/M) (00059)	PUMP OR FLOW PERIOD PRIOR TO SAM-PLING (MIN) (72004)	SAM-PLING DEPTH (FEET) (00003)	TUR-BID-ITY FIELD WATER UNFLTRD (NTU) (61028)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)
OCT											
24...	1100	63.24	.20	22	81	370	2.9	3.4	160	1.2	6
JUN											
06...	1200	25.61	1.1	54	83	16	9.0	5.0	43	4.6	11

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT											
24...	1.80	.365	2.49	.1	.74	--	<1	1.11	<.1	13.4	41.9
JUN											
06...	3.29	.708	1.54	.1	.65	3	3	.76	<.1	4.96	8.5

DATE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)
OCT											
24...	E.08	E63	<.04	.24	<.008	<.02	1540	.29	E.1	.11	.35
JUN											
06...	.03	22	--	--	--	--	87	.06	.2	<.06	.04

DATE	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT												
24...	6.7	.95	16.0	979	24.9	6.3	6.09	<.3	<1	.31	.3	70
JUN												
06...	<.8	.14	1.6	20	.93	5.5	.68	<.3	<1	.10	<.2	6

E--Estimated.

TENMILE CREEK BASIN

462522112172401 08N06W24DDCD01

LOCATION.--Lat 46°25'21.8", long 112°17'23.5" (NAD 83), in SW$^1/_4$SW$^1/_4$SE$^1/_4$ sec. 24, T.8 N., R.6 W., Lewis and Clark County, Hydrologic Unit 10030101.
HYDROGEOLOGIC UNIT.--Tertiary volcanics.
WELL CHARACTERISTICS.--Drilled in June 1999, casing diameter 4 in., depth 227 ft. Measuring point, top of PVC casing, 1.70 ft above land surface datum.
DATUM.--Elevation of land-surface datum is 7,579.8 ft (NGVD 29).
REMARKS.--All water levels are reported as distance, in feet, below land-surface datum.
PERIOD OF RECORD.--October 2001 to September 2002.

MEASURED WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM,
WATER YEAR OCTOBER 2001 THROUGH SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Oct 10	124.35	Jun 07	140.05	Aug 05	115.26
Oct 24	129.00	Jul 01	122.03	Sep 09	119.29

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	FLOW RATE (G/M) (00059)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	SAMPLING DEPTH (FEET) (00003)	TURBIDITY FIELD WATER UNFLTRD (NTU) (61028)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	HARDNESS TOTAL (MG/L AS CACO3) (00900)
OCT											
24...	1200	129.00	.20	77	150	6.2	1.0	6.4	310	3.4	28
JUN											
07...	1100	140.05	.30	10	190	790	4.1	5.5	330	6.8	28

DATE	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SODIUM ADSORPTION RATIO (00931)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	ALKALINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	ALKALINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SULFATE DISSOLVED (MG/L AS SO4) (00945)
OCT											
24...	8.26	1.84	5.92	4	45.0	54	50	5.74	.3	22.6	72.4
JUN											
07...	8.35	1.83	5.90	4	50.1	70	67	4.26	.3	25.0	75.6

DATE	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ANTIMONY, DISSOLVED (UG/L AS SB) (01095)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)	CADMIUM DISSOLVED (UG/L AS CD) (01025)
OCT											
24...	.26	193	.20	E.04	<.008	<.02	1	.50	.5	<.06	.34
JUN											
07...	.29	213	--	--	--	--	3	.19	1.0	E.06	.04

DATE	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	THALLIUM, DISSOLVED (UG/L AS TL) (01057)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
OCT												
24...	E.5	4.26	1.4	53	E.07	216	4.33	<.3	<1	.35	.4	29
JUN												
07...	<.8	6.33	1.0	1290	.30	332	4.96	<.3	<1	.31	1.4	39

E--Estimated.

TENMILE CREEK BASIN

462527112175201 TENMILE CREEK AT HEADWATERS NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°25'26.9", long 112°17'52.1" (NAD 83), in NE$^1/_4$ SE$^1/_4$ SW$^1/_4$ sec. 24, T. 8 N., R. 6 W., Lewis and Clark County, Hydrologic Unit 10030101, 2.9 mi upstream from the confluence with Monitor Creek and 0.4 mi south of Rimini.
DRAINAGE AREA.--Indeterminate.
GAGE.--None. Elevation at site is 7,280 ft (NGVD 29).
PERIOD OF RECORD.--October 2001 to July 2002.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
OCT												
17...	0930	<.01	579	8.5	81	4.9	19	1.8	4	1.20	.290	1.66
JUL												
01...	1150	.01	--	--	--	5.8	14	5.4	3	.85	.211	1.28

DATE	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
OCT												
17...	.1	.67	6	.35	<.1	7.86	2.4	.02	<.01	18	<.04	<.05
JUL												
01...	.1	.55	3	E.21	<.1	6.67	2.1	E.02	<.01	E14	<.04	<.05

DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)
OCT												
17...	<.008	E.01	46	73	.07	<.9	1.1	E2	.20	.18	.12	.12
JUL												
01...	<.008	<.02	97	137	.15	<.9	.9	E1	.17	.20	.12	.13

DATE	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
OCT												
17...	<.8	<.8	.31	<1	.8	E.4	96	110	.21	<1	24	26
JUL												
01...	<.8	<.8	.04	<1	1.2	1.0	23	30	.34	<1	2.2	2.8

DATE	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	THAL-LIUM, TOTAL (UG/L AS TL) (01059)	VANA-DIUM, TOTAL (UG/L AS V) (01087)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT												
17...	.34	<1	<.3	<.4	<1	<.05	<.04	<.9	<10	<.2	29	29
JUL												
01...	.26	<1	<.3	<.4	<1	<.05	.05	<.9	<10	<.2	26	28

E--Estimated.

TENMILE CREEK BASIN

462529112173301 MONITOR CREEK SS 8 NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°25'28.6", long 112°17'33.5" (NAD 83), in NE$^1/_4$ SW$^1/_4$ SE$^1/_4$ sec. 24, T. 8 N., R. 6 W., Lewis and Clark County, Hydrologic Unit 10030101, 2.25 mi upstream from confluence of Tenmile Creek and 3.7 mi south of Rimini.
DRAINAGE AREA.--Indeterminate.
PERIOD OF RECORD.--October 2001 to July 2002.
GAGE.--None. Elevation at site is 7,380 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
OCT												
16...	1300	<.01	580	8.4	76	3.5	177	0.0	17	5.05	1.04	6.01
JUL												
01...	1200	.0003	--	--	--	4.1	215	8.0	61	18.5	3.63	6.63

DATE	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)
OCT												
16...	.2	1.55	1.13	.2	42.1	78.4	<.04	<.05	<.008	<.02	8040	7080
JUL												
01...	.1	1.43	.82	.2	21.1	110	<.04	.06	<.008	<.02	5090	4900

DATE	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)
OCT												
16...	.08	<.9	.3	E1	1.61	1.50	4.20	4.15	<.8	<.8	5.10	5
JUL												
01...	.08	<.9	.6	E1	2.58	2.94	5.35	5.25	<.8	<.8	11.1	11

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)
OCT												
16...	6.8	6.8	60	60	17.1	16	160	145	5.96	6	.9	1.0
JUL												
01...	8.0	8.2	57	60	13.9	13	729	692	11.9	12	1.1	1.2

DATE	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	THAL-LIUM, TOTAL (UG/L AS TL) (01059)	VANA-DIUM, TOTAL (UG/L AS V) (01087)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT								
16...	<1	.06	.29	<.9	<10	<.2	351	345
JUL								
01...	<1	<.05	.28	<.9	<10	E.1	422	410

E--Estimated.

TENMILE CREEK BASIN

462531112172901 MONITOR CREEK SS MS NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°25'31.1", long 112°17'29.3" (NAD 83), in NW$^1/_4$ SE$^1/_4$ SE$^1/_4$ sec. 24, T. 8 N., R. 6 W., Lewis and Clark County, Hydrologic Unit 10030101, 0.5 mi east of Monitor Creek and 2.25 mi upstream from the confluence of Tenmile and Monitor Creeks and 5.4 mi south of Rimini.
DRAINAGE AREA.--Indeterminate.
PERIOD OF RECORD.--October 2001 to July 2002.
GAGE.--None. Elevation at site is 7,400 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
OCT												
16...	0915	.02	580	9.1	88	3.3	428	2.5	77	21.7	5.49	9.42
JUL												
01...	1125	.06	--	--	--	3.5	437	5.0	85	24.3	5.93	9.15

DATE	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)
OCT												
16...	.1	2.18	1.60	<.1	38.4	165	.11	.79	E.004	<.02	6590	7580
JUL												
01...	.1	1.86	1.13	.2	29.7	174	.09	.93	<.008	<.02	9070	8870

DATE	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)
OCT												
16...	<.20	<.9	E.6	E1	4.60	5.47	24.4	24.3	<.8	<.8	34.1	33
JUL												
01...	E.03	<.9	.6	E1	5.09	5.74	21.8	21.1	<.8	<.8	33.9	33

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)
OCT												
16...	102	94	902	790	105	104	1140	1140	28.6	28	5.8	3.9
JUL												
01...	92	90	326	310	100	95	1150	1110	27.5	27	5.6	4.6

DATE	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	THAL-LIUM, TOTAL (UG/L AS TL) (01059)	VANA-DIUM, TOTAL (UG/L AS V) (01087)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT								
16...	<4	.15	.85	<.9	<10	<.8	1320	1280
JUL								
01...	<1	.33	.82	<.9	<10	<.2	1180	1170

E--Estimated.

TENMILE CREEK BASIN

462535112173601 MONITOR CREEK SS 11 NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°25'35.5", long 112°17'36.5" (NAD 83), in SE$^1/_4$ NW$^1/_4$ SE$^1/_4$ sec. 24, T. 8 N., R. 6 W., Lewis and Clark County, Hydrologic Unit 10030101, 2 mi upstream from confluence of Tenmile Creek and 5.5 mi south of Rimini.
DRAINAGE AREA.--Indeterminate.
PERIOD OF RECORD.--October 2001 to July 2002.
GAGE.--None. Elevation at site is 7,270 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
OCT												
16...	1130	.01	580	10.3	98	4.0	100	2.1	13	4.07	.732	3.97
JUL												
01...	1000	.02	--	--	--	4.5	74	7.7	11	3.35	.655	2.86

DATE	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)
OCT												
16...	.2	2.04	.90	.2	33.5	43.0	--	--	--	--	1700	2060
JUL												
01...	.2	1.31	.52	.2	19.4	28.4	<.04	<.05	<.008	<.02	993	1020

DATE	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)
OCT												
16...	E.03	<.9	.6	2	1.02	1.17	.75	.75	<.8	<.8	1.61	1
JUL												
01...	.09	<.9	.7	<2	.79	.88	.77	.74	<.8	<.8	1.60	2

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)
OCT												
16...	2.1	2.2	742	710	6.06	6	109	108	1.86	2	.5	E.3
JUL												
01...	2.4	2.5	215	230	4.80	5	108	106	1.83	2	.4	E.3

DATE	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	THAL-LIUM, TOTAL (UG/L AS TL) (01059)	VANA-DIUM, TOTAL (UG/L AS V) (01087)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT								
16...	<1	<.05	.20	<.9	<10	<.2	120	119
JUL								
01...	<1	<.05	.16	<.9	<10	<.2	101	101

E--Estimated.

TENMILE CREEK BASIN

462537112173301 MONITOR CREEK SS 10 NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°25'37.5", long 112°17'33.4" (NAD 83), in SE$^1/_4$ NW$^1/_4$ SE$^1/_4$ sec. 24, T. 8 N., R. 6 W., Lewis and Clark County, Hydrologic Unit 10030101, 500 ft east of Monitor Creek and 1.9 mi upstream from confluence of Tenmile Creek and 5.4 mi south of Rimini.
DRAINAGE AREA.--Indeterminate.
PERIOD OF RECORD.--October 2001 to July 2002.
GAGE.--None. Elevation at site is 7,240 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
OCT												
16...	1200	.01	580	11.8	109	3.5	326	1.0	64	18.1	4.51	8.97
JUL												
01...	1030	.04	--	--	--	3.7	370	7.8	85	24.5	5.72	8.24

DATE	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)
OCT												
16...	.1	1.96	1.18	<.1	33.8	136	.06	.67	<.008	<.02	5740	6440
JUL												
01...	.1	1.79	1.12	.2	24.4	154	.05	1.08	<.008	<.02	7200	6820

DATE	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)
OCT												
16...	<.10	<.9	.6	E1	3.47	4.09	18.5	17.7	<.8	<.8	25.6	25
JUL												
01...	.06	<.9	.6	E1	3.81	4.27	16.1	15.3	<.8	<.8	25.0	25

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)
OCT												
16...	64	59	473	440	63.8	60	917	905	21.2	21	3.7	2.5
JUL												
01...	61	60	322	310	65.8	63	903	874	21.2	21	3.8	3.0

DATE	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	THAL-LIUM, TOTAL (UG/L AS TL) (01059)	VANA-DIUM, TOTAL (UG/L AS V) (01087)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT								
16...	<3	E.05	.64	<.9	<10	<.6	1020	938
JUL								
01...	<1	.12	.63	<.9	<10	<.2	902	886

E--Estimated.

TENMILE CREEK BASIN

462541112172001 MONITOR CREEK ADIT NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°25'40.6", long 112°17'19.5" (NAD 83), in NE$^1/_4$ NE$^1/_4$ SE$^1/_4$ sec. 24, T. 8 N., R. 6 W., Lewis and Clark County, Hydrologic Unit 10030101, 0.2 mi east of Monitor Creek and 1.9 mi upstream from the confluence of Tenmile and Monitor Creeks and 5.25 mi south of Rimini.
DRAINAGE AREA.--Indeterminate.
PERIOD OF RECORD.--October 2001 to July 2002.
GAGE.--None. Elevation at site is 7,440 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
OCT												
16...	1000	.002	580	9.8	93	2.9	457	2.0	26	5.44	3.01	4.34
JUL												
01...	0945	.01	--	--	--	3.3	435	3.5	38	7.31	4.82	3.13

DATE	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)
OCT												
16...	.1	.98	E.25	<.1	25.1	117	.06	.26	<.008	<.02	4400	5170
JUL												
01...	.1	.79	E.24	.1	14.1	141	.08	.46	<.008	.03	8330	7830

DATE	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)
OCT												
16...	<.10	<.9	E.5	3	2.14	2.59	3.13	3.23	1.0	1.0	18.9	18
JUL												
01...	.05	<.9	1.3	2	4.90	5.77	4.18	3.96	1.3	1.2	30.2	29

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)
OCT												
16...	77.0	70	2290	2160	22.9	32	583	578	20.4	19	2.1	1.5
JUL												
01...	163	156	7990	7650	14.2	13	1040	946	32.9	31	2.7	2.4

DATE	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	THAL-LIUM, TOTAL (UG/L AS TL) (01059)	VANA-DIUM, TOTAL (UG/L AS V) (01087)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT								
16...	<3	.22	.20	<.9	<10	<.6	725	686
JUL								
01...	<1	.24	.22	<.9	<10	.3	1020	907

E--Estimated.

TENMILE CREEK BASIN

462542112173301 MONITOR CREEK 5-MC NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°25'42.4", long 112°17'32.9" (NAD 83), in NE$^1/_4$ NW$^1/_4$ SE$^1/_4$ sec. 24, T. 8 N., R. 6 W., Lewis and Clark County, Hydrologic Unit 10030101, 1.9 mi upstream from confluence with Tenmile Creek and 5.4 mi south of Rimini.
DRAINAGE AREA.--Indeterminate.
PERIOD OF RECORD.--October 2001 to July 2002.
GAGE.-None. Elevation at site is 7,190 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
OCT												
16...	1100	.07	580	10.8	101	3.7	200	1.2	33	9.52	2.28	5.96
JUL												
01...	0915	.17	--	--	--	4.0	235	6.8	54	15.8	3.56	5.97

DATE	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)
OCT												
16...	.2	2.12	.86	E.1	33.0	77.9	<.04	.23	<.008	<.02	3000	3290
JUL												
01...	.1	1.63	.84	.2	22.2	97.7	<.04	.47	<.008	<.02	4240	4510

DATE	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)
OCT												
16...	<.10	<.9	<.4	<2	1.64	2.06	6.73	6.47	<.8	<.8	9.85	9
JUL												
01...	.08	<.9	.5	E1	2.35	2.72	8.11	7.93	<.8	<.8	13.7	14

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)
OCT												
16...	20	18	527	510	21.1	20	379	403	8.44	8	.9	1.0
JUL												
01...	25	25	241	240	20.6	21	560	517	12.6	12	1.5	1.2

DATE	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	THAL-LIUM, TOTAL (UG/L AS TL) (01059)	VANA-DIUM, TOTAL (UG/L AS V) (01087)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT								
16...	<2	<.05	.35	<.9	<10	<.4	426	390
JUL								
01...	<1	<.05	.76	<.9	<10	<.2	518	503

E--Estimated.

TENMILE CREEK BASIN

462520112165601 RUBY CREEK NO. 1A ABOVE SCOTT RESERVOIR, NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°25'20", long 112°16'56.1" (NAD 83), in NE$^1/_4$ NW$^1/_4$ NW$^1/_4$ sec. 30, T. 8 N., R. 5 W., Lewis and Clark County, Hydrologic Unit 10030101, 1 mi southwest of Scott Reservoir and 5.2 mi south of Rimini.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--July 2002.

GAGE.--None. Elevation at site is 7,650 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)
JUL 02...	1200	.01	6.0	19	9.8	7	2.33	.344	.28	.2	.97	8

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)
JUL 02...	<.30	<.1	6.30	.4	<.04	<.05	<.008	<.02	159	203	.23	<.9

DATE	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)
JUL 02...	2.4	2	.16	.16	.09	.12	<.8	<.8	.15	<1	4.8	4.7

DATE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)
JUL 02...	132	130	.42	<1	16	20	.48	<1	<.3	<.4	<1	.07

DATE	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	THAL-LIUM, TOTAL (UG/L AS TL) (01059)	VANA-DIUM, TOTAL (UG/L AS V) (01087)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
JUL 02...	<.04	<.9	<10	.3	9	9

TENMILE CREEK BASIN

462538112163301 RUBY CREEK NO. 2 ABOVE SCOTT RESERVOIR, NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°25'37.9", long 112°16'33.2" (NAD 83), in NW$^1/_4$ NW$^1/_4$ SE$^1/_4$ sec. 19, T. 8 N., R. 5 W., Lewis and Clark County, Hydrologic Unit 10030101, 0.5 mi southwest of Scott Reservoir and 4.7 mi south of Rimini.
DRAINAGE AREA.--Indeterminate.
PERIOD OF RECORD.--October 2001 to July 2002.
GAGE.-None. Elevation at site is 7,300 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
OCT												
17...	1330	.01	579	11.1	103	6.7	16	.9	5	1.32	.347	.81
JUL												
02...	0830	.13	--	--	--	5.9	11	7.5	3	.85	.224	.51

DATE	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
OCT												
17...	.1	.74	5	.47	<.1	6.56	2.3	.02	<.01	16	<.04	<.05
JUL												
02...	.2	.61	4	<.30	<.1	5.87	1.4	E.02	<.01	E12	<.04	<.05

DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)
OCT												
17...	<.008	<.02	40	51	.10	<.9	.7	<1	E.04	E.03	E.02	E.02
JUL												
02...	<.008	<.02	112	149	.17	<.9	1.1	E1	.08	.07	E.03	E.03

DATE	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
OCT												
17...	<.8	<.8	.08	<1	.8	.7	113	150	.17	<1	13	14
JUL												
02...	<.8	<.8	.05	<1	1.6	1.6	72	80	.28	<1	2.9	3.9

DATE	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	THAL-LIUM, TOTAL (UG/L AS TL) (01059)	VANA-DIUM, TOTAL (UG/L AS V) (01087)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT												
17...	.18	<1	<.3	<.4	<1	<.05	<.04	<.9	<10	<.2	3	4
JUL												
02...	.19	<1	<.3	<.4	<1	<.05	<.04	<.9	<10	E.1	4	4

E--Estimated.

TENMILE CREEK BASIN

462549112161401 RUBY CREEK NO. 3 ABOVE SCOTT RESERVOIR, NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°25'49.4", long 112°16'14.5" (NAD 83), in SW$^1/_4$ SE$^1/_4$ NE$^1/_4$ sec. 19, T. 8 N., R. 5 W., Lewis and Clark County, Hydrologic Unit 10030101, 0.2 mi upstream from Scott Reservoir and 4.4 mi south of Rimini.
DRAINAGE AREA.--Indeterminate.
PERIOD OF RECORD.--October 2001 to July 2002.
GAGE.--None. Elevation at site is 7,270 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
OCT												
17...	1630	.17	579	10.9	100	6.2	44	.7	13	4.10	.739	1.40
JUL												
02...	0930	.60	--	--	--	6.2	19	6.1	6	1.74	.318	.68

DATE	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
OCT												
17...	.2	1.32	5	.97	E.1	11.0	11.6	.05	.02	34	<.04	E.04
JUL												
02...	.1	.68	5	E.23	<.1	6.91	3.3	E.23	E.03	E17	<.04	.05

DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)
OCT												
17...	<.008	<.02	50	79	.20	<.9	.5	<2	.08	.10	.05	.05
JUL												
02...	<.008	E.01	118	168	.20	<.9	1.2	E2	.12	.13	.04	E.03

DATE	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
OCT												
17...	<.8	<.8	.08	<1	.7	.7	43	50	.18	<1	9.5	10
JUL												
02...	<.8	<.8	.06	<1	1.6	1.5	61	80	.50	<1	3.3	4.4

DATE	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	THAL-LIUM, TOTAL (UG/L AS TL) (01059)	VANA-DIUM, TOTAL (UG/L AS V) (01087)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT												
17...	.40	<1	<.3	<.4	<1	<.05	<.04	<.9	<10	<.2	11	13
JUL												
02...	.22	<1	<.3	<.4	<1	E.04	E.04	<.9	<10	<.2	7	7

E--Estimated.

TENMILE CREEK BASIN

462657112143501 BANNER CREEK AT BRIDGE, 0.5 MILE ABOVE CITY DIVERSION, NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°23'57", long 112°15'25" (NAD 27), in NW$^1/_4$ NW$^1/_4$ SW$^1/_4$ sec. 16, T. 8 N., R. 5 W., Lewis and Clark County, Hydrologic Unit 10030101, at bridge near the downstream edge of meadow, about 0.5 mi upstream from city diversion, and 2.5 mi south of Rimini.

DRAINAGE AREA.--2.6 mi^2.

PERIOD OF RECORD.--April 2000 to current year.

GAGE--None. Elevation at site is 6,700 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEARS OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
MAY												
20...	0915	13	7.0	40	16.0	2.0	17	5.18	.98	--	--	--
JUN												
05...	1210	17	6.9	37	14.5	5.5	15	4.52	.80	.36	.1	1.13
27...	0945	4.8	7.6	44	22.0	9.0	18	5.40	1.00	--	--	--
AUG												
06...	1005	.48	7.5	72	17.0	11.0	28	8.57	1.66	--	--	--

DATE	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)
MAY												
20...	--	--	--	--	--	--	--	--	--	--	--	1.8
JUN												
05...	12	.35	<.1	8.86	5.3	1.28	28	46	564	.17	<.9	1.1
27...	--	--	--	--	--	--	--	--	--	--	--	3.0
AUG												
06...	--	--	--	--	--	--	--	--	--	--	--	1.0

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
MAY												
20...	8	.15	.61	--	--	4.7	16.9	--	--	.33	15	--
JUN												
05...	2	.15	.32	<.8	<.8	4.6	8.0	113	820	.43	6	28.9
27...	E1	.14	.13	--	--	3.3	4.1	--	--	.29	1	--
AUG												
06...	2	.09	.12	--	--	1.5	2.1	--	--	.12	<1	--

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAY												
20...	--	--	--	--	--	--	--	32	75	73	137	4.7
JUN												
05...	67	<.01	E.01	.55	<1	<.1	.27	28	43	64	31	1.4
27...	--	--	--	--	--	--	--	20	23	64	11	.14
AUG												
06...	--	--	--	--	--	--	--	21	23	70	7	.01

E--Estimated.

TENMILE CREEK BASIN

462838112143901 POISON CREEK AT MOUTH, NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°28'38", long 112°14'39" (NAD 27), in SW$^1/_4$ NW$^1/_4$ NW$^1/_4$ sec. 4, T. 8 N., R. 5 W., Lewis and Clark County, Hydrologic Unit 10030101, at culvert crossing on Rimini Road about 1 mi south of Rimini.
DRAINAGE AREA.--0.32 mi^2.
PERIOD OF RECORD.--May 1999 to current year.
GAGE--None. Elevation at site is 5,500 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
MAY												
20...	1030	.57	5.2	106	18.0	5.0	32	9.79	1.83	--	--	--
JUN												
05...	1130	.29	5.9	112	15.0	7.0	35	10.8	1.97	1.03	.2	2.19
27...	1100	.17	6.0	129	24.0	11.0	41	12.6	2.28	--	--	--
AUG												
06...	1115	.04	6.9	114	18.0	10.0	36	11.3	2.00	--	--	--

DATE	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)
MAY												
20...	--	--	--	--	--	--	--	--	--	--	--	11.9
JUN												
05...	2	1.02	.2	24.2	41.4	.07	87	127	430	1.49	1.6	7.2
27...	--	--	--	--	--	--	--	--	--	--	--	8.3
AUG												
06...	--	--	--	--	--	--	--	--	--	--	--	21.5

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
MAY												
20...	142	11.6	11.4	--	--	61.7	71.9	--	--	8.68	75	--
JUN												
05...	33	12.2	11.8	<.8	<.8	52.6	60.9	22	170	5.93	17	753
27...	35	15.4	14.4	--	--	67.4	76.6	--	--	7.06	16	--
AUG												
06...	40	9.86	9.70	--	--	32.2	37.6	--	--	3.34	8	--

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAY												
20...	--	--	--	--	--	--	--	1500	1460	73	32	.05
JUN												
05...	753	<.01	<.01	4.17	4	<.1	.23	1650	1580	87	5	<.01
27...	--	--	--	--	--	--	--	1990	1850	82	7	<.01
AUG												
06...	--	--	--	--	--	--	--	1310	1250	91	1	<.01

TENMILE CREEK BASIN

462853112144101 TENMILE CREEK ABOVE CITY DIVERSION, NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°28'53", long 112°14'10" (NAD 27), in NW$^1/_4$ NW$^1/_4$ NW$^1/_4$ sec. 4 , T. 8 N., R. 5 W., Lewis and Clark County, Hydrologic Unit 10030101, about 0.25 mile upstream from city diversion, about 100 feet west of Rimini road, and 0.125 mi south of Rimini.

DRAINAGE AREA.--15.2 mi^2.

PERIOD OF RECORD.--May 1999 to current year.

GAGE--None. Elevation at site is 5,350 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
MAY												
20...	1130	72	7.1	39	18.0	4.5	15	4.30	.94	--	--	--
JUN												
05...	1030	46	7.1	37	15.0	6.0	12	3.57	.79	.81	.2	1.41
27...	1200	24	7.6	42	26.0	11.5	15	4.42	.95	--	--	--
AUG												
06...	1150	2.9	7.7	71	15.0	12.0	24	6.98	1.53	--	--	--

DATE	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)
MAY												
20...	--	--	--	--	--	--	--	--	--	--	--	2.6
JUN												
05...	9	.40	E.1	12.7	6.8	4.04	32	120	384	.25	<.9	2.3
27...	--	--	--	--	--	--	--	--	--	--	--	3.5
AUG												
06...	--	--	--	--	--	--	--	--	--	--	--	5.7

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
MAY												
20...	8	.46	.65	--	--	5.1	8.0	--	--	.73	8	--
JUN												
05...	3	.66	.69	<.8	E.4	4.7	5.5	71	310	.84	3	24.6
27...	4	.97	.96	--	--	5.5	5.8	--	--	.96	2	--
AUG												
06...	8	1.47	1.55	--	--	3.9	4.2	--	--	.80	2	--

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAY												
20...	--	--	--	--	--	--	--	78	93	60	46	9.0
JUN												
05...	39	.01	.01	.71	<1	<.1	.14	110	110	64	8	1.0
27...	--	--	--	--	--	--	--	154	159	88	4	.26
AUG												
06...	--	--	--	--	--	--	--	302	310	57	3	.02

E--Estimated.

TENMILE CREEK BASIN

462758112123001 BEAVER CREEK TRIBUTARY NO. 2 NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°27'58", long 112°12'30" (NAD 27), in SW$^1/_4$ SE$^1/_4$ SE$^1/_4$ sec. 3, T. 8 N., R. 5 W., Lewis and Clark County, Hydrologic Unit 10030101, about 40 ft upstream from inlet structure to Banner Creek flume, about 100 ft. upstream from Banner Creek flume, and about 2.5 mi southwest of Rimini.
DRAINAGE AREA.--0.67 mi^2.
PERIOD OF RECORD.--April 2000 to current year.
GAGE--None. Elevation at site is 6,330 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEARS OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)
MAY											
21...	0850	2.1	7.5	32	5.5	2.5	11	3.33	.61	--	--
JUN											
05...	1400	1.4	7.2	50	13.0	4.5	15	4.56	.80	1.13	.2
JUL											
09...	1130	.73	7.5	57	15.0	7.0	17	5.43	.92	--	--
AUG											
05...	1300	.26	7.7	58	18.5	9.0	18	5.48	.96	--	--

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)
MAY											
21...	--	--	--	--	--	--	--	--	--	--	7.2
JUN											
05...	1.64	9	E.22	<.1	13.3	12.8	27	114	.14	<.9	3.9
JUL											
09...	--	--	--	--	--	--	--	--	--	--	6.7
AUG											
05...	--	--	--	--	--	--	--	--	--	--	6.3

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
MAY												
21...	19	1.48	1.92	--	--	15.3	26.2	--	--	.46	12	--
JUN												
05...	12	4.22	4.24	<.8	<.8	19.8	24.6	30	180	.99	7	26.3
JUL												
09...	8	3.64	3.42	--	--	12.0	12.8	--	--	.63	2	--
AUG												
05...	9	2.39	2.48	--	--	8.3	9.1	--	--	.25	<1	--

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAY												
21...	--	--	--	--	--	--	--	253	290	35	14	.08
JUN												
05...	34	E.01	E.01	.60	<1	<.1	.05	691	660	77	2	.01
JUL												
09...	--	--	--	--	--	--	--	561	557	80	1	<.01
AUG												
05...	--	--	--	--	--	--	--	399	393	86	1	<.01

E--Estimated.

TENMILE CREEK BASIN

462913112144101 SUZIE LODE ADIT DISCHARGE AT RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°29'13", long 112°14'41" (NAD 27), in SE$^1/_4$ NW$^1/_4$ SE$^1/_4$ sec. 33 , T. 9 N., R. 5 W., Lewis and Clark County, Hydrologic Unit 10030101, at adit discharge from pipe, at culvert crossing on Rimini Road in Rimini.

DRAINAGE AREA.--None.

PERIOD OF RECORD.--May 2000 to current year.

GAGE--None. Elevation at site is 5,240 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)
MAY											
21...	1345	.01	5.3	1950	5.5	9.5	970	236	91.5	--	--
JUN											
05...	0945	.01	5.1	1980	12.0	10.0	990	239	96.3	3.42	.4
27...	1310	.01	5.4	1970	24.0	11.0	950	233	88.8	--	--
AUG											
06...	1310	.01	5.3	2000	18.0	10.0	980	239	93.5	--	--

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)
MAY											
21...	--	--	--	--	--	--	--	--	--	6640	8720
JUN											
05...	26.8	1.32	.5	38.2	1260	657	678	.59	<.9	6500	8000
27...	--	--	--	--	--	--	--	--	--	7170	8400
AUG											
06...	--	--	--	--	--	--	--	--	--	6310	8510

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
MAY											
21...	197	193	--	--	41.3	44.2	--	--	.46	2	--
JUN											
05...	194	185	<.8	<.8	40.3	40.7	104000	104000	.56	2	13700
27...	199	181	--	--	40.9	46.3	--	--	.53	2	--
AUG											
06...	187	180	--	--	43.7	37.0	--	--	.55	2	--

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
MAY									
21...	--	--	--	--	--	--	--	28900	27400
JUN									
05...	13400	.02	.02	33.5	34	<.1	.08	29200	28300
27...	--	--	--	--	--	--	--	28100	29300
AUG									
06...	--	--	--	--	--	--	--	28700	28000

TENMILE CREEK BASIN

462922112145401 TENMILE CREEK BELOW SPRING CREEK, AT RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°29'22", long 112°14'54" (NAD 27), in NW$^1/_4$ SW$^1/_4$ SW$^1/_4$ sec. 33, T. 8 N., R. 5 W., Lewis and Clark County, Hydrologic Unit 10030101, at bridge crossing on road to private residence in Rimini.

DRAINAGE AREA.--22.8 mi^2.

PERIOD OF RECORD.--May 1997 to current year.

GAGE--None. Elevation at site is 5,220 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEARS OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM DIS-SOLVED (MG/L AS NA) (00930)
MAY												
20...	1230	73	7.1	41	18.0	5.0	15	4.36	.99	--	--	--
JUN												
05...	0900	50	7.3	40	15.5	5.5	13	3.93	.88	.98	.2	1.61
27...	1340	25	7.4	47	24.5	14.5	16	4.71	1.05	--	--	--
AUG												
06...	1331	.63	6.8	134	17.5	16.0	43	11.5	3.49	--	--	--

DATE	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)
MAY												
20...	--	--	--	--	--	--	--	--	--	--	--	3.5
JUN												
05...	9	.41	E.1	14.0	7.2	4.71	35	113	333	.27	<.9	3.6
27...	--	--	--	--	--	--	--	--	--	--	--	5.5
AUG												
06...	--	--	--	--	--	--	--	--	--	--	--	9.3

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
MAY												
20...	12	.55	.81	--	--	6.3	9.4	--	--	.90	9	--
JUN												
05...	6	.65	.74	<.8	<.8	5.9	7.0	93	310	1.09	4	24.2
27...	7	1.34	1.32	--	--	7.2	7.8	--	--	1.37	4	--
AUG												
06...	48	10.6	10.7	--	--	7.9	13.5	--	--	1.28	9	--

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAY												
20...	--	--	--	--	--	--	--	90	114	38	75	14.8
JUN												
05...	44	E.01	.02	.74	<1	<.1	.08	117	118	82	7	.94
27...	--	--	--	--	--	--	--	186	193	82	5	.34
AUG												
06...	--	--	--	--	--	--	--	1390	1380	93	3	.01

E--Estimated.

TENMILE CREEK BASIN

462932112145801 MOORES SPRING CREEK AT MOUTH, NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°29'32", long 112°14'58" (NAD 27), in NW$^1/_4$ NW$^1/_4$ SW$^1/_4$ sec. 33 , T. 8 N., R. 5 W., Lewis and Clark County, Hydrologic Unit 10030101, at culvert crossing on Rimini Road in Rimini.

DRAINAGE AREA.--0.6 mi^2.

PERIOD OF RECORD.--May 2000 to current year.

GAGE--None. Elevation at site is 5,180 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
MAY												
21...	1400	.29	7.3	206	5.5	7.0	80	21.6	6.24	--	--	--
JUN												
05...	0830	.15	7.6	186	15.5	7.0	77	21.1	5.93	1.85	.2	4.48
27...	1435	.32	8.0	195	24.5	15.5	78	21.5	5.89	--	--	--
AUG												
06...	1415	.02	9.4	267	17.5	13.5	110	30.2	8.60	--	--	--

DATE	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)
MAY												
21...	--	--	--	--	--	--	--	--	--	--	--	53.9
JUN												
05...	38	.54	E.1	20.7	48.4	.05	127	11	76	1.23	1.2	54.1
27...	--	--	--	--	--	--	--	--	--	--	--	63.4
AUG												
06...	--	--	--	--	--	--	--	--	--	--	--	73.8

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
MAY												
21...	62	4.25	4.23	--	--	8.0	8.4	--	--	.25	3	--
JUN												
05...	58	4.04	4.09	<.8	<.8	6.8	8.1	18	90	.24	4	73.1
27...	78	4.82	4.89	--	--	8.0	9.6	--	--	.80	6	--
AUG												
06...	79	4.72	4.57	--	--	5.7	6.7	--	--	.19	1	--

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAY												
21...	--	--	--	--	--	--	--	710	668	73	3	<.01
JUN												
05...	78	<.01	<.01	2.03	2	<.1	.07	653	614	82	2	<.01
27...	--	--	--	--	--	--	--	601	593	87	5	<.01
AUG												
06...	--	--	--	--	--	--	--	655	638	85	1	<.01

E--Estimated.

TENMILE CREEK BASIN

462917112165601 MINNEHAHA CREEK BELOW ARMSTRONG MINE, NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°29'17", long 112°16'56" (NAD 27), in SW$^1/_4$ SW$^1/_4$ NW$^1/_4$ sec. 31, T. 9 N., R. 5 W., Lewis and Clark County, Hydrologic Unit 10030101, 0.6 mi downstream from the Armstrong mine road and 1.4 mi southwest of Rimini.

DRAINAGE AREA.--1.75 mi^2.

PERIOD OF RECORD.--April 1998 to current year.

GAGE--None. Elevation at site is 5,650 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEARS OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)
MAY											
21...	1200	7.7	7.3	33	5.5	3.0	11	3.07	.79	--	--
JUN											
06...	0815	4.8	7.3	45	9.5	5.0	12	3.40	.95	.90	.3
28...	1040	3.0	7.4	57	17.0	9.0	16	4.49	1.23	--	--
AUG											
07...	1150	.88	7.2	61	16.0	9.5	17	4.79	1.30	--	--

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)
MAY											
21...	--	--	--	--	--	--	--	--	--	--	5.1
JUN											
06...	2.23	9	E.29	E.1	22.1	10.4	80	214	.15	<.9	4.2
28...	--	--	--	--	--	--	--	--	--	--	4.5
AUG											
07...	--	--	--	--	--	--	--	--	--	--	4.9

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
MAY												
21...	9	2.08	2.16	--	--	13.3	16.9	--	--	1.30	6	--
JUN												
06...	5	3.09	3.15	<.8	<.8	13.3	14.5	32	100	.88	2	24.4
28...	5	4.59	4.35	--	--	15.9	16.8	--	--	.68	2	--
AUG												
07...	5	3.11	3.08	--	--	9.3	9.8	--	--	.23	<1	--

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAY												
21...	--	--	--	--	--	--	--	323	337	67	8	.17
JUN												
06...	28	<.01	<.01	1.30	1	<.1	.05	505	472	81	3	.04
28...	--	--	--	--	--	--	--	696	626	71	2	.02
AUG												
07...	--	--	--	--	--	--	--	480	475	85	2	<.01

E--Estimated.

TENMILE CREEK BASIN

462918112170801 BEATTRICE MINE TRIBUTARY AT MOUTH, NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°29'18", long 112°17'08" (NAD 27), in SW$^1/_4$ SW$^1/_4$ SW$^1/_4$ sec. 31, T. 9 N., R. 5 W., Lewis and Clark County, Hydrologic Unit 10030101, 400 ft upstream from old logging road crossing, about 1,000 ft upstream from confluence with Minnehaha Creek, and 1.5 mi southwest of Rimini.

DRAINAGE AREA.--0.24 mi^2.

PERIOD OF RECORD.--May 2000 to current year.

GAGE--None. Elevation at site is 5,660 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEARS OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
MAY												
21...	1100	.42	7.9	60	6.0	1.5	21	6.34	1.18	--	--	--
JUN												
06...	0720	.57	7.6	54	9.5	4.5	17	5.37	.93	.85	.3	2.64
28...	1015	.23	7.7	63	16.0	9.0	20	6.18	1.10	--	--	--
AUG												
07...	1105	.05	8.5	103	17.0	9.5	31	9.45	1.84	--	--	--

DATE	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)
MAY												
21...	--	--	--	--	--	--	--	--	--	--	--	1.2
JUN												
06...	12	.85	.1	27.7	11.1	.09	57	56	176	.21	<.9	1.1
28...	--	--	--	--	--	--	--	--	--	--	--	1.9
AUG												
07...	--	--	--	--	--	--	--	--	--	--	--	.6

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
MAY												
21...	E2	.07	.11	--	--	20.2	28.3	--	--	.22	2	--
JUN												
06...	<2	.07	.08	<.8	<.8	16.0	18.9	55	220	.27	1	5.9
28...	<2	.07	.06	--	--	13.4	14.7	--	--	.14	<1	--
AUG												
07...	E2	.07	.06	--	--	7.5	7.7	--	--	E.04	<1	--

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAY												
21...	--	--	--	--	--	--	--	9	11	69	6	.01
JUN												
06...	13	<.01	E.01	.45	<1	<.1	.07	8	8	73	4	.01
28...	--	--	--	--	--	--	--	8	9	73	3	<.01
AUG												
07...	--	--	--	--	--	--	--	10	7	83	1	<.01

E--Estimated.

TENMILE CREEK BASIN

463023112153701 MINNEHAHA CREEK ABOVE CITY DIVERSION, NEAR RIMINI, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°30'23", long 112°15'37" (NAD 27), in NW$^1/_4$ NW$^1/_4$ SE$^1/_4$ sec. 29, T. 9 N., R. 5 W., Lewis and Clark County, Hydrologic Unit 10030101, about 75 feet upstream from city diversion structure, about 200 feet upstream from mouth and about 3 mi north of Rimini.

DRAINAGE AREA.--5.35 mi^2.

PERIOD OF RECORD.--April 1998 to current year.

GAGE--None. Elevation at site is 5,040 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEARS OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
MAY												
21...	1230	12	7.4	42	7.5	4.5	14	3.86	.97	--	--	--
JUN												
06...	0950	8.9	7.3	48	17.0	6.0	15	4.28	1.04	1.0	.3	2.74
28...	1210	6.1	7.7	57	19.5	10.5	18	5.08	1.22	--	--	--
AUG												
07...	1230	2.2	7.5	67	17.0	11.5	20	5.72	1.45	--	--	--

DATE	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)
MAY												
21...	--	--	--	--	--	--	--	--	--	3.3	5	1.25
JUN												
06...	13	E.30	E.1	22.5	9.1	50	453	.16	<.9	2.7	3	1.43
28...	--	--	--	--	--	--	--	--	--	3.0	3	1.67
AUG												
07...	--	--	--	--	--	--	--	--	--	2.9	4	1.56

DATE	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)
MAY												
21...	1.44	--	--	10.4	13.4	--	--	.51	3	--	--	--
JUN												
06...	1.54	<.8	<.8	8.7	10.3	236	240	.33	1	4.4	10	<.01
28...	1.79	--	--	8.6	10.4	--	--	.24	1	--	--	--
AUG												
07...	1.60	--	--	5.4	6.1	--	--	.09	<1	--	--	--

DATE	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAY										
21...	--	--	--	--	--	222	238	61	8	.26
JUN										
06...	<.01	.86	<1	<.1	E.04	258	250	70	3	.07
28...	--	--	--	--	--	250	268	49	6	.10
AUG										
07...	--	--	--	--	--	266	270	45	7	.04

E--Estimated.

TENMILE CREEK BASIN

06062500 TENMILE CREEK NEAR RIMINI, MT

LOCATION.--Lat 46°31'27", long 112°15'22" (NAD 27), in NE$^1/_4$SW$^1/_4$NE$^1/_4$ sec. 20, T.9 N., R.5 W., Lewis and Clark County, Hydrologic Unit 10030101, Helena National Forest, on left bank at U.S. Forest Service Moose Creek campground, 500 ft upstream from Moose Creek, 2.5 mi north of Rimini, and at river mile 20.4.

DRAINAGE AREA.--30.9 mi^2.

PERIOD OF RECORD.--July 1914 to September 1994, May 1997 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 19417, 1921, 1924-25. WSP 1509: 1915, 1916-17(M), 1920(M), 1927(m), 1928-1930, 1947(m), 1948, 1950(M). WSP 1559: Drainage area. WSP 1709: 1959. WDR-MT-97-1: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 4,850 ft (NGVD 29). Prior to Dec. 17, 1934, water-stage recorder at site 40 ft downstream at different datum and different control.

REMARKS.--Records good except those below 1.0 ft^3/s and those for estimated daily discharges, which are poor. Flow regulated by Chessman and Scott Reservoirs on tributaries upstream from station, combined capacity, 2,340 acre-feet. Small diversions upstream from station for water supply for city of Helena. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.25	1.1	0.31	e0.05	e0.07	e0.04	0.18	5.2	90	e21	1.0	e0.40
2	0.25	0.74	0.32	e0.04	0.09	e0.04	0.18	6.3	96	e20	0.98	e0.40
3	0.25	0.65	e0.26	e0.04	0.09	e0.04	0.18	10	83	e18	0.93	e0.45
4	0.26	0.56	e0.24	e0.04	0.07	e0.05	0.18	9.9	66	e16	0.97	e0.40
5	0.27	0.46	e0.24	e0.04	0.06	e0.04	0.18	12	57	e13	1.4	e0.45
6	0.24	0.43	e0.25	e0.04	0.06	e0.03	0.18	12	51	e13	1.0	e0.55
7	0.25	0.42	e0.27	e0.06	0.06	e0.03	0.25	11	44	e15	1.3	e0.75
8	0.25	0.37	e0.28	e0.07	0.08	e0.04	0.45	9.3	52	e19	11	e0.55
9	0.25	0.37	e0.27	e0.12	0.08	e0.05	1.8	8.7	53	e15	8.2	e0.45
10	0.25	0.36	e0.22	e0.14	0.08	e0.06	3.1	8.9	56	e12	2.3	e0.45
11	0.36	0.36	e0.22	e0.17	0.07	e0.07	2.8	9.1	68	e10	1.2	e0.40
12	0.56	0.36	e0.22	e0.21	0.08	e0.07	3.8	10	90	8.3	1.00	e0.35
13	0.53	0.33	e0.22	0.22	0.07	e0.07	7.4	16	107	e5.0	0.84	e0.30
14	0.46	0.34	e0.22	0.22	0.07	e0.07	21	26	122	e4.0	0.73	e0.30
15	0.48	0.34	e0.22	0.22	0.07	e0.07	19	27	124	e15	0.70	0.28
16	0.86	0.34	e0.22	0.25	0.07	e0.06	12	23	112	e14	0.64	0.25
17	0.60	0.34	e0.23	0.24	0.07	e0.06	8.8	24	100	e8.0	e0.55	0.34
18	0.49	0.34	e0.22	0.22	0.06	e0.05	4.3	32	93	5.0	e0.55	0.38
19	0.72	0.33	e0.20	0.22	0.06	e0.05	5.0	60	82	4.4	e0.60	0.30
20	1.3	0.33	e0.18	0.22	0.06	e0.05	5.2	94	69	5.0	e0.60	0.27
21	0.86	0.33	e0.16	0.22	0.06	e0.05	5.5	90	61	3.2	e1.7	0.30
22	1.1	0.34	e0.14	0.22	e0.05	e0.05	5.4	77	63	1.9	e1.6	0.27
23	1.3	0.34	e0.10	0.22	e0.04	e0.06	6.8	59	58	1.7	e0.75	0.29
24	1.0	0.32	e0.08	e0.23	e0.04	e0.07	5.3	55	47	1.7	0.96	0.30
25	0.92	0.32	e0.07	e0.23	e0.04	e0.08	4.7	65	40	1.4	2.1	0.30
26	0.91	e0.30	e0.07	e0.21	e0.04	e0.09	4.3	77	37	1.4	0.88	0.29
27	0.50	e0.25	e0.07	e0.15	e0.04	e0.10	4.0	86	33	1.4	0.77	0.57
28	0.52	e0.30	e0.06	e0.08	e0.04	0.12	4.1	97	29	1.2	0.74	0.60
29	0.53	0.35	e0.06	e0.07	---	0.14	4.8	105	29	1.1	0.65	0.43
30	0.53	0.32	e0.06	e0.07	---	0.15	5.8	109	26	1.1	e0.60	0.50
31	0.89	---	e0.05	e0.08	---	0.16	---	99	---	1.1	e0.45	---
TOTAL	17.94	12.04	5.73	4.61	1.77	2.11	146.68	1333.4	2038	257.9	47.69	11.87
MEAN	0.579	0.401	0.185	0.149	0.063	0.068	4.889	43.01	67.93	8.319	1.538	0.396
MAX	1.3	1.1	0.32	0.25	0.09	0.16	21	109	124	21	11	0.75
MIN	0.24	0.25	0.05	0.04	0.04	0.03	0.18	5.2	26	1.1	0.45	0.25
AC-FT	36	24	11	9.1	3.5	4.2	291	2640	4040	512	95	24

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1915 - 2002, BY WATER YEAR (WY)

MEAN	3.119	2.356	1.787	1.471	1.343	2.537	17.89	83.84	73.17	12.42	2.565	2.379
MAX	23.1	13.6	9.64	6.97	5.05	17.5	66.7	300	346	66.4	22.5	22.4
(WY)	1966	1986	1918	1918	1921	1986	1926	1917	1975	1969	1993	1993
MIN	0.19	0.22	0.17	0.14	0.10	0.17	1.50	6.14	3.01	0.34	0.13	0.23
(WY)	1974	1941	1941	1941	1936	1937	1975	2000	2000	1985	2000	1935

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1915 - 2002*	
ANNUAL TOTAL			3879.74			
ANNUAL MEAN	3020.00		10.63		16.91	
HIGHEST ANNUAL MEAN	8.274				53.1	1917
LOWEST ANNUAL MEAN					1.74	2000
HIGHEST DAILY MEAN	109	May 14	124	Jun 15	1880	May 22 1981
LOWEST DAILY MEAN	0.05	Dec 31	0.03	Mar 6	0.00	Aug 31 1931
ANNUAL SEVEN-DAY MINIMUM	0.06	Dec 25	0.04	Mar 1	0.00	Aug 31 1931
MAXIMUM PEAK FLOW			133	Jun 14	3290	May 22 1981
MAXIMUM PEAK STAGE			2.90	Jun 14	6.20	May 22 1981
ANNUAL RUNOFF (AC-FT)	5990		7700		12250	
10 PERCENT EXCEEDS	37		45		51	
50 PERCENT EXCEEDS	0.45		0.43		2.0	
90 PERCENT EXCEEDS	0.15		0.06		0.40	

*--During period of operation (1915-1994, May 1997 to current year).
e--Estimated.

TENMILE CREEK BASIN

06062750 TENMILE CREEK AT TENMILE WATER TREATMENT PLANT, NEAR RIMINI, MT

LOCATION.--Lat 46°34'22", long 112°12'52" (NAD 27), in NE$^1/_4$SW$^1/_4$SE$^1/_4$ sec. 34, T.10N., R.5W., Lewis and Clark County, Hydrologic Unit 10030101, on left bank near Tenmile Water Treatment Plant, about 0.1 mi south of U.S. Highway 12, and about 8 mi north of Rimini. Formerly published as Tenmile Creek at Helena Water Treatment Plant, near Rimini.

DRAINAGE AREA.--51.1 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1997 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,425 ft (NGVD 29).

REMARKS.--Water-discharge records fair except those for estimated daily discharges, which are poor. Small diversions upstream from station for water supply for city of Helena.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	e1.0	e0.40	e0.00	e0.00	e0.00	e0.00	10	94	18	0.43	0.00
2	0.00	e0.90	e0.38	e0.00	e0.00	e0.00	e0.00	11	100	15	0.40	0.00
3	0.00	e0.80	e0.36	e0.00	e0.00	e0.00	e0.00	16	89	13	0.35	0.00
4	0.00	e0.70	e0.31	e0.00	e0.00	e0.00	e0.00	15	72	14	0.40	0.00
5	0.00	e0.60	e0.25	e0.00	e0.00	e0.00	e0.50	19	65	10	0.72	0.00
6	0.00	e0.40	e0.30	e0.00	e0.00	e0.00	e0.20	18	57	9.4	0.69	0.00
7	0.00	e0.30	e0.30	e0.00	e0.00	e0.00	e0.25	17	49	11	0.74	0.21
8	0.00	e0.25	e0.30	e0.00	e0.00	e0.00	e0.40	15	60	15	8.4	0.43
9	0.00	e0.35	e0.30	e0.00	e0.00	e0.00	e2.5	15	70	13	8.8	0.14
10	0.00	e0.40	e0.10	e0.00	e0.00	e0.00	e7.0	16	86	8.4	2.4	0.07
11	0.00	e0.40	e0.01	e0.00	e0.00	e0.00	e14	15	89	7.0	0.86	0.00
12	e0.60	e0.40	e0.00	e0.00	e0.00	e0.00	19	e25	107	5.7	0.66	0.00
13	e0.65	e0.40	e0.00	e0.00	e0.00	e0.00	21	e30	124	3.9	0.56	0.00
14	e0.65	e0.40	e0.00	e0.00	e0.00	e0.00	44	e30	136	3.1	0.40	0.00
15	e0.80	e0.40	e0.00	e0.00	e0.00	e0.00	41	e28	136	6.8	0.33	0.00
16	e0.80	e0.38	e0.00	e0.00	e0.00	e0.00	22	e35	121	7.6	0.23	0.00
17	e0.70	e0.40	e0.00	e0.00	e0.00	e0.00	16	e50	109	4.6	0.20	0.00
18	e0.60	e0.40	e0.00	e0.00	e0.00	e0.00	11	e75	102	2.3	0.10	0.00
19	e0.80	e0.40	e0.00	e0.00	e0.00	e0.00	12	e100	91	1.6	0.00	0.00
20	e1.5	e0.40	e0.00	e0.00	e0.00	e0.00	11	e90	75	2.2	0.00	0.00
21	e1.5	e0.40	e0.00	e0.00	e0.00	e0.00	11	e80	67	1.4	0.53	0.00
22	e1.2	e0.40	e0.00	e0.00	e0.00	e0.00	10	e70	68	0.82	1.3	0.00
23	e1.5	e0.40	e0.00	e0.00	e0.00	e0.00	13	e60	64	0.63	0.64	0.00
24	e1.2	e0.40	e0.00	e0.00	e0.00	e0.00	10	e70	51	0.59	0.68	0.00
25	e0.90	e0.25	e0.00	e0.00	e0.00	e0.00	9.1	e90	41	0.45	2.3	0.00
26	e0.90	e0.30	e0.00	e0.00	e0.00	e0.00	8.8	e100	36	0.40	0.85	0.00
27	e0.80	e0.40	e0.00	e0.00	e0.00	e0.00	8.9	e105	32	0.46	0.42	0.26
28	e0.80	e0.25	e0.00	e0.00	e0.00	e0.00	8.8	e115	27	0.37	0.38	0.94
29	e0.80	e0.40	e0.00	e0.00	---	e0.00	9.8	116	26	0.45	0.25	0.70
30	e1.0	e0.40	e0.00	e0.00	---	e0.00	11	115	23	0.48	0.10	0.41
31	e1.2	---	e0.00	e0.00	---	e0.00	---	105	---	0.42	0.00	---
TOTAL	18.90	13.28	3.01	0.00	0.00	0.00	322.25	1656	2267	178.07	34.12	3.16
MEAN	0.610	0.443	0.097	0.000	0.000	0.000	10.74	53.42	75.57	5.744	1.101	0.105
MAX	1.5	1.0	0.40	0.00	0.00	0.00	44	116	136	18	8.8	0.94
MIN	0.00	0.25	0.00	0.00	0.00	0.00	0.00	10	23	0.37	0.00	0.00
AC-FT	37	26	6.0	0.00	0.00	0.00	639	3280	4500	353	68	6.3

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2002, BY WATER YEAR (WY)

MEAN	2.063	1.745	1.274	1.052	0.857	2.636	13.60	68.98	60.87	13.94	2.218	0.745
MAX	5.84	4.29	3.61	2.20	1.64	6.85	21.0	156	102	50.3	4.97	1.86
(WY)	1998	1998	1998	1998	1998	1999	1998	1997	1997	1998	1997	1997
MIN	0.61	0.14	0.003	0.000	0.000	0.000	7.46	4.64	2.61	1.01	0.000	0.076
(WY)	2002	2001	2001	2001	2002	2002	2000	2000	2000	2000	2000	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1997 - 2002	
ANNUAL TOTAL	3338.31		4495.79			
ANNUAL MEAN	9.146		12.32		11.94	
HIGHEST ANNUAL MEAN					20.6	1998
LOWEST ANNUAL MEAN					1.83	2000
HIGHEST DAILY MEAN	115	May 14	136	Jun 14	260	May 25 1997
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	0.00	Sep 22 1999
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00	Oct 1	0.00	Jul 11 2000
MAXIMUM PEAK FLOW			a136	Jun 13	c382	Jun 11 1997
MAXIMUM PEAK STAGE			b8.78	Feb 7	8.78	Feb 7 2002
INSTANTANEOUS LOW FLOW			0.00	Oct 1	0.00	Sep 22 1999
ANNUAL RUNOFF (AC-FT)	6620		8920		8650	
10 PERCENT EXCEEDS	40		53		41	
50 PERCENT EXCEEDS	0.38		0.40		1.4	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

a--Gage height, 2.47 ft.
b--Ice jam.
c--Gage height, 3.34 ft.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1999 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
APR												
17...	1440	15	7.5	110	2.0	3.0	41	12.0	2.68	--	--	--
JUN												
05...	0730	65	8.0	57	12.0	7.0	20	5.77	1.33	.77	.2	2.52
28...	0845	28	7.8	77	19.5	11.0	27	7.91	1.80	--	--	--
AUG												
07...	1345	.49	7.7	161	17.0	15.0	59	17.3	3.73	--	--	--

DATE	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)
APR												
17...	--	--	--	--	--	--	--	--	--	--	--	12.1
JUN												
05...	15	1.46	E.1	16.3	9.2	8.16	47	66	317	.32	<.9	7.2
28...	--	--	--	--	--	--	--	--	--	--	--	11.7
AUG												
07...	--	--	--	--	--	--	--	--	--	--	--	20.3

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
APR												
17...	14	.56	.62	--	--	5.3	6.1	--	--	.53	2	--
JUN												
05...	9	.59	.68	1.0	<.8	5.8	7.2	72	330	.48	3	10.6
28...	13	.86	.88	--	--	5.9	6.7	--	--	.57	2	--
AUG												
07...	22	.62	.67	--	--	2.5	2.6	--	--	<.08	<1	--

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
APR												
17...	--	--	--	--	--	--	--	137	134	67	3	.12
JUN												
05...	25	E.01	.01	.78	<1	<.1	.06	127	128	77	6	1.1
28...	--	--	--	--	--	--	--	158	169	84	5	.38
AUG												
07...	--	--	--	--	--	--	--	115	113	80	1	<.01

E--Estimated.

TENMILE CREEK BASIN

463438112091801 TENMILE CREEK BELOW COLORADO GULCH, NEAR HELENA, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°34'38", long 112°09'18" (NAD 27), in NW$^1/_4$NW$^1/_4$SE$^1/_4$ sec. 31, T.10N., R4W., Lewis and Clark County, Hydrologic Unit 10030101, at U.S. Highway 12 bridge over Tenmile Creek, about 0.5 mi below the mouth of Colorado Gulch, and about 5.0 mi west of Helena.
DRAINAGE AREA.--77.8 mi^2.
PERIOD OF RECORD.--April 2002 to October 2002.
GAGE.--None. Elevation of gage is 4,190 ft (NGVD 29).

WATER-QUALITY DATA, APRIL 2002 TO OCTOBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
APR											
17...	1315	18	7.7	150	4.0	4.0	55	16.0	3.74	.34	.094
MAY											
28...	1130	114	7.5	68	19.0	8.0	25	7.31	1.71	.29	.020
JUL											
29...	0815	6.4	8.1	219	21.0	13.0	89	25.6	6.10	.18	<.013
OCT											
09...	0830	2.2	8.1	262	6.0	7.5	108	30.6	7.76	E.10	.232

DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
APR											
17...	<.002	.009	.032	10.7	13	.26	.33	4.2	4.8	.29	2
MAY											
28...	<.002	E.005	.040	7.2	13	.47	.66	6.4	8.8	.31	5
JUL											
29...	<.002	.018	.027	15.1	15	.19	.31	2.1	2.5	.09	<1
OCT											
09...	.003	E.006	.013	11.0	10	.09	.10	1.9	1.4	E.06	<1

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
APR					
17...	79	79	71	4	.19
MAY					
28...	98	122	55	15	4.6
JUL					
29...	35	42	73	1	.02
OCT					
09...	18	18	--	--	--

E--Estimated.

TENMILE CREEK BASIN

06063000 TENMILE CREEK NEAR HELENA, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°36'20", long 112°05'20" (NAD 27), in SW$^1/_4$NE$^1/_4$SE$^1/_4$ sec. 22, T.10N., R4W., Lewis and Clark County, Hydrologic Unit 10030101, at Williams Street bridge over Tenmile, about 1.2 mi southeast of Fort Harrison, and about 3.5 mi west of Helena.
DRAINAGE AREA.--96.5 mi^2.
PERIOD OF RECORD.--April 2002 to October 2002.
GAGE.-- Non-recording wire-weight gage on bridge. Elevation at gage is 3,960 ft (NGVD 29).

WATER-QUALITY DATA, APRIL 2002 TO OCTOBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
APR											
17...	1140	18	8.0	185	5.5	4.0	65	18.7	4.45	.33	.104
MAY											
28...	1230	118	7.7	83	19.0	8.5	30	8.48	2.03	.34	.022
JUL											
29...	0945	5.4	8.3	279	21.0	16.0	100	29.8	7.21	.17	.182
OCT											
09...	1000	2.2	7.9	E336	10.5	10.5	127	36.1	8.96	.11	.176

DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
APR											
17...	<.002	.008	.029	10.9	13	.14	.20	3.6	4.5	.23	2
MAY											
28...	<.002	E.004	.043	7.9	14	.32	.61	5.8	8.7	.26	6
JUL											
29...	E.002	.009	.019	16.0	15	.14	.21	1.9	2.2	.08	<1
OCT											
09...	.003	<.007	.009	13.2	12	.12	.11	2.0	1.7	.37	<1

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
APR					
17...	48	53	74	6	.29
MAY					
28...	80	114	64	19	6.1
JUL					
29...	20	26	75	2	.03
OCT					
09...	13	16	78	11	.07

E--Estimated.

TENMILE CREEK BASIN

463747112033801 SEVENMILE CREEK AT MOUTH, NEAR HELENA, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°37'47", long 112°03'38" (NAD 27), in NW$^1/_4$NW$^1/_4$NW$^1/_4$ sec. 13, T.10N., R4W., Lewis and Clark County, Hydrologic Unit 10030101, at railroad bridge over Sevenmile Creek, about 0.15 mi upstream from Tenmile Creek, about 3.2 mi northwest of Helena.
DRAINAGE AREA.--57.2 mi^2.
PERIOD OF RECORD.--April 2002 to October 2002.
GAGE.--None. Elevation at site is 3,850 ft (NGVD 29).

WATER-QUALITY DATA, APRIL 2002 TO OCTOBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
APR											
17...	1000	1.2	8.1	665	6.0	4.5	290	69.4	28.3	.38	.082
MAY											
28...	1440	2.0	8.4	705	21.5	17.0	310	74.5	29.2	.36	<.013
JUL											
29...	1130	2.3	8.4	509	21.0	17.0	260	67.6	22.1	.23	<.013
OCT											
09...	1145	.70	8.0	E687	17.0	9.5	341	81.6	33.4	.25	E.014

DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
APR											
17...	.003	.018	.038	11.6	11	E.02	E.03	1.2	1.7	.12	<1
MAY											
28...	<.002	.040	.065	16.9	17	E.02	E.03	1.4	1.8	E.08	<1
JUL											
29...	<.002	.027	.049	12.0	14	E.02	E.03	1.2	1.8	.10	<1
OCT											
09...	.003	.021	.046	8.84	8	E.02	.05	1.2	3.1	.12	<1

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
APR					
17...	3	3	90	5	.02
MAY					
28...	2	2	92	3	.02
JUL					
29...	<1	2	72	18	.11
OCT					
09...	5	14	--	--	--

E--Estimated.

TENMILE CREEK BASIN

06064100 TENMILE CREEK AT GREEN MEADOW DRIVE, AT HELENA, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 46°37'54", long 112°02'46" (NAD 27), in SW$^1/_4$SE$^1/_4$SE$^1/_4$ sec. 12, T.10N., R4W., Lewis and Clark County, Hydrologic Unit 10030101, at Green Meadow Drive bridge over Tenmile Creek, about 1.1 mi north of Custer Avenue, and about 3 mi northwest of Helena.
DRAINAGE AREA.--161 mi^2.
PERIOD OF RECORD.--May 1997 to September 1998, April 2002 to October 2002.
GAGE.--None. Elevation at site is 3,820 ft (NGVD 29).

WATER-QUALITY DATA, APRIL 2002 TO OCTOBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
APR											
17...	0820	27	8.0	237	6.0	4.0	89	24.9	6.47	.37	.068
MAY											
28...	1400	113	7.7	102	21.5	9.5	38	10.6	2.70	.42	.022
JUL											
29...	1215	4.9	8.6	379	21.0	20.0	170	44.9	12.9	.25	<.013
OCT											
09...	1300	1.2	8.3	E457	17.0	10.0	201	53.9	16.1	.18	<.022

DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
APR											
17...	<.002	.007	.031	10.9	14	.06	.13	3.4	4.2	.20	1
MAY											
28...	<.002	.007	.060	9.2	16	.18	.57	5.2	9.0	.25	7
JUL											
29...	<.002	.017	.037	19.0	19	.06	.13	2.1	2.6	.18	<1
OCT											
09...	<.002	.009	.021	12.3	12	.05	.06	1.4	1.8	.13	<1

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
APR					
17...	32	37	84	8	.58
MAY					
28...	64	109	72	29	8.8
JUL					
29...	4	14	62	31	.41
OCT					
09...	4	7	90	4	.01

MISSOURI RIVER MAIN STEM

06065500 MISSOURI RIVER BELOW HAUSER DAM, NEAR HELENA, MT

LOCATION.--Lat 46°46'02", long 111°53'27" (NAD 27), in SE$^1/_4$NW$^1/_4$SW$^1/_4$ sec. 29, T.12 N., R.2 W., Lewis and Clark County, Hydrologic Unit 10030101, 0.2 mi downstream from Hauser Dam, 1.3 mi upstream from Beaver Creek, 15 miles northeast of Helena, and at river mile 2,237.2.

DRAINAGE AREA.--16,876 mi^2.

PERIOD OF RECORD.--January 1923 to September 1942, October 1994 to current year. Monthly means for October, November, and December 1922 were from Congressional documents: 73rd Congress, 2nd session, H. Doc. 238, Missouri River. Published figures are in acre feet.

GAGE.--Water-stage recorder. Elevation of gage is 3,580 ft (NGVD 29).

REMARKS.--Records excellent. Flow regulated by eight small irrigation reservoirs and two power plants, Clark Canyon Reservoir (station number 06015300) and Canyon Ferry Lake (station number 06058500). Diversions for irrigation of about 594,400 acres. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were obtained during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3040	2970	2920	3040	3010	3110	3210	3170	3040	3010	2960	2940
2	3010	3000	2980	3040	3010	3100	3130	3170	3030	3080	2900	2940
3	2860	3000	3000	3030	3010	3100	3010	3190	3030	3050	2900	2940
4	2820	2990	2980	3000	3010	3120	3010	3180	3020	3070	2860	2960
5	2790	3000	2980	2980	3010	3160	3090	3170	3010	3020	2840	2970
6	2790	3030	2980	2980	3010	3140	3170	3140	3010	2970	2840	3000
7	2790	3090	2980	2990	3010	3140	3170	3040	3010	2880	2830	3100
8	2790	3050	2980	2980	3010	3140	3100	2930	3020	2840	2870	3170
9	2780	2990	2980	2970	3010	3140	3030	2910	3010	2840	2870	3010
10	2830	2990	3010	2990	3010	3130	3010	2920	3010	2840	2850	2910
11	2900	2990	3040	2990	3020	3120	3010	2920	3000	2840	2940	2920
12	3020	2990	3010	2990	3010	3120	3010	2940	2890	2840	2930	2920
13	3050	2990	2960	3000	3020	3120	3000	2950	2840	2840	2970	2920
14	3120	3000	2960	3000	3010	3120	2990	2960	2840	2840	3010	2890
15	3110	2990	2960	2990	2990	3100	3080	2960	2820	2840	3010	2860
16	3100	2990	2960	2970	3010	3110	3060	2960	2820	2790	3020	2790
17	3100	3010	3030	2980	3010	3090	3030	3040	2820	2760	3000	2760
18	3060	3010	3080	2980	3010	3090	3100	3150	2820	2760	3010	2760
19	3010	2980	3010	2980	3010	3100	3000	3170	2820	2760	3000	2760
20	3010	2990	2980	2980	3010	3110	2880	3180	2800	2760	2940	2810
21	3010	2990	2980	2990	3010	3110	2880	3200	2800	2780	2860	2890
22	3010	2990	2980	2990	3000	3110	2880	3170	2800	2770	2840	2910
23	2970	2990	2980	2980	3040	3160	2890	3140	2700	2860	2880	3000
24	3010	3000	2980	2990	3040	3150	2890	3140	2640	2820	2900	3050
25	3010	3010	2980	3000	3010	3110	2890	2960	2640	2790	2970	3080
26	3000	3010	2980	3020	3010	3070	2910	2900	2650	2810	3020	3160
27	2970	3010	2980	3010	2990	3060	2960	2900	2650	2900	3030	3170
28	2970	3010	3000	3010	3060	3020	3120	2910	2670	2980	3030	3150
29	2960	3010	3040	3000	---	3020	3160	2900	2850	2970	3030	3150
30	2960	2960	3040	3000	---	3060	3190	2900	2950	2910	3030	3160
31	2960	---	3040	3010	---	3110	---	2990	---	2970	2970	---
TOTAL	91810	90030	92760	92860	84360	96340	90860	94160	86010	89190	91110	89050
MEAN	2962	3001	2992	2995	3013	3108	3029	3037	2867	2877	2939	2968
MAX	3120	3090	3080	3040	3060	3160	3210	3200	3040	3080	3030	3170
MIN	2780	2960	2920	2970	2990	3020	2880	2900	2640	2760	2830	2760
AC-FT	182100	178600	184000	184200	167300	191100	180200	186800	170600	176900	180700	176600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 2002, BY WATER YEAR (WY)*

MEAN	3573	3652	3599	3561	3776	4435	5314	7026	8398	4342	3055	3265
MAX	6489	6021	5622	6665	8101	8271	9227	16340	23540	12020	5797	5684
(WY)	1998	1998	1996	1997	1997	1997	1942	1928	1927	1998	1998	1995
MIN	1944	1998	1935	1896	1666	2398	2585	2381	2546	1208	971	1495
(WY)	1935	1935	1935	1937	1938	1938	1938	1934	1934	1934	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1923 - 2002*	
ANNUAL TOTAL	1130610		1088540			
ANNUAL MEAN	3098		2982		4498	
HIGHEST ANNUAL MEAN					7862	1997
LOWEST ANNUAL MEAN					2381	1934
HIGHEST DAILY MEAN	3410	May 1	3210	Apr 1	33300	Jun 15 1927
LOWEST DAILY MEAN	2670	Jul 31	2640	Jun 24	280	Mar 3 1938
ANNUAL SEVEN-DAY MINIMUM	2760	Jul 27	2680	Jun 22	716	Aug 3 1934
MAXIMUM PEAK FLOW			3400	Jul 23	33300	Jun 15 1927
MAXIMUM PEAK STAGE			3.48	Jul 23	a78.80	Jun 15 1927
INSTANTANEOUS LOW FLOW					280	Mar 3 1938
ANNUAL RUNOFF (AC-FT)	2243000		2159000		3258000	
10 PERCENT EXCEEDS	3280		3120		7700	
50 PERCENT EXCEEDS	3060		3000		3730	
90 PERCENT EXCEEDS	2960		2830		2040	

*--During periods of operation (December 1922 to September 1942, October 1994 to present).
a--Site and datum then in use.

MISSOURI RIVER MAIN STEM

06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT

LOCATION.--Lat 46°59'41", long 112°00'37" (NAD 27), in NE$^1/_4$SW$^1/_4$SE$^1/_4$ sec.5, T.14 N., R.3 W., Lewis and Clark County, Hydrologic Unit 10030102, on left bank 0.4 mi downstream from Holter Dam, 2.8 mi southeast of Wolf Creek, and at river mile 2,210.7.
DRAINAGE AREA.--17,149 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to current year.
GAGE.--Water-stage recorder. Datum of gage is 3,464.11 ft (NGVD 29).
REMARKS.--Water-discharge records good. Flow regulated by nine smaller irrigation reservoirs and powerplants, Clark Canyon Reservoir (station number 06015300), and Canyon Ferry Lake (station number 06058500). Diversions for irrigation of about 594,400 acres. Bureau of Reclamation satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3080	3090	3010	3150	3050	3030	3020	3060	2870	2920	3000	3060
2	3000	3100	3000	3180	3050	3050	3030	3060	2870	2940	3000	3010
3	2900	3090	3000	3120	3050	3110	3000	3060	2890	3000	2960	2970
4	2880	3100	2970	3060	3040	3110	3000	3060	2920	3070	2910	2970
5	2860	3070	2970	3050	3050	3120	3050	3060	2920	3090	2920	3000
6	2860	3040	2970	3040	3040	3110	3160	3040	2930	3090	2920	3080
7	2860	3110	2990	3030	3030	3110	3160	2950	2950	3030	2920	3220
8	2890	3110	3030	3040	3040	3100	3110	2900	3060	2930	3010	3240
9	2900	3100	3030	3060	3040	3080	3060	2900	3090	2860	3100	3130
10	2890	3060	3030	3060	3070	3040	3010	2900	3250	2830	3090	2940
11	2890	3050	3040	3030	3090	3000	3000	2900	3270	2830	2990	2890
12	2880	3030	3040	3020	3070	2980	3010	2900	3160	2870	2920	2870
13	2890	3010	3010	3030	3070	2980	2980	2900	2990	2860	2970	2870
14	2930	3000	2980	3030	3070	2940	2900	2880	2860	2840	3070	2890
15	3040	3000	2960	3050	3070	2960	2860	2880	2910	2850	3150	2930
16	3130	3000	3000	3100	3060	2980	2850	2890	3040	2860	3200	2920
17	3090	3030	3020	3140	3030	2980	2840	2880	3150	2860	3150	2860
18	3060	3040	3010	3130	3000	3030	2910	2950	3130	2870	3150	2850
19	3080	3050	3010	3110	3000	3060	3010	3050	3020	2870	3140	2840
20	3100	3110	3030	3060	3000	3080	2970	3090	2920	2850	3040	2830
21	3110	3130	3070	3060	2970	3110	2900	3130	2890	2800	2920	2830
22	3110	3080	3110	3060	2930	3100	2870	3260	2890	2790	2920	2840
23	3110	3070	3130	3060	2970	3110	2840	3300	2900	2800	2920	2850
24	3110	3030	3130	3050	3000	3110	2830	3230	2910	2870	3000	2850
25	3110	3030	3060	3050	3040	3110	2830	3110	2930	2910	3170	2900
26	3100	3040	3000	3060	3070	3060	2820	3000	2930	2910	3190	3000
27	3090	3060	2970	3060	3060	3020	2860	2930	2930	2880	3100	3030
28	3100	3080	2970	3060	3050	3000	2990	2900	2930	2960	3100	3020
29	3090	3090	3010	3060	---	2940	3050	2900	2920	2960	3150	3030
30	3060	3050	3090	3060	---	2970	3090	2890	2920	3020	3150	3000
31	3080	---	3100	3050	---	2980	---	2870	---	3030	3110	---
TOTAL	93280	91850	93740	95120	85010	94360	89010	92830	89350	90250	94340	88720
MEAN	3009	3062	3024	3068	3036	3044	2967	2995	2978	2911	3043	2957
MAX	3130	3130	3130	3180	3090	3120	3160	3300	3270	3090	3200	3240
MIN	2860	3000	2960	3020	2930	2940	2820	2870	2860	2790	2910	2830
AC-FT	185000	182200	185900	188700	168600	187200	176600	184100	177200	179000	187100	176000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

MEAN	4517	4820	5023	5066	5021	5143	5595	6828	9065	5949	4286	4233
MAX	10140	8500	9645	6637	7954	9186	11130	15710	23370	16580	7590	10010
(WY)	1966	1966	1960	1997	1997	1968	1976	1948	1948	1975	1984	1984
MIN	2710	2968	3026	3090	3112	2757	2489	2063	1533	2454	1969	2077
(WY)	1954	1989	2002	2002	2002	1959	1959	1955	1955	1954	1954	1959

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1946 - 2002	
ANNUAL TOTAL	1148290		1097860			
ANNUAL MEAN	3146		3008		5461	
HIGHEST ANNUAL MEAN					8497	1984
LOWEST ANNUAL MEAN					3008	2002
HIGHEST DAILY MEAN	3430	Apr 22	3300	May 23	34000	Jun 8 1948
LOWEST DAILY MEAN	2760	Aug 1	2790	Jul 22	747	May 27 1962
ANNUAL SEVEN-DAY MINIMUM	2820	Jul 28	2830	Jul 17	1040	May 16 1957
MAXIMUM PEAK FLOW			a3370	Apr 30	34800	Jun 8 1948
MAXIMUM PEAK STAGE			2.72	Sep 7	11.70	Jun 8 1948
INSTANTANEOUS LOW FLOW					b250	Jul 26 1968
ANNUAL RUNOFF (AC-FT)	2278000		2178000		3956000	
10 PERCENT EXCEEDS	3350		3110		8140	
50 PERCENT EXCEEDS	3110		3030		4760	
90 PERCENT EXCEEDS	2970		2870		3050	

06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT--Continued

SUMMARY STATISTICS	WATER YEARS 1946 - 1952*		WATER YEARS 1953 - 2002**	
ANNUAL MEAN	5882		5401	
HIGHEST ANNUAL MEAN	7787	1948	8497	1984
LOWEST ANNUAL MEAN	4651	1946	3008	2002
HIGHEST DAILY MEAN	34000	Jun 8 1948	25600	Jun 20 1964
LOWEST DAILY MEAN	1560	Aug 31 1946	747	May 27 1962
ANNUAL SEVEN DAY MINIMUM	2310	Aug 2 1949	1040	May 16 1957
MAXIMUM PEAK FLOW	34800	Jun 8 1948	27100	Jun 19 1964
MAXIMUM PEAK STAGE	11.70	Jun 8 1948	10.04	Jun 19 1964
INSTANTANEOUS LOW FLOW	c742	Nov 25 1949	b250	Jul 26 1968
ANNUAL RUNOFF (AC-FT)	4261000		3913000	
10 PERCENT EXCEEDS	10800		7920	
50 PERCENT EXCEEDS	4520		4830	
90 PERCENT EXCEEDS	3350		3030	

*--Before Canyon Ferry completion.
**--After Canyon Ferry completion.
a--Gage height, 2.31 ft.
b--Probably less than; during power plant operation.
c--Gage height, 0.18 ft.

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--October 1999 to current year.
WATER TEMPERATURE: October 1999 to current year.
INSTRUMENTATION.--Temperature probe installed Sept. 30, 1999.
REMARKS--Unpublished records of instantaneous specific conductance and temperature data are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE : Maximum, 21.0°C, July 25, 2002; minimum, 1.0°C, many days during winter period.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 21.0°C, July 25; minimum, 1.0°C, many days December through January.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	16.5	16.0	16.0	9.5	9.5	9.5	5.5	5.5	5.5	1.0	1.0	1.0
2	16.0	15.0	15.5	9.5	9.5	9.5	5.5	5.0	5.5	1.0	1.0	1.0
3	15.5	15.0	15.5	9.5	9.5	9.5	5.5	5.0	5.0	1.0	1.0	1.0
4	15.0	14.5	15.0	9.5	9.5	9.5	5.0	5.0	5.0	1.0	1.0	1.0
5	15.0	14.5	14.5	9.5	9.0	9.5	5.0	5.0	5.0	1.0	1.0	1.0
6	14.5	14.0	14.5	9.5	9.0	9.0	5.0	4.5	5.0	1.0	1.0	1.0
7	14.5	14.0	14.0	9.0	9.0	9.0	5.0	4.5	4.5	1.5	1.0	1.0
8	14.0	14.0	14.0	9.0	8.5	8.5	4.5	4.5	4.5	1.5	1.0	1.5
9	14.0	13.5	14.0	9.0	8.5	8.5	4.5	4.0	4.5	1.5	1.0	1.0
10	13.5	13.5	13.5	8.5	8.5	8.5	4.0	4.0	4.0	1.0	1.0	1.0
11	13.5	13.0	13.5	8.5	8.5	8.5	4.0	4.0	4.0	1.0	1.0	1.0
12	13.0	13.0	13.0	8.5	8.5	8.5	4.0	3.5	4.0	1.0	1.0	1.0
13	13.0	12.0	12.5	8.5	8.0	8.5	3.5	3.5	3.5	1.0	1.0	1.0
14	12.5	12.0	12.5	8.5	8.0	8.0	3.5	3.0	3.5	1.0	1.0	1.0
15	12.5	12.0	12.0	8.5	8.0	8.0	3.5	3.0	3.0	1.5	1.0	1.0
16	12.0	12.0	12.0	8.5	8.0	8.0	3.0	2.5	3.0	1.5	1.0	1.0
17	12.0	11.5	12.0	8.0	8.0	8.0	3.0	2.5	3.0	1.5	1.0	1.0
18	11.5	11.5	11.5	8.0	8.0	8.0	3.0	2.5	2.5	1.0	1.0	1.0
19	11.5	11.0	11.5	8.0	8.0	8.0	2.5	2.5	2.5	1.5	1.0	1.5
20	11.5	11.0	11.0	8.0	7.5	7.5	2.5	2.0	2.5	1.5	1.5	1.5
21	11.0	11.0	11.0	8.0	7.5	7.5	2.5	2.0	2.0	1.5	1.5	1.5
22	11.0	11.0	11.0	7.5	7.5	7.5	2.5	2.0	2.0	1.5	1.5	1.5
23	11.0	10.5	10.5	7.5	7.5	7.5	2.0	1.5	1.5	1.5	1.5	1.5
24	10.5	10.5	10.5	7.5	7.5	7.5	1.5	1.5	1.5	1.5	1.5	1.5
25	10.5	10.0	10.5	7.5	7.0	7.5	1.5	1.5	1.5	1.5	1.5	1.5
26	10.5	10.0	10.0	7.0	7.0	7.0	1.5	1.0	1.5	1.5	1.5	1.5
27	10.5	10.0	10.0	7.0	6.5	6.5	1.5	1.0	1.0	1.5	1.5	1.5
28	10.0	10.0	10.0	6.5	6.0	6.0	1.5	1.0	1.0	1.5	1.5	1.5
29	10.0	10.0	10.0	6.0	5.5	6.0	1.5	1.0	1.0	1.5	1.5	1.5
30	10.0	10.0	10.0	6.0	5.5	5.5	1.0	1.0	1.0	1.5	1.5	1.5
31	10.0	9.5	10.0	---	---	---	1.0	1.0	1.0	1.5	1.5	1.5
MONTH	16.5	9.5	12.5	9.5	5.5	8.0	5.5	1.0	3.0	1.5	1.0	1.0

MISSOURI RIVER MAIN STEM

06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT--Continued

WATER TEMPERATURE, DEGREES CELCIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.5	1.5	1.5	2.5	2.0	2.0	2.5	2.0	2.0	5.5	5.0	5.5
2	1.5	1.5	1.5	2.5	2.0	2.0	2.5	2.0	2.5	6.5	5.0	6.0
3	1.5	1.5	1.5	2.5	2.0	2.0	2.5	2.0	2.5	6.0	5.5	6.0
4	2.0	1.5	1.5	2.5	2.0	2.0	2.5	2.0	2.5	6.0	5.5	6.0
5	2.0	1.5	1.5	2.0	2.0	2.0	3.0	2.5	2.5	7.0	6.0	6.5
6	2.0	1.5	1.5	2.0	2.0	2.0	3.0	2.5	2.5	7.0	6.0	6.5
7	2.0	1.5	1.5	2.0	2.0	2.0	3.0	2.5	2.5	6.0	5.5	6.0
8	2.0	1.5	1.5	2.0	1.5	2.0	3.0	2.5	2.5	6.0	5.5	6.0
9	2.0	1.5	1.5	2.0	1.5	2.0	3.0	2.5	3.0	7.0	6.0	6.5
10	2.0	1.5	1.5	2.0	2.0	2.0	3.0	2.5	3.0	7.0	6.5	7.0
11	2.0	1.5	1.5	2.0	2.0	2.0	3.5	3.0	3.0	8.0	6.5	7.0
12	2.0	1.5	2.0	2.5	2.0	2.0	3.5	3.0	3.0	8.0	7.5	7.5
13	2.0	1.5	2.0	2.5	2.0	2.0	3.5	3.0	3.5	10.0	7.5	8.5
14	2.0	2.0	2.0	3.5	1.5	2.0	3.5	3.0	3.5	8.5	6.5	7.5
15	2.0	1.5	2.0	2.5	2.0	2.0	3.5	3.0	3.5	8.5	6.0	7.5
16	2.0	2.0	2.0	2.0	2.0	2.0	3.5	3.5	3.5	8.0	7.0	7.0
17	2.5	2.0	2.0	2.5	2.0	2.0	3.5	3.5	3.5	9.5	6.5	8.0
18	2.0	2.0	2.0	2.0	2.0	2.0	3.5	3.5	3.5	8.5	7.5	8.0
19	2.0	2.0	2.0	2.0	2.0	2.0	4.0	3.5	3.5	10.0	7.5	9.0
20	2.5	2.0	2.0	2.0	2.0	2.0	4.0	3.5	4.0	11.0	8.0	9.0
21	2.5	2.0	2.0	2.5	2.0	2.0	4.5	3.5	4.0	10.0	8.0	9.0
22	2.5	2.0	2.0	2.5	2.0	2.0	5.0	4.0	4.5	9.0	7.0	8.0
23	2.0	2.0	2.0	2.5	2.0	2.0	4.5	4.0	4.5	10.5	7.0	8.5
24	2.0	2.0	2.0	2.5	2.0	2.0	4.5	4.0	4.5	10.5	9.0	10.0
25	2.5	2.0	2.0	2.5	2.0	2.0	5.0	4.5	4.5	11.5	9.0	10.5
26	2.5	2.0	2.0	2.5	2.0	2.0	5.0	4.0	4.5	11.5	9.0	10.5
27	2.5	2.0	2.0	2.5	2.0	2.0	4.5	4.5	4.5	11.5	9.5	10.5
28	2.0	2.0	2.0	2.5	2.0	2.0	5.0	4.5	5.0	11.5	9.0	10.5
29	---	---	---	2.5	2.0	2.0	5.5	4.5	5.0	12.0	9.0	10.5
30	---	---	---	2.5	2.0	2.0	6.0	5.0	5.5	12.0	9.5	11.0
31	---	---	---	2.5	2.0	2.5	---	---	---	12.5	10.0	11.5
MONTH	2.5	1.5	2.0	3.5	1.5	2.0	6.0	2.0	3.5	12.5	5.0	8.0

		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.0	9.5	11.0	16.0	14.5	15.5	17.5	16.5	17.0	18.0	16.0	17.0
2	11.5	10.5	11.5	17.0	15.0	16.0	18.5	16.5	17.5	17.5	16.0	17.0
3	12.0	11.0	11.5	17.5	15.5	16.5	16.5	16.0	16.5	18.0	17.0	17.5
4	13.5	11.5	12.5	17.0	15.5	16.5	17.0	16.0	16.5	17.5	16.5	17.0
5	13.0	11.0	12.0	16.5	15.5	16.0	17.5	16.0	16.5	17.0	15.5	16.5
6	13.0	10.0	11.5	17.0	15.5	16.0	17.0	16.0	16.5	16.5	15.5	16.5
7	13.5	11.0	12.5	17.5	16.0	16.5	17.0	16.0	16.5	17.0	16.0	16.5
8	13.5	10.5	12.0	17.5	14.0	16.5	17.0	16.0	16.5	17.0	16.0	16.5
9	12.0	9.5	11.0	17.0	14.0	16.5	18.0	16.5	17.0	17.0	16.0	16.5
10	11.5	9.0	10.5	17.5	16.0	16.5	18.0	16.5	17.0	17.0	16.5	17.0
11	12.5	9.5	11.5	19.0	16.5	17.5	16.5	15.5	16.0	17.0	16.0	16.5
12	12.5	11.5	12.0	19.5	17.0	18.0	17.0	16.5	16.5	17.0	16.0	16.5
13	12.0	11.0	11.5	18.5	17.0	17.5	18.0	16.0	17.0	17.0	15.5	16.5
14	12.0	11.0	11.5	19.0	17.5	18.0	17.0	15.0	16.0	17.0	15.5	16.5
15	12.0	11.0	11.5	19.5	17.5	18.5	17.5	15.5	16.5	17.0	16.5	17.0
16	14.0	11.5	12.5	20.0	18.5	19.0	16.5	14.5	15.5	17.0	16.0	16.5
17	14.0	11.5	12.5	20.5	18.0	19.0	17.0	16.0	16.5	17.0	16.0	16.5
18	13.5	11.5	12.5	20.0	18.0	18.5	16.5	16.0	16.0	16.5	16.0	16.0
19	13.5	12.0	13.0	20.0	18.5	19.0	17.5	16.0	16.5	17.0	15.5	16.5
20	14.5	13.0	14.0	20.5	17.5	19.0	16.5	15.5	16.0	16.5	15.0	15.5
21	14.5	12.0	13.5	18.5	16.5	17.5	16.5	16.0	16.0	16.0	15.5	15.5
22	15.0	12.5	14.0	18.0	17.5	17.5	17.5	16.0	16.5	16.0	15.5	15.5
23	15.5	13.0	14.5	20.0	18.0	18.5	16.5	16.0	16.5	15.5	15.0	15.5
24	15.5	13.5	14.5	19.5	18.0	19.0	17.5	16.5	17.0	15.5	14.5	15.0
25	15.5	14.0	15.0	21.0	18.0	19.0	18.0	16.5	17.0	15.0	15.0	15.0
26	16.0	14.0	15.0	20.5	18.0	19.0	17.5	16.5	17.0	15.0	14.5	15.0
27	17.5	15.0	16.0	18.5	17.5	18.0	16.5	16.0	16.5	14.5	14.0	14.5
28	16.5	15.0	16.0	19.5	16.5	18.0	16.5	16.0	16.5	14.5	14.0	14.5
29	16.5	14.0	15.5	18.5	16.5	17.5	18.0	16.5	17.0	14.5	14.0	14.5
30	16.5	13.0	15.5	19.0	17.0	18.0	18.0	17.0	17.5	14.0	13.5	14.0
31	---	---	---	18.0	16.5	17.5	18.0	16.5	17.0	---	---	---
MONTH	17.5	9.0	13.0	21.0	14.0	17.5	18.5	14.5	16.5	18.0	13.5	16.0

LITTLE PRICKLY PEAR CREEK BASIN

06071300 LITTLE PRICKLY PEAR CREEK AT WOLF CREEK, MT

LOCATION.--Lat 47°00'19", long 112°04'10" (NAD 27), in NE$^1/_4$NW$^1/_4$NE$^1/_4$ sec.2, T.14N., R.4W., Lewis and Clark County, Hydrologic Unit 10030102, on right bank 30 ft downstream from Interstate 15 access road bridge, 500 ft southwest of Wolf Creek Post Office, 0.5 mi downstream from Wolf Creek, and at river mile 3.2.

DRAINAGE AREA.--381 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1962 to September 1967, October 1991 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,547.38 ft (NGVD 29). May 10, 1962 to July 6, 1965, water-stage recorder on left bank at present datum. July 7, 1965 to Apr. 11, 1966, non-recording gage on bridge 0.25 mi upstream at datum 3.27 ft higher. Apr. 12, 1966 to Sept. 30, 1967, water-stage recorder on right bank 23 ft upstream at present datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 2,500 acres upstream from station. U.S.Geological Survey satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 7, 1975, reached a stage of 7.45 ft, present datum, from floodmarks, discharge, 4,500 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	41	32	e17	40	e20	e60	83	151	109	40	40
2	24	40	32	e25	41	e20	e50	76	150	102	40	39
3	24	40	33	e35	35	e25	e55	78	145	98	39	37
4	25	40	32	42	36	33	57	84	133	100	42	37
5	26	40	27	42	33	e35	64	85	120	93	46	37
6	27	39	30	41	33	e30	88	85	111	88	45	40
7	28	38	32	43	36	e25	117	85	100	81	46	49
8	26	37	31	49	37	e25	91	84	112	79	54	48
9	28	37	31	48	35	e32	84	81	147	78	56	45
10	28	37	28	40	33	41	78	78	496	73	49	42
11	29	37	24	42	36	45	80	71	600	69	46	40
12	31	37	26	41	30	68	81	64	492	63	46	38
13	31	37	30	40	30	72	84	62	464	62	44	37
14	31	38	31	39	36	58	106	67	432	61	41	36
15	32	38	27	30	31	50	126	76	399	62	41	35
16	32	38	26	29	31	46	115	78	346	62	40	34
17	32	37	31	32	34	e40	103	77	309	60	40	35
18	31	37	23	35	35	e37	100	76	264	61	39	37
19	32	36	32	32	33	e35	91	79	235	57	37	36
20	32	36	e27	41	36	e30	90	96	210	53	34	35
21	33	36	e23	41	33	e25	89	133	188	51	36	35
22	33	37	e20	33	40	e30	91	181	177	52	47	36
23	34	37	e18	31	42	e35	96	185	190	51	45	36
24	36	36	21	40	e25	e40	97	178	168	51	43	36
25	36	36	22	43	e22	e45	95	157	147	53	42	36
26	36	35	23	38	e20	47	87	144	135	49	41	35
27	37	33	24	e28	e25	65	85	148	124	49	42	37
28	38	29	e20	e26	e22	69	84	148	116	50	46	39
29	40	33	e18	e25	---	60	80	150	115	46	42	36
30	40	33	e16	e30	---	59	80	152	116	44	43	36
31	41	---	e15	e35	---	61	---	155	---	41	42	---
TOTAL	977	1105	805	1113	920	1303	2604	3296	6892	2048	1334	1139
MEAN	31.52	36.83	25.97	35.90	32.86	42.03	86.80	106.3	229.7	66.06	43.03	37.97
MAX	41	41	33	49	42	72	126	185	600	109	56	49
MIN	24	29	15	17	20	20	50	62	100	41	34	34
AC-FT	1940	2190	1600	2210	1820	2580	5170	6540	13670	4060	2650	2260

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2002, BY WATER YEAR (WY)

MEAN	52.12	53.85	50.00	44.51	61.32	65.63	133.9	235.4	210.3	83.53	46.58	50.08
MAX	131	98.5	74.9	69.1	190	102	372	580	684	175	95.4	127
(WY)	1966	1966	1966	1965	1996	1996	1965	1965	1967	1965	1993	1965
MIN	29.5	31.5	25.8	30.8	29.3	41.6	64.8	35.5	25.5	17.7	14.2	18.5
(WY)	1993	1993	2002	1993	2001	2002	2000	1992	1992	2000	2000	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1962 - 2002*	
ANNUAL TOTAL	17095		23536			
ANNUAL MEAN	46.84		64.48		89.79	
HIGHEST ANNUAL MEAN					179	1965
LOWEST ANNUAL MEAN					35.2	2000
HIGHEST DAILY MEAN	282	Apr 29	600	Jun 11	2440	Jun 9 1964
LOWEST DAILY MEAN	15	Dec 31	15	Dec 31	10	Aug 13 1992
ANNUAL SEVEN-DAY MINIMUM	19	Aug 30	19	Dec 26	11	Jul 29 2000
MAXIMUM PEAK FLOW			791	Jun 10	3110	Jun 9 1964
MAXIMUM PEAK STAGE			5.21	Jun 10	7.65	Jun 9 1964
INSTANTANEOUS LOW FLOW					a9.6	Aug 2 2000
ANNUAL RUNOFF (AC-FT)	33910		46680		65050	
10 PERCENT EXCEEDS	90		118		175	
50 PERCENT EXCEEDS	36		40		54	
90 PERCENT EXCEEDS	23		27		28	

*--During periods of operation (May 1962 to September 1967, October 1991 to current year).
a--Gage height, 2.54ft.
e--Estimated.

LITTLE PRICKLY PEAR CREEK BASIN

06071300 LITTLE PRICKLY PEAR CREEK AT WOLF CREEK, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: May 2001 to current year.

INSTRUMENTATION.--Temperature recorder installed May 8, 2001.

REMARKS.--Missing temperature data for Nov. 4-8 due to equipment problems. Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 22.0°C, Aug. 7, 2001; minimum 0.0°C, many days during winter months.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 20.5°C, July 11, 12; minimum 0.0°C, many days December through April.

WATER TEMPERATURE, DEGREES CELCIUS, OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	14.5	10.0	12.0	7.0	6.5	7.0	3.0	1.5	2.0	0.0	0.0	0.0
2	13.0	9.0	11.0	9.0	6.5	7.5	3.5	2.0	3.0	0.5	0.0	0.0
3	12.0	9.0	10.5	8.5	6.5	7.5	4.5	2.5	3.5	1.5	0.5	1.0
4	9.5	7.5	8.5	---	---	---	3.0	1.5	2.0	1.5	0.5	1.0
5	10.0	6.0	7.5	---	---	---	2.5	0.5	1.5	1.5	0.5	1.0
6	11.0	7.0	8.5	---	---	---	3.5	1.0	2.0	2.0	0.5	1.0
7	10.0	8.0	9.0	---	---	---	2.5	1.5	2.0	4.5	1.5	3.0
8	11.5	8.0	9.5	---	---	---	3.5	2.0	2.5	4.0	2.0	3.0
9	10.5	8.5	9.5	8.0	4.5	5.5	3.0	1.5	2.0	2.5	1.0	2.0
10	10.5	7.5	9.0	6.5	4.0	5.0	2.0	0.5	1.0	3.0	1.0	1.5
11	10.0	8.5	9.0	5.5	3.5	4.5	2.5	0.5	1.0	3.5	1.5	2.5
12	8.5	7.0	7.5	6.5	3.5	4.5	2.0	0.5	1.0	3.0	2.0	2.5
13	10.5	7.5	8.5	6.5	4.0	5.5	2.5	1.0	2.0	2.5	1.5	2.0
14	9.0	7.0	8.0	8.0	5.5	6.5	3.5	1.5	2.5	1.5	0.5	1.0
15	9.0	5.5	7.0	8.0	6.0	7.0	2.0	0.5	1.0	2.0	0.0	1.0
16	10.5	7.0	8.5	8.0	5.5	6.5	3.0	0.5	2.0	1.5	0.0	0.5
17	9.5	7.0	8.0	7.0	5.0	6.0	3.0	1.0	2.0	2.0	0.5	1.0
18	7.5	6.5	7.0	6.0	4.0	5.0	2.0	0.0	1.0	1.0	0.0	0.5
19	9.0	7.0	7.5	5.0	3.0	4.0	1.5	0.0	1.0	2.0	0.0	1.0
20	9.0	6.5	7.5	6.0	4.0	5.0	2.0	0.0	1.0	1.5	0.0	1.0
21	10.0	6.5	8.0	6.5	4.5	5.5	2.0	0.0	0.5	2.0	0.5	1.5
22	9.5	7.5	8.0	6.5	4.5	5.0	1.0	0.0	0.0	1.5	0.0	0.5
23	8.5	6.0	7.5	6.0	4.5	5.5	2.0	0.0	0.5	2.0	0.0	0.5
24	7.5	6.0	6.5	4.5	3.0	4.0	1.5	0.0	0.5	2.5	0.5	1.5
25	7.5	5.5	6.0	3.0	1.5	2.5	1.5	0.0	0.5	3.5	1.5	2.5
26	8.5	5.5	7.0	2.5	0.5	1.5	1.5	0.0	0.5	2.5	0.0	0.5
27	9.5	6.5	8.0	2.5	0.5	1.5	1.5	0.0	0.5	0.0	0.0	0.0
28	8.0	6.5	7.5	2.5	0.5	1.5	1.5	0.0	0.5	0.0	0.0	0.0
29	9.0	6.0	7.5	3.5	1.5	2.5	1.0	0.0	0.5	0.0	0.0	0.0
30	9.5	7.5	8.5	3.0	2.0	2.5	0.5	0.0	0.0	0.0	0.0	0.0
31	9.0	7.0	8.0	---	---	---	1.0	0.0	0.5	1.0	0.0	0.5
MONTH	14.5	5.5	8.5	---	---	---	4.5	0.0	1.5	4.5	0.0	1.0

LITTLE PRICKLY PEAR CREEK BASIN

06071300 LITTLE PRICKLY PEAR CREEK AT WOLF CREEK, MT--Continued

WATER TEMPERATURE, DEGREES CELCIUS, APRIL 2002 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	2.0	0.0	0.5	1.0	0.0	0.0	4.5	0.0	1.5	11.5	4.0	7.5
2	1.5	0.0	0.5	1.5	0.0	0.0	2.0	0.0	0.5	13.5	5.5	9.0
3	2.5	0.0	1.0	3.0	0.0	0.5	3.5	0.0	1.0	10.5	6.5	8.0
4	2.5	0.5	1.0	3.5	0.5	1.5	8.0	0.0	3.0	11.5	5.5	8.0
5	2.0	0.0	1.0	1.0	0.0	0.5	9.0	2.5	5.5	9.5	6.5	7.5
6	3.0	0.5	1.0	0.0	0.0	0.0	8.5	5.5	6.5	7.5	4.5	6.5
7	3.5	1.0	2.0	0.0	0.0	0.0	6.0	3.5	5.0	6.0	3.5	5.0
8	2.5	1.0	2.0	0.0	0.0	0.0	8.0	3.0	5.5	10.0	3.0	6.0
9	3.0	0.0	1.0	0.5	0.0	0.0	7.0	4.0	5.5	9.5	3.5	6.0
10	3.0	0.5	1.0	2.5	0.0	0.5	9.5	4.5	6.5	11.0	5.5	8.0
11	2.5	0.5	1.5	3.0	0.5	1.5	9.5	4.5	7.0	11.0	5.0	8.0
12	3.5	0.0	1.0	2.5	0.0	1.0	9.0	5.5	7.0	15.0	6.5	10.5
13	4.0	0.0	1.0	2.5	0.0	1.0	12.5	6.0	8.5	15.5	7.5	11.0
14	3.0	0.5	1.5	4.0	0.0	1.5	10.5	6.5	8.5	14.5	8.5	11.0
15	3.5	0.0	1.5	4.5	0.0	1.5	6.5	3.5	5.5	10.5	7.0	8.5
16	4.0	0.0	1.5	1.0	0.0	0.0	7.0	3.0	5.0	12.0	6.5	9.0
17	4.5	0.5	2.0	0.5	0.0	0.0	5.5	3.5	4.5	13.5	6.0	9.5
18	3.5	0.5	1.5	0.0	0.0	0.0	6.0	1.5	3.5	13.5	8.0	10.5
19	3.5	0.0	2.0	0.0	0.0	0.0	8.5	1.5	4.5	16.5	8.5	12.0
20	4.5	1.0	2.5	0.0	0.0	0.0	9.5	3.0	6.0	15.5	10.5	12.5
21	5.5	1.0	3.0	0.0	0.0	0.0	7.5	4.0	5.5	13.0	8.5	10.5
22	7.0	4.0	5.5	1.0	0.0	0.5	11.0	4.5	7.5	8.5	5.0	6.5
23	4.0	0.0	1.0	2.0	0.0	0.5	9.0	4.5	6.5	8.5	4.0	6.5
24	0.5	0.0	0.0	3.0	0.0	0.5	8.5	2.0	5.0	12.0	6.0	9.0
25	0.0	0.0	0.0	3.0	0.0	1.0	8.5	3.5	5.5	11.0	7.5	9.5
26	0.0	0.0	0.0	5.0	0.0	1.5	10.0	4.0	6.5	13.0	9.0	11.0
27	0.5	0.0	0.0	4.0	0.5	2.0	6.0	3.5	4.5	14.5	9.5	11.5
28	0.5	0.0	0.0	6.0	0.5	2.5	8.5	3.0	5.5	14.5	9.5	12.0
29	---	---	---	5.5	1.5	3.5	10.5	4.5	7.0	14.5	10.0	11.5
30	---	---	---	5.0	3.0	4.0	7.5	5.0	6.0	15.5	10.5	12.5
31	---	---	---	7.5	2.5	4.5	---	---	---	16.5	10.0	13.0
MONTH	7.0	0.0	1.5	7.5	0.0	1.0	12.5	0.0	5.5	16.5	3.0	9.5

		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.5	10.0	11.5	17.0	11.0	13.5	17.5	10.5	13.5	15.0	13.0	14.0
2	11.0	9.5	10.5	17.5	10.5	13.5	18.0	10.5	14.0	17.5	11.5	14.5
3	13.0	9.5	11.0	16.5	11.0	13.5	15.0	11.0	12.5	17.5	12.0	14.5
4	15.5	9.0	12.0	18.5	12.0	15.0	16.0	10.5	12.5	18.5	12.5	15.0
5	14.5	10.5	12.5	18.5	11.5	15.0	18.0	12.0	14.5	15.5	14.0	14.5
6	15.5	10.0	12.5	19.0	12.0	15.0	18.0	13.0	15.0	14.0	12.5	13.0
7	15.5	9.5	12.5	18.0	13.0	15.0	15.5	13.0	14.0	14.5	12.0	13.0
8	12.0	8.5	10.0	16.5	12.5	14.5	13.0	12.0	12.5	14.5	10.5	12.5
9	9.5	7.5	8.0	18.5	11.0	14.5	18.0	11.0	14.0	15.5	9.5	12.0
10	7.5	5.0	6.5	20.0	12.0	15.5	18.5	12.0	14.5	16.0	10.0	12.5
11	9.5	6.5	8.0	20.5	13.0	16.5	15.0	12.5	13.0	16.5	10.5	13.0
12	10.5	7.0	8.5	20.5	13.5	16.5	16.0	11.0	13.0	17.0	10.5	13.5
13	12.5	7.0	9.5	19.5	13.0	16.0	18.5	11.0	14.0	16.5	10.5	13.5
14	13.5	8.0	10.5	19.0	14.0	16.0	17.5	12.5	14.5	16.5	10.5	13.5
15	14.5	9.0	11.5	18.5	14.0	16.0	17.5	10.0	13.5	17.0	11.5	14.0
16	15.0	10.0	12.5	18.0	14.0	15.5	14.0	11.0	12.5	16.0	11.5	13.5
17	15.5	11.0	13.0	19.0	13.0	16.0	16.0	9.0	12.0	14.0	12.0	13.0
18	12.5	10.5	11.5	19.0	13.5	16.0	17.5	10.5	13.5	14.5	11.0	12.5
19	14.0	9.0	11.0	18.0	14.0	15.5	17.5	10.5	13.5	15.0	10.0	12.0
20	15.5	8.5	11.5	19.5	14.0	16.0	17.5	11.5	14.5	14.0	10.0	12.0
21	16.0	10.0	13.0	17.5	12.5	14.5	16.5	12.5	14.0	12.5	9.0	10.5
22	15.5	11.0	13.5	17.5	12.0	14.5	17.0	12.0	14.0	13.0	8.5	10.5
23	17.5	11.5	14.0	18.5	12.5	15.0	16.5	11.5	14.0	13.5	8.5	10.5
24	17.5	12.0	14.5	18.5	13.5	16.0	16.5	12.5	14.5	11.5	10.0	11.0
25	18.5	11.5	14.5	18.5	13.0	15.5	17.0	12.5	14.5	13.0	9.0	10.5
26	19.0	12.5	15.5	19.0	13.5	16.0	16.5	12.0	14.0	11.5	8.5	10.0
27	19.0	13.0	15.5	17.5	12.5	15.0	16.5	12.0	14.0	10.0	9.0	9.5
28	17.0	12.5	14.5	18.0	12.0	14.5	18.0	13.0	15.0	12.5	8.5	10.0
29	16.0	12.5	14.0	19.0	13.0	15.5	18.0	13.0	15.0	12.5	9.0	10.5
30	17.5	11.0	14.0	19.0	12.5	15.5	17.0	13.0	15.0	11.0	8.0	9.5
31	---	---	---	18.0	12.5	15.0	18.0	13.0	15.0	---	---	---
MONTH	19.0	5.0	12.0	20.5	10.5	15.0	18.5	9.0	14.0	18.5	8.0	12.5

DEARBORN RIVER BASIN

06073500 DEARBORN RIVER NEAR CRAIG, MT

LOCATION.--Lat 47°11'57", long 112°05'44" (NAD 27), in NW$^1/_4$ NW$^1/_4$ SE$^1/_4$ sec.27, T. 17 N., R. 4 W., Lewis and Clark County, Hydrologic Unit 10030102, on left bank at upstream side of bridge on U.S. Highway 287, 7.0 mi downstream from South Fork Dearborn River, 10.5 mi northwest of Craig, 13.5 mi north of Wolf Creek, and at river mile 19.0.

DRAINAGE AREA.--325 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to September 1969, October 1993 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,800 ft (NGVD 29). Oct. 1, 1945 to Sept. 30, 1946, nonrecording gage; Oct. 1, 1946 to June 9, 1964, water-stage recorder on upstream side of bridge; June 10, 1964 to May 31, 1965, nonrecording gage; June 1, 1965 to Sept. 30 1969, water-stage recorder on downstream side of abandoned bridge, all at same previous datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	37	e25	e15	e21	e17	e35	159	826	407	77	56
2	27	37	e27	e17	e22	e18	e30	158	727	371	74	53
3	28	37	e26	e20	e21	e20	e35	176	656	336	72	52
4	30	36	e25	e25	e22	e23	e40	196	598	308	80	52
5	33	36	e25	e30	e23	e25	47	202	563	287	85	52
6	30	37	e30	e30	e24	e20	64	205	598	267	86	64
7	29	37	e40	e35	e25	e15	83	215	528	250	85	76
8	28	37	e37	e40	e23	e13	72	208	532	248	95	65
9	28	36	e30	e35	e22	e20	68	201	639	234	89	58
10	29	36	e23	e30	e23	e30	64	200	1380	211	74	55
11	29	36	e20	e25	e21	e40	71	196	1210	198	73	52
12	30	36	e20	e28	e20	e70	77	194	1050	185	75	50
13	30	36	e22	e22	e22	e80	87	209	1220	172	69	48
14	32	35	e24	e18	e23	e60	137	283	1420	155	64	47
15	35	35	e22	e17	e24	e50	230	376	1560	149	65	46
16	32	34	e24	e18	e25	e40	213	373	1610	141	63	44
17	34	34	e25	e19	e25	e35	186	343	1560	135	63	44
18	38	35	e23	e19	e24	e30	180	365	1420	125	59	46
19	38	35	e22	e20	e23	e25	152	436	1160	123	57	43
20	38	35	e20	e20	e25	e22	144	732	939	118	55	41
21	37	34	e20	e20	e27	e20	144	924	830	113	68	42
22	36	34	e20	e19	e28	e25	149	897	813	109	78	43
23	37	34	e22	e20	e25	e28	157	718	877	106	64	42
24	37	34	e24	e22	e20	e30	159	604	820	100	64	44
25	37	e33	e25	e20	e18	e35	154	541	734	96	65	46
26	37	e30	e25	e18	e17	e40	148	538	625	92	63	44
27	36	e25	e24	e16	e18	e45	157	634	572	95	67	54
28	37	e22	e22	e15	e19	47	153	764	547	102	71	64
29	38	e25	e18	e17	---	46	149	844	506	87	68	53
30	37	e27	e16	e19	---	41	152	967	463	81	64	51
31	37	---	e15	e20	---	38	---	918	---	79	63	---
TOTAL	1032	1015	741	689	630	1048	3537	13776	26983	5480	2195	1527
MEAN	33.29	33.83	23.90	22.23	22.50	33.81	117.9	444.4	899.4	176.8	70.81	50.90
MAX	38	37	40	40	28	80	230	967	1610	407	95	76
MIN	27	22	15	15	17	13	30	158	463	79	55	41
AC-FT	2050	2010	1470	1370	1250	2080	7020	27320	53520	10870	4350	3030

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)*

MEAN	74.39	75.00	66.60	56.51	61.19	84.26	235.7	692.4	783.9	212.8	68.67	57.79
MAX	187	165	155	104	184	187	519	1337	2104	583	163	230
(WY)	1966	1947	1947	1947	1996	1947	1969	1995	1964	1951	1951	1993
MIN	17.0	33.8	23.9	22.2	22.5	33.8	51.0	135	113	27.2	13.1	18.8
(WY)	1957	2002	2002	2002	2002	2002	1961	2000	2000	2000	2000	1956

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1946 - 2002*	
ANNUAL TOTAL	39430		58653			
ANNUAL MEAN	108.0		160.7		205.5	
HIGHEST ANNUAL MEAN					363	1948
LOWEST ANNUAL MEAN					58.3	2000
HIGHEST DAILY MEAN	842	Apr 29	1610	Jun 16	12500	Jun 9 1964
LOWEST DAILY MEAN	15	Dec 31	13	Mar 8	8.5	Aug 17 1961
ANNUAL SEVEN-DAY MINIMUM	21	Dec 25	18	Dec 28	11	Aug 14 1961
MAXIMUM PEAK FLOW			1730	Jun 10	b15400	Jun 9 1964
MAXIMUM PEAK STAGE			5.84	Jun 10	c13.50	Jun 9 1964
INSTANTANEOUS LOW FLOW			a11	Dec 10	d8.0	Aug 17 1961
ANNUAL RUNOFF (AC-FT)	78210		116300		148900	
10 PERCENT EXCEEDS	334		543		556	
50 PERCENT EXCEEDS	38		43		75	
90 PERCENT EXCEEDS	27		20		35	

*--During periods of operation (October 1945 to September 1969, October 1993 to current year).
a--Gage height, 2.01 ft; may have been less during period of ice affected stage-discharge relation.
b--From rating curve extended above 7,000 ft^3/s on basis of slope-area measurment of peak flow.
c--From floodmark.
d--Site and datum then in use.
e--Estimated.

06073500 DEARBORN RIVER NEAR CRAIG, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 1999 to to current year.
PERIOD OF DAILY RECORD.--August to September 1991, November 1993 to current year.
INSTRUMENTATION.--Temperature recorder installed Nov. 3, 1993.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance for many days are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 28.5°C, Aug. 1, 2, 2000; minimum, 0.0°C on many days during winter.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 25.0°C, July 18; minimum, 0.0°C on many days November to April.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV 2001									
01...	1645	37	8.3	288	8.5	6.5	E.06	<.013	<.002
APR 2002									
19...	1310	149	8.4	295	10.0	5.0	E.07	.042	<.002
MAY									
28...	1200	799	7.9	223	18.0	8.5	.24	.043	<.002
JUL									
19...	1630	126	8.7	322	26.0	21.0	.11	.015	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001					
01...	<.007	<.004	67	19	1.9
APR 2002					
19...	<.007	.005	77	5	2.0
MAY					
28...	<.007	.048	60	65	140
JUL					
19...	<.007	E.002	59	19	6.5

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
NOV 2001											
01...	1645	170	46.1	13.6	.71	.1	3.14	179	1.32	.1	6.36
MAY 2002											
28...	1200	120	32.4	8.93	.53	.0	1.12	118	.54	E.1	5.23

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
NOV 2001											
01...	13.7	.26	19.2	192	<2	<.1	<.8	E.5	<1	1	<1
MAY 2002											
28...	6.1	.17	272	126	<2	<.1	E.5	1.7	<1	1	3

E--Estimated.

DEARBORN RIVER BASIN

06073500 DEARBORN RIVER NEAR CRAIG, MT--Continued

WATER TEMPERATURE, DEGREES CELCIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	18.0	9.5	13.0	8.0	4.5	5.5	0.5	0.0	0.5	0.5	0.0	0.0
2	15.5	8.5	12.0	8.0	4.0	6.0	1.5	0.5	0.5	0.5	0.0	0.5
3	15.0	8.0	11.0	9.0	5.5	6.5	3.0	0.5	1.5	0.5	0.0	0.5
4	10.0	6.5	8.0	9.0	5.5	7.0	0.5	0.0	0.5	0.5	0.0	0.0
5	11.5	4.0	7.5	9.5	5.0	7.0	0.5	0.0	0.0	0.5	0.0	0.5
6	12.0	5.5	8.5	7.5	4.0	5.5	0.5	0.0	0.0	0.5	0.0	0.5
7	12.5	7.0	9.5	6.5	2.0	4.0	0.5	0.0	0.0	0.5	0.0	0.5
8	13.0	7.0	10.0	4.5	2.0	3.0	1.0	0.0	0.5	0.5	0.0	0.5
9	13.0	7.0	9.5	6.5	3.0	4.5	0.5	0.0	0.5	0.5	0.0	0.5
10	11.5	6.0	8.0	7.5	3.0	5.0	0.5	0.0	0.5	0.5	0.0	0.5
11	9.5	6.5	8.0	6.5	1.5	4.0	0.5	0.0	0.0	0.5	0.0	0.5
12	6.5	5.0	5.5	7.5	3.0	5.0	0.5	0.0	0.0	1.0	0.5	0.5
13	10.5	4.5	7.0	8.0	4.0	5.5	0.5	0.0	0.0	0.5	0.5	0.5
14	8.0	5.0	6.5	8.0	5.5	6.5	0.5	0.0	0.5	0.5	0.0	0.5
15	9.5	3.0	6.0	9.5	5.5	7.0	0.5	0.0	0.5	0.5	0.0	0.0
16	10.5	5.0	7.5	9.5	5.5	7.5	0.5	0.5	0.5	0.5	0.0	0.0
17	11.0	5.5	8.0	6.5	5.0	6.0	1.0	0.0	0.5	0.0	0.0	0.0
18	6.0	4.0	5.0	6.5	2.5	4.5	0.5	0.0	0.5	0.0	0.0	0.0
19	9.0	4.5	6.0	4.5	1.5	3.0	0.5	0.0	0.5	0.5	0.0	0.0
20	8.0	4.0	6.0	7.0	3.5	5.0	0.5	0.0	0.0	0.5	0.0	0.0
21	8.5	5.5	6.5	6.0	3.5	5.0	0.5	0.0	0.0	0.5	0.0	0.0
22	9.0	5.5	7.0	6.5	3.0	4.5	0.5	0.0	0.0	0.5	0.0	0.5
23	9.0	4.5	6.5	5.0	3.5	4.5	0.5	0.0	0.0	0.5	0.0	0.5
24	8.0	3.5	5.5	4.5	2.0	3.0	0.5	0.0	0.5	0.5	0.0	0.5
25	7.0	3.0	5.0	2.0	0.5	0.5	0.5	0.0	0.5	0.5	0.0	0.0
26	8.0	3.5	6.0	0.5	0.0	0.5	0.5	0.0	0.5	0.0	0.0	0.0
27	11.0	5.0	8.0	0.5	0.0	0.0	0.5	0.0	0.5	0.5	0.0	0.0
28	8.5	5.5	6.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0
29	10.0	4.5	7.0	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0
30	10.0	7.0	8.5	1.0	0.0	0.5	0.5	0.0	0.5	0.0	0.0	0.0
31	9.5	6.0	8.0	---	---	---	0.5	0.0	0.0	0.5	0.0	0.0
MONTH	18.0	3.0	7.5	9.5	0.0	4.0	3.0	0.0	0.5	1.0	0.0	0.0
		FEBRUARY			MARCH			APRIL			MAY	
1	0.5	0.0	0.0	0.0	0.0	0.0	4.5	0.0	1.5	12.5	3.5	7.5
2	0.5	0.0	0.0	0.5	0.0	0.0	2.5	0.0	0.5	14.0	5.5	9.5
3	0.5	0.0	0.0	0.5	0.0	0.0	5.0	0.0	1.0	10.0	5.5	7.5
4	0.5	0.0	0.0	0.5	0.0	0.0	8.5	0.0	3.5	11.0	4.0	7.5
5	0.5	0.0	0.0	0.5	0.0	0.0	11.0	2.0	6.5	11.0	5.5	8.0
6	0.5	0.0	0.0	0.5	0.0	0.0	12.0	5.5	8.0	8.5	4.5	6.5
7	0.5	0.0	0.0	0.5	0.0	0.0	7.0	4.0	5.5	8.0	2.0	5.0
8	0.5	0.0	0.0	0.5	0.0	0.0	10.5	2.5	6.0	11.0	2.0	6.5
9	0.5	0.0	0.0	0.5	0.0	0.0	8.0	4.0	6.0	11.0	3.5	7.5
10	0.5	0.0	0.0	0.5	0.0	0.0	11.0	4.5	7.5	12.0	5.5	8.5
11	0.5	0.0	0.0	0.5	0.0	0.0	12.5	4.5	8.0	12.0	5.0	8.5
12	1.0	0.0	0.5	0.5	0.0	0.0	12.0	6.0	8.5	15.5	7.0	11.0
13	0.5	0.0	0.5	0.5	0.0	0.0	15.0	6.0	9.5	16.0	7.5	12.0
14	0.5	0.0	0.0	0.5	0.0	0.0	13.0	7.5	9.5	14.0	8.5	11.0
15	1.0	0.0	0.5	1.0	0.0	0.5	7.5	3.0	5.5	10.0	6.0	8.0
16	1.0	0.0	0.5	0.5	0.0	0.0	8.5	3.0	5.5	11.0	5.5	8.0
17	0.5	0.0	0.5	0.5	0.0	0.0	7.0	2.0	5.0	12.0	5.5	9.0
18	0.5	0.0	0.5	0.5	0.0	0.0	8.0	0.0	3.0	12.5	7.5	10.0
19	0.5	0.0	0.5	0.0	0.0	0.0	10.0	0.5	5.0	15.5	8.0	11.5
20	1.0	0.0	0.5	0.0	0.0	0.0	11.5	2.0	6.5	14.0	8.0	11.0
21	2.5	0.0	1.0	0.0	0.0	0.0	10.0	3.5	7.0	11.0	6.5	7.5
22	7.0	2.5	4.0	0.0	0.0	0.0	13.0	4.5	8.0	6.5	4.0	5.0
23	2.5	0.0	0.5	0.5	0.0	0.0	8.5	4.0	6.0	10.5	3.0	6.5
24	0.0	0.0	0.0	0.5	0.0	0.0	9.0	0.5	4.5	12.0	5.0	8.5
25	0.0	0.0	0.0	0.5	0.0	0.0	10.0	3.5	6.0	11.5	6.5	9.0
26	0.5	0.0	0.0	0.5	0.0	0.0	10.5	3.5	7.0	13.5	8.0	10.5
27	0.5	0.0	0.0	3.0	0.0	1.0	6.5	3.0	5.0	13.5	8.5	11.0
28	0.0	0.0	0.0	6.0	0.5	3.0	11.0	2.5	6.0	12.5	7.5	10.0
29	---	---	---	6.5	1.0	3.5	11.5	4.5	7.5	12.0	7.0	9.5
30	---	---	---	5.5	2.0	3.5	8.0	5.0	6.0	11.5	7.5	9.5
31	---	---	---	8.0	1.5	4.0	---	---	---	13.5	6.5	10.0
MONTH	7.0	0.0	0.5	8.0	0.0	0.5	15.0	0.0	6.0	16.0	2.0	8.5

DEARBORN RIVER BASIN

06073500 DEARBORN RIVER NEAR CRAIG, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	11.5	6.5	9.0	16.5	10.0	13.5	22.0	13.0	17.0	19.5	13.5	16.5
2	9.5	7.5	8.5	17.5	10.0	13.5	22.0	12.5	17.0	21.0	12.5	16.5
3	11.5	7.5	9.5	17.0	11.0	14.0	18.0	12.5	15.0	22.0	13.5	17.5
4	12.0	6.5	9.5	19.5	12.5	16.0	17.5	12.0	14.5	22.5	14.5	18.0
5	13.5	8.5	10.5	19.0	12.0	15.5	20.0	13.0	16.0	18.5	14.5	16.5
6	12.5	8.0	10.5	20.5	12.0	16.0	20.0	14.0	17.0	14.5	13.5	14.0
7	13.0	7.5	10.5	19.5	14.0	17.0	19.0	14.5	16.5	15.5	12.5	14.0
8	10.5	7.0	8.0	16.5	13.0	14.5	15.5	12.5	13.5	17.0	10.5	13.5
9	7.0	6.0	6.5	20.0	11.0	15.0	20.0	11.5	15.5	18.5	9.5	13.5
10	6.0	2.5	4.5	22.0	13.5	17.5	22.0	13.5	17.5	19.5	10.5	15.0
11	10.0	5.5	7.5	23.0	14.5	19.0	17.5	14.0	15.0	20.5	11.5	16.0
12	11.5	6.5	9.0	24.0	15.0	19.5	21.0	12.0	16.0	20.5	11.5	16.0
13	13.5	6.0	9.5	24.5	15.5	20.0	22.5	12.5	17.5	20.0	11.5	15.5
14	13.5	7.0	10.5	24.0	17.0	20.0	20.0	14.0	16.5	20.0	11.5	15.5
15	14.0	7.5	10.5	23.5	17.0	20.0	21.5	10.5	15.5	19.0	12.5	15.5
16	13.0	7.5	10.5	22.0	16.5	19.5	16.5	12.5	14.0	17.5	12.0	15.0
17	13.5	8.5	10.5	24.0	15.5	19.5	19.5	9.5	14.0	15.5	13.0	14.0
18	11.5	8.0	9.5	25.0	16.0	20.0	21.0	12.0	16.0	17.0	11.5	13.5
19	12.5	6.5	9.5	21.0	17.0	18.5	20.0	12.0	16.0	17.5	10.0	13.5
20	14.5	6.5	10.5	24.0	16.0	19.5	21.0	13.0	17.0	17.0	10.0	13.0
21	15.5	8.5	12.0	21.5	16.0	18.5	19.5	14.0	16.5	15.0	9.5	11.5
22	14.5	10.0	12.5	22.5	14.5	18.0	21.0	12.5	16.0	15.0	8.0	11.0
23	14.5	10.0	12.0	24.0	15.5	19.0	21.5	12.5	17.0	16.0	7.5	11.5
24	16.0	9.5	13.0	24.0	16.0	20.0	21.5	14.5	17.5	13.0	10.5	11.5
25	17.0	9.5	13.5	23.0	16.0	19.5	20.5	14.0	17.0	15.5	8.0	11.5
26	18.5	11.0	14.5	23.0	15.5	19.0	19.0	12.5	16.0	12.0	8.0	10.0
27	18.5	12.0	15.5	19.5	15.5	17.5	19.5	13.0	16.0	10.5	9.0	9.5
28	16.5	12.0	14.0	22.0	13.5	17.5	21.5	14.0	17.5	14.0	7.0	10.5
29	15.5	11.5	13.5	23.0	15.0	18.5	21.0	14.5	17.5	15.0	8.5	11.5
30	17.0	10.0	13.5	23.0	15.0	18.5	18.0	13.5	16.5	14.0	7.5	10.5
31	---	---	---	21.5	14.5	17.5	21.0	13.5	17.0	---	---	---
MONTH	18.5	2.5	10.5	25.0	10.0	18.0	22.5	9.5	16.0	22.5	7.0	13.5

SMITH RIVER BASIN

06077200 SMITH RIVER BELOW EAGLE CREEK, NEAR FORT LOGAN, MT

LOCATION.--Lat 46°49'41", long 111°11'29" (NAD 27), in SW$^1/_4$NW$^1/_4$SE$^1/_4$ sec. 2, T.12 S., R.4 E., Meagher County, Hydrologic Unit 10030103, on right bank at downstream side of private bridge, 0.6 mi downstream from Eagle Creek, 11.3 mi north of Fort Logan, and at river mile 80.8.
DRAINAGE AREA.--1,088 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1996 to current year.
GAGE.--Water-stage recorder. Elevation of gage is 4,350 ft (NGVD 29).
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow slightly regulated by Smith River Reservoir (station number 06075000). Diversion for irrigation of about 19,300 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND,WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	77	e75	e65	e68	e57	e95	113	373	315	89	85
2	56	75	e75	e62	e70	e55	e80	118	537	273	87	85
3	55	74	e75	e60	e67	e58	e90	133	617	251	81	77
4	55	73	e75	e62	e62	e65	e110	131	550	244	83	73
5	57	72	e72	e65	e65	e63	e130	135	455	221	104	69
6	58	72	e68	e68	e65	e60	160	143	418	207	96	76
7	59	71	e70	e70	e68	e60	166	144	401	203	87	98
8	58	60	e72	e72	e72	e58	149	137	427	226	117	101
9	60	76	e72	e67	e70	e60	139	130	451	224	141	94
10	66	69	e70	e65	e68	e65	139	135	556	190	117	89
11	71	61	e68	e67	e68	e70	150	126	532	173	98	83
12	75	70	e65	e70	e65	e75	151	119	515	157	92	76
13	72	86	e68	e70	e65	e70	154	122	543	148	88	76
14	71	88	e70	e68	e65	e67	211	135	564	146	86	73
15	73	79	e70	e65	e65	e65	231	158	538	157	86	69
16	71	75	e68	e65	e67	e65	190	165	491	143	82	65
17	68	75	e68	e65	e70	e65	151	164	487	149	82	72
18	67	74	e70	e67	e68	e65	136	184	511	141	76	103
19	68	61	e68	e70	e65	e65	121	272	558	132	75	99
20	70	71	e68	e70	e65	e62	122	446	465	132	73	87
21	70	91	e65	e72	e65	e60	128	537	405	124	103	85
22	69	81	e62	e70	e67	e65	137	654	622	110	125	86
23	70	82	e60	e68	e70	e70	149	544	1020	103	114	83
24	70	79	e60	e68	e60	e80	132	422	782	104	99	83
25	67	74	e60	e72	e55	e85	121	363	656	103	94	82
26	69	e72	e60	e75	e60	e90	115	335	563	108	89	83
27	72	e68	e62	e70	e65	e100	118	338	493	121	91	91
28	71	e65	e62	e65	e62	e110	112	338	438	116	90	101
29	77	e67	e65	e60	---	e100	109	348	400	107	90	96
30	79	e70	e65	e60	---	e95	112	357	361	97	90	92
31	77	---	e65	e62	---	e90	---	371	---	94	90	---
TOTAL	2078	2208	2093	2075	1842	2215	4108	7817	15729	5019	2915	2532
MEAN	67.03	73.60	67.52	66.94	65.79	71.45	136.9	252.2	524.3	161.9	94.03	84.40
MAX	79	91	75	75	72	110	231	654	1020	315	141	103
MIN	55	60	60	60	55	55	80	113	361	94	73	65
AC-FT	4120	4380	4150	4120	3650	4390	8150	15510	31200	9960	5780	5020

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2002, BY WATER YEAR (WY)

MEAN	132.4	130.2	115.3	130.9	116.0	151.7	215.4	442.3	617.3	284.9	126.3	109.5
MAX	213	185	167	249	145	254	328	1119	1893	607	276	219
(WY)	1998	1999	1998	1997	1997	1997	1997	1997	1997	1998	1997	1997
MIN	67.0	73.6	67.5	66.9	65.8	71.5	137	252	152	88.3	43.7	53.6
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2001	2001	2000	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1997 - 2002	
ANNUAL TOTAL	38386		50631			
ANNUAL MEAN	105.2		138.7		214.5	
HIGHEST ANNUAL MEAN					458	1997
LOWEST ANNUAL MEAN					109	2001
HIGHEST DAILY MEAN	447	May 1	1020	Jun 23	3510	Jun 12 1997
LOWEST DAILY MEAN	34	Aug 22	55	Oct 3	31	Aug 25 2000
ANNUAL SEVEN-DAY MINIMUM	35	Aug 19	57	Oct 1	32	Aug 25 2000
MAXIMUM PEAK FLOW			a1210	Jun 23	d3900	Jun 12 1997
MAXIMUM PEAK STAGE			b5.65	Mar 24	b9.30	Jan 1 1997
INSTANTANEOUS LOW FLOW			c44	Nov 11	28	Aug 26 2000
ANNUAL RUNOFF (AC-FT)	76140		100400		155400	
10 PERCENT EXCEEDS	182		362		394	
50 PERCENT EXCEEDS	84		80		135	
90 PERCENT EXCEEDS	52		62		68	

a--Gage height, 5.07 ft.
b--Backwater from ice.
c--Gage height, 2.78 ft, result of freeze-up, may have been less during period of ice effect.
d--Gage height, 7.00 ft.
e--Estimated.

06077200 SMITH RIVER BELOW EAGLE CREEK, NEAR FORT LOGAN, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--Water years 1997 to present. Data for water years 1997 to 2001 not published.

INSTRUMENTATION.--Water temperature recorder installed Nov. 4, 1997.

REMARKS.--Several observations of water temperature and specific conductance were made during the water year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 27.5°C, July 14, 2002; minimum 0.0°C, many days during winter months.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 27.5°C, July 14; minimum 0.0°C, many days November through April.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.0	9.0	12.0	6.5	3.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0
2	13.5	8.0	11.0	6.0	2.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0
3	13.0	8.5	10.5	6.0	2.5	4.0	0.5	0.0	0.0	0.0	0.0	0.0
4	10.5	7.0	8.5	6.5	1.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
5	9.0	3.5	6.5	5.5	1.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
6	9.0	3.5	6.5	4.5	1.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0
7	9.5	5.0	7.5	4.5	1.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0
8	10.0	7.0	8.5	1.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
9	10.5	7.0	8.5	2.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
10	10.0	6.5	8.0	1.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
11	8.5	7.0	7.5	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
12	7.0	4.5	5.5	2.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
13	7.5	4.5	6.0	2.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
14	6.5	5.0	6.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
15	7.5	2.5	4.5	3.5	0.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0
16	6.5	2.5	4.5	5.0	1.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
17	6.5	4.0	5.0	4.0	1.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0
18	5.0	3.0	4.0	3.0	0.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0
19	5.0	3.0	4.0	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
20	6.5	1.5	4.0	2.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
21	5.0	2.5	3.5	2.5	0.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0
22	5.5	3.0	4.5	3.0	0.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0
23	6.5	3.5	5.0	2.5	1.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0
24	5.5	2.5	3.5	2.0	0.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0
25	3.5	1.5	2.5	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
26	6.0	0.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	7.5	2.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	6.0	4.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	7.5	3.0	5.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	7.0	5.5	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	8.0	5.5	7.0	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0
MONTH	15.0	0.5	6.0	6.5	0.0	1.5	0.5	0.0	0.0	0.0	0.0	0.0

SMITH RIVER BASIN

06077200 SMITH RIVER BELOW EAGLE CREEK, NEAR FORT LOGAN, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	4.0	8.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	4.5	9.0
3	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.5	11.5	6.0	9.0
4	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	1.0	11.0	5.0	8.0
5	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	2.0	8.5	6.0	7.0
6	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.5	1.5	8.5	4.0	6.0
7	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.5	1.5	7.0	3.5	5.0
8	0.0	0.0	0.0	0.0	0.0	0.0	6.5	2.0	4.0	9.5	1.5	5.0
9	0.0	0.0	0.0	0.0	0.0	0.0	5.0	3.5	4.0	12.0	2.5	7.0
10	0.0	0.0	0.0	0.0	0.0	0.0	8.0	4.0	5.5	11.0	6.0	8.0
11	0.0	0.0	0.0	0.0	0.0	0.0	8.0	3.0	5.5	10.5	4.5	7.5
12	0.0	0.0	0.0	0.0	0.0	0.0	7.5	4.5	5.5	15.0	6.5	10.5
13	0.0	0.0	0.0	0.0	0.0	0.0	9.0	4.0	6.0	16.5	8.0	12.5
14	0.0	0.0	0.0	0.0	0.0	0.0	7.0	3.5	5.5	15.0	9.0	11.5
15	0.0	0.0	0.0	0.0	0.0	0.0	4.5	2.5	3.5	11.0	7.0	9.0
16	0.0	0.0	0.0	0.0	0.0	0.0	6.5	2.0	4.0	11.0	6.0	8.5
17	0.0	0.0	0.0	0.0	0.0	0.0	5.0	2.0	3.5	13.5	6.0	10.0
18	0.0	0.0	0.0	0.0	0.0	0.0	7.0	1.5	4.0	15.0	8.5	11.5
19	0.0	0.0	0.0	0.0	0.0	0.0	9.0	1.5	4.5	16.0	10.0	13.0
20	0.0	0.0	0.0	0.0	0.0	0.0	9.5	2.0	5.5	13.5	9.5	12.0
21	0.0	0.0	0.0	0.0	0.0	0.0	9.0	2.5	5.5	12.5	8.5	10.0
22	0.0	0.0	0.0	0.0	0.0	0.0	12.0	3.5	7.5	8.5	4.0	5.5
23	0.0	0.0	0.0	0.0	0.0	0.0	8.0	4.0	6.0	7.5	3.0	5.0
24	0.0	0.0	0.0	0.0	0.0	0.0	8.0	1.5	4.0	10.5	5.0	7.5
25	0.0	0.0	0.0	0.5	0.0	0.0	8.5	2.5	5.0	10.5	6.0	8.5
26	0.0	0.0	0.0	0.5	0.0	0.5	10.5	3.0	6.5	13.0	8.5	10.5
27	0.0	0.0	0.0	0.5	0.5	0.5	8.0	3.5	5.5	14.0	8.5	11.0
28	0.0	0.0	0.0	0.5	0.5	0.5	11.5	3.0	7.0	14.0	10.0	12.0
29	---	---	---	0.5	0.0	0.5	11.0	5.0	7.5	13.5	10.0	11.5
30	---	---	---	0.5	0.0	0.0	11.0	4.5	8.0	13.5	9.5	11.5
31	---	---	---	0.0	0.0	0.0	---	---	---	16.0	9.5	13.0
MONTH	0.0	0.0	0.0	0.5	0.0	0.0	12.0	0.0	4.5	16.5	1.5	9.0

		JUNE			JULY			AUGUST			SEPTEMBER	
1	14.0	10.5	12.0	19.0	14.0	16.5	22.0	12.5	17.0	16.5	13.0	15.0
2	11.5	10.0	10.5	19.0	12.5	16.0	20.5	14.5	17.0	19.5	11.5	15.0
3	12.5	9.0	10.5	18.0	14.0	16.0	19.0	12.5	15.5	19.0	12.5	15.5
4	13.5	8.5	11.0	21.0	14.0	17.5	19.5	13.5	16.0	21.0	13.5	17.0
5	15.0	10.5	12.5	21.0	15.0	18.0	23.0	14.0	18.0	19.0	14.5	16.5
6	15.0	10.5	13.0	22.5	15.5	19.0	23.5	16.0	19.0	15.0	13.5	14.0
7	16.5	11.0	13.5	24.5	18.0	21.0	19.0	15.0	17.0	15.5	13.0	13.5
8	13.5	9.5	11.0	23.0	19.0	20.5	16.5	15.0	16.0	17.0	10.5	13.0
9	9.5	8.0	8.5	22.5	15.5	19.0	22.0	14.0	17.5	16.5	9.0	12.5
10	8.5	5.0	6.5	25.5	17.5	21.0	23.0	15.5	19.0	17.5	9.5	13.5
11	10.0	5.5	7.0	25.5	17.0	21.5	20.0	16.5	18.5	18.0	10.5	14.0
12	12.5	7.5	9.5	26.5	18.0	22.0	19.0	14.5	16.5	18.5	11.0	15.0
13	15.0	8.0	11.5	27.0	19.0	23.0	22.0	12.5	17.0	18.0	11.0	14.5
14	15.5	9.5	12.5	27.5	20.0	23.0	21.5	14.5	17.5	18.5	11.0	14.5
15	16.5	10.5	13.5	26.0	20.0	23.0	21.5	12.5	16.5	18.0	11.5	14.5
16	17.0	11.5	14.5	25.5	19.0	22.0	17.5	13.0	15.0	18.0	11.5	14.5
17	16.0	13.5	15.0	25.0	17.0	21.0	18.5	9.5	13.5	15.0	12.0	13.0
18	14.5	12.0	13.5	25.0	18.5	22.0	20.0	11.5	15.5	14.0	11.0	12.0
19	14.0	9.5	11.5	23.0	19.0	20.5	21.0	12.0	16.0	15.0	9.0	12.0
20	17.0	9.5	13.0	24.0	17.5	20.5	20.5	13.0	16.5	14.5	9.5	12.0
21	17.5	12.5	14.5	23.5	16.5	20.0	19.5	14.5	17.0	12.0	8.0	10.0
22	15.5	12.5	14.0	24.0	17.0	20.0	20.5	14.0	17.0	12.0	6.5	9.0
23	17.0	12.0	14.0	24.5	17.0	20.0	20.0	13.5	17.0	13.5	7.0	10.0
24	18.0	13.5	15.5	24.5	17.5	20.5	20.0	13.5	16.5	12.5	9.0	10.5
25	19.5	14.0	16.5	22.5	17.0	19.5	20.5	13.0	16.5	13.0	8.5	10.5
26	21.0	15.0	18.0	21.5	15.5	18.0	19.5	12.5	16.0	11.5	7.5	9.5
27	21.0	16.5	19.0	21.0	15.0	18.0	18.5	13.0	15.5	10.0	8.5	9.0
28	19.5	16.0	17.5	24.5	18.5	21.5	21.0	14.0	16.5	12.0	7.5	9.5
29	18.0	15.0	16.0	26.5	20.0	23.0	21.5	14.0	17.5	12.0	7.0	9.5
30	19.0	12.5	16.0	23.5	18.5	21.5	20.5	14.0	17.0	11.5	8.0	9.5
31	---	---	---	22.0	16.0	18.5	20.0	14.0	17.0	---	---	---
MONTH	21.0	5.0	13.0	27.5	12.5	20.0	23.5	9.5	16.5	21.0	6.5	12.5

MISSOURI RIVER MAIN STEM

06078200 MISSOURI RIVER NEAR ULM, MT

LOCATION.--Lat 47°26'06", long 111°23'07" (NAD 27), in NE$^1/_4$NW$^1/_4$NW$^1/_4$ sec.5, T.19 N., R.3 E., Cascade County, Hydrologic Unit 10030102, on left bank 5.6 mi east of Ulm, 9.1 mi downstream from Smith River, and at river mile 2,140.4.

DRAINAGE AREA.--20,941 mi^2.

PERIOD OF RECORD.--August 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,313.27 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by 10 smaller irrigation reservoirs and power plants, Clark Canyon Reservoir (station number 06015300), and Canyon Ferry Lake (station number 06058500). Diversions for irrigation of about 630,400 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1953 reached a stage of about 17 ft; discharge, 35,000 ft^3/s. Flood in June 1948 reached a stage of about 16 ft; discharge, 32,000 ft^3/s, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2960	3060	3180	e3200	e3100	e3100	3320	3600	4780	4330	3170	3170
2	2990	3070	3090	e3300	e3100	e3100	3360	3630	4700	4170	3130	3090
3	2970	3100	3060	e3300	e3100	e3200	3330	3540	4720	4080	3120	3040
4	2830	3080	3060	e3200	e3100	e3200	3320	3590	4740	4070	3110	2990
5	2840	3070	3020	e3100	e3100	e3200	3320	3620	4680	4060	3090	2960
6	2840	3050	3020	e3100	e3100	e3200	3400	3640	4480	4020	3080	2980
7	2830	3020	3030	e3100	e3100	e3200	3500	3680	4390	3980	3090	3120
8	2820	3110	3090	e3100	e3100	e3100	3590	3660	4560	3950	3190	3310
9	2860	3110	3070	e3100	e3100	e3100	3590	3600	4770	3840	3280	3360
10	2890	3120	3060	e3100	e3100	e3100	3530	3510	5830	3710	3380	3260
11	2870	3090	3060	e3100	e3100	e3000	3460	3480	9040	3610	3330	3070
12	2910	3060	3100	e3100	e3100	e3000	3400	3500	9790	3530	3230	2970
13	2870	3050	3160	e3100	e3100	e3000	3440	3500	8930	3500	3120	2900
14	2890	3090	3110	e3100	e3100	e3000	3440	3500	8770	3440	3070	2890
15	2940	3010	3030	e3100	e3100	e3000	3360	3490	8530	3370	3130	2900
16	3010	3010	3040	e3100	e3100	e3000	3500	3640	8130	3350	3190	2940
17	3090	3010	3070	e3200	e3100	e3000	3550	3710	7660	3340	3310	2950
18	3110	3050	3030	e3200	e3100	e3100	3530	3670	7260	3330	3280	2900
19	3030	3110	3060	e3200	e3100	e3100	3540	3690	6760	3290	3260	2920
20	3030	3100	e3100	e3100	e3100	e3100	3550	3880	6240	3290	3230	2850
21	3040	3130	e3100	e3100	e3100	e3200	3540	4290	5690	3230	3170	2890
22	3060	3170	e3200	e3100	e3000	e3200	3450	4900	5310	3150	3080	2880
23	3060	3140	e3200	e3100	e3000	e3200	3380	5470	5270	3120	3070	2880
24	3010	3120	e3200	e3100	e3000	e3200	3420	5380	5570	3160	3060	2900
25	3040	3110	e3100	e3100	e3100	e3200	3440	5150	5350	3140	3090	2920
26	3090	3140	e3100	e3100	e3100	e3200	3390	4980	5070	3190	3200	2970
27	3090	3110	e3100	e3100	e3200	e3300	3360	4810	4850	3230	3250	3100
28	3060	3110	e3100	e3100	e3200	e3300	3400	4720	4670	3190	3190	3170
29	3090	3150	e3100	e3100	---	3380	3480	4710	4550	3230	3170	3160
30	3080	3160	e3100	e3100	---	3340	3560	4710	4450	3180	3210	3210
31	3100	---	e3200	e3100	---	3380	---	4800	---	3140	3200	---
TOTAL	92300	92710	95940	97000	86700	97700	103450	126050	179540	109220	98480	90650
MEAN	2977	3090	3095	3129	3096	3152	3448	4066	5985	3523	3177	3022
MAX	3110	3170	3200	3300	3200	3380	3590	5470	9790	4330	3380	3360
MIN	2820	3010	3020	3100	3000	3000	3320	3480	4390	3120	3060	2850
AC-FT	183100	183900	190300	192400	172000	193800	205200	250000	356100	216600	195300	179800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2002, BY WATER YEAR (WY)

MEAN	4969	5341	5569	5679	5798	5918	6570	9006	10960	7446	4887	4642
MAX	11230	9497	10690	7213	9501	9652	12070	19800	24260	19480	8741	9990
(WY)	1966	1966	1960	1984	1996	1968	1976	1976	1981	1975	1993	1984
MIN	2977	3090	3095	3129	3096	3152	3070	3501	2965	2868	2990	2283
(WY)	2002	2002	2002	2002	2002	2002	1961	1961	1961	1985	2000	1959

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1957 - 2002	
ANNUAL TOTAL	1260190		1269740			
ANNUAL MEAN	3453		3479		6398	
HIGHEST ANNUAL MEAN					9653	1976
LOWEST ANNUAL MEAN					3479	2002
HIGHEST DAILY MEAN	5300	Apr 30	9790	Jun 12	28200	May 24 1981
LOWEST DAILY MEAN	2810	Sep 22	2820	Oct 8	1700	Jun 17 1961
ANNUAL SEVEN-DAY MINIMUM	2840	Oct 4	2840	Oct 4	2150	Sep 4 1959
MAXIMUM PEAK FLOW			10200	Jun 11	a28500	May 24 1981
MAXIMUM PEAK STAGE			7.23	Jun 11	15.20	Jun 17 1997
ANNUAL RUNOFF (AC-FT)	2500000		2519000		4635000	
10 PERCENT EXCEEDS	4100		4550		10100	
50 PERCENT EXCEEDS	3420		3130		5600	
90 PERCENT EXCEEDS	2970		3000		3400	

a--Gage height, 14.99 ft.
e--Estimated.

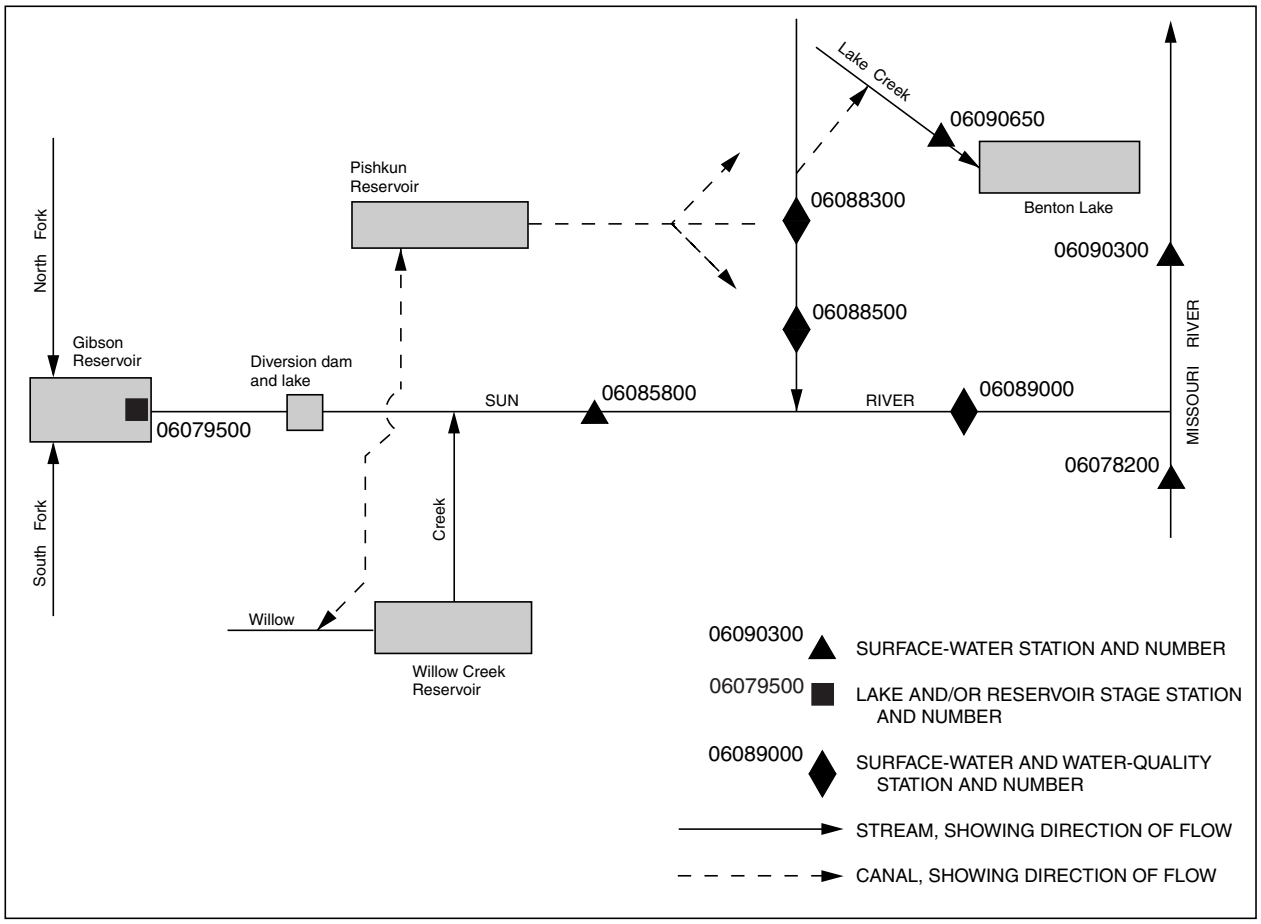

Figure 10. Schematic diagram showing diversions and storage in Sun River Basin.

SUN RIVER BASIN

06085800 SUN RIVER AT SIMMS, MT

LOCATION.--Lat 47°30'06", long 111°55'56" (NAD 27), in NW$^1/_4$NW$^1/_4$SE$^1/_4$ sec. 12, T. 20 N., R.3 W., Cascade County, Hydrologic Unit 10030104, on left bank 5 ft downstream from bridge on Montana Secondary Highway 565, 0.7 mi downstream from Simms Creek, 0.7 mi north of Simms, and at river mile 45.0.

DRAINAGE AREA.--1,320 mi^2.

PERIOD OF RECORD.--May to June 1953 (in WSP 1320-B), May to June 1964 (in WSP 1840-B), April 1966 to September 1979, April 1997 to current year.

REVISED RECORDS.--WDR MT-75-1: 1964 (M).

GAGE.--Water-stage recorder. Elevation of gage is 3,570 ft (NGVD 29). May 1941 to October 1965, nonrecording gage at different datum. April 1966 to September 1979, water-stage recorder at site about 500 ft downstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Gibson, Pishkun, Willow Creek, and Nilan Reservoirs. Diversions for irrigation of about 105,000 acres upstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	152	e120	e90	e100	e100	148	43	3530	1150	73	123
2	98	147	e130	e100	e100	e100	116	45	3060	703	79	108
3	94	145	e120	e120	e100	e110	159	31	2550	312	83	99
4	101	144	e110	e150	e110	e130	169	40	2170	168	114	99
5	109	143	e120	e140	e110	e120	157	46	1700	103	145	102
6	106	143	e130	e130	e120	e100	156	57	1910	94	165	106
7	101	144	e130	e150	e120	e90	155	67	1950	97	173	153
8	97	133	e140	e250	e110	e80	155	97	2170	69	215	201
9	93	139	e150	e200	e100	e90	147	94	2260	87	254	159
10	95	139	e140	e150	e110	e100	144	86	2700	84	235	165
11	93	137	e120	e130	e110	e120	136	87	4070	79	196	160
12	96	138	e120	e140	e100	e150	140	94	3360	69	203	151
13	102	143	e130	e150	e110	e200	141	83	3080	59	179	135
14	109	142	e130	e130	e120	e170	138	54	2990	52	151	141
15	125	139	e130	e110	e110	e150	141	36	2880	72	150	146
16	145	136	e130	e100	e110	e140	117	40	3120	65	128	127
17	146	136	e130	e110	e110	e130	119	50	3310	67	130	119
18	149	140	e120	e120	e110	e130	129	39	3350	62	132	131
19	156	141	e120	e120	e110	e120	123	26	3210	58	118	128
20	155	139	e110	e120	e120	e110	118	40	3020	61	104	116
21	154	138	e110	e120	e120	e100	117	106	2200	77	100	114
22	154	137	e110	e110	e120	e110	104	220	1180	98	168	104
23	153	137	e110	e110	e110	e120	69	275	1390	123	135	107
24	151	136	e120	e110	e100	e130	48	231	3630	114	114	116
25	151	135	e120	e120	e100	e150	91	177	2800	102	110	119
26	153	e130	e120	e110	e110	e200	93	162	2400	89	112	123
27	151	e110	e110	e100	e110	e250	92	158	2240	113	116	139
28	151	e100	e100	e90	e110	e220	60	134	2210	115	130	155
29	154	e110	e100	e80	---	e190	53	306	2170	116	128	130
30	156	e120	e90	e90	---	169	41	2030	2010	105	112	130
31	155	---	e90	e100	---	153	---	3940	---	84	136	---
TOTAL	3954	4073	3710	3850	3070	4232	3576	8894	78620	4647	4388	3906
MEAN	127.5	135.8	119.7	124.2	109.6	136.5	119.2	286.9	2621	149.9	141.5	130.2
MAX	156	152	150	250	120	250	169	3940	4070	1150	254	201
MIN	93	100	90	80	100	80	41	26	1180	52	73	99
AC-FT	7840	8080	7360	7640	6090	8390	7090	17640	155900	9220	8700	7750

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2002, BY WATER YEAR (WY)*

MEAN	210.5	224.5	199.3	197.3	194.4	223.1	326.8	1180	2316	418.1	168.3	151.0
MAX	519	596	456	314	291	473	1125	4123	8558	2165	383	422
(WY)	1972	1976	1976	1976	1976	1969	1969	1976	1975	1975	1972	1972
MIN	89.0	120	101	122	96.3	104	80.9	72.1	109	54.5	48.8	49.3
(WY)	1978	1978	1974	2001	1977	1977	1977	2001	1977	2001	2000	1977

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1966 - 2002*	
ANNUAL TOTAL	41162		126920			
ANNUAL MEAN	112.8		347.7		478.0	
HIGHEST ANNUAL MEAN					1177	1975
LOWEST ANNUAL MEAN					123	2001
HIGHEST DAILY MEAN	566	Jun 14	4070	Jun 11	35000	Jun 20 1975
LOWEST DAILY MEAN	27	May 19	26	May 19	19	Sep 29 1977
ANNUAL SEVEN-DAY MINIMUM	42	May 13	41	May 14	26	Sep 19 1977
MAXIMUM PEAK FLOW			5510	Jun 24	50000	Jun 9 1964
MAXIMUM PEAK STAGE			6.46	Jun 24	b13.70	Jun 9 1964
INSTANTANEOUS LOW FLOW			a23	May 19		
ANNUAL RUNOFF (AC-FT)	81640		251700		346300	
10 PERCENT EXCEEDS	154		287		914	
50 PERCENT EXCEEDS	110		120		186	
90 PERCENT EXCEEDS	49		83		84	

*--During periods of operation (April 1966 to September 1979, April 1997 to current year).
a--Gage height, 0.77 ft.
b--About, from floodmark.
e--Estimated.

SUN RIVER BASIN

06088300 MUDDY CREEK NEAR VAUGHN, MT

LOCATION.--Lat 47°37'30", long 111°38'05" (NAD 27), in NE$^1/_4$NE$^1/_4$NW$^1/_4$ sec. 32, T. 22 N., R.1 E., Cascade County, Hydrologic Unit 10030104, on left bank 200 ft downstream from bridge on county road 6.2 mi northwest of Vaughn and at mile 14.6

DRAINAGE AREA.--282 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1968 to September 1987, March 1996 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,441.79 ft (NGVD 29) (levels by U.S. Army Corps of Engineers).

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Natural flow increased by wastage from Greenfield Irrigation Project. Diversions for irrigation of about 400 acres upstream from station and pumped diversions from Muddy Creek upstream from station in SW$^1/_4$ sec. 2, T. 22 N., R.1 W, to supplement water supply for Benton Lake Wildlife Refuge. Bureau of Reclamation satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	34	e32	e21	e22	e18	e22	23	59	239	223	204
2	52	34	e35	e23	e22	e19	e20	20	116	206	196	202
3	53	33	e34	e27	e22	e20	e22	17	194	217	197	176
4	54	33	e32	e27	e22	e22	e27	18	145	294	230	163
5	56	33	e30	e27	e23	e19	36	19	135	287	255	149
6	54	32	e33	e29	e23	e16	40	28	149	281	275	177
7	52	32	e32	e32	e23	e15	40	140	156	229	289	208
8	51	31	e35	e30	e22	e15	32	185	259	292	283	177
9	50	31	e33	e28	e21	e16	32	113	275	303	297	160
10	44	31	e30	e27	e22	e18	29	70	958	292	256	153
11	38	31	e30	e26	e21	e25	28	46	964	266	226	152
12	40	31	e31	e27	e20	e40	26	31	408	265	239	138
13	39	35	e32	e25	e21	e30	26	58	290	238	207	127
14	39	33	e31	e23	e21	e27	24	78	237	209	207	136
15	40	37	e30	e23	e22	e25	22	81	207	226	198	131
16	39	45	e30	e24	e22	e23	21	54	199	188	171	143
17	36	43	e29	e25	e22	e22	20	53	182	182	165	135
18	35	42	e28	e23	e21	e22	27	62	178	178	179	146
19	35	42	e27	e25	e21	e21	27	61	172	180	198	152
20	35	42	e26	e26	e22	e20	23	98	136	190	184	142
21	34	41	e25	e24	e22	e18	22	58	135	201	230	158
22	33	41	e25	e22	e22	e20	20	172	211	229	253	144
23	37	41	e25	e23	e20	e22	16	181	213	237	216	159
24	44	40	e25	e24	e18	e24	16	71	174	302	205	149
25	39	39	e25	e24	e18	e27	16	154	203	289	193	136
26	37	32	e24	e20	e19	e30	17	122	221	286	200	101
27	31	e27	e23	e16	e20	e35	19	121	203	305	219	93
28	32	e25	e22	e15	e18	e33	21	67	179	306	197	83
29	31	e28	e21	e16	---	e30	20	79	177	299	185	75
30	31	e27	e20	e18	---	e27	22	101	240	273	195	75
31	35	---	e20	e20	---	e25	---	68	---	282	224	---
TOTAL	1264	1046	875	740	592	724	733	2449	7375	7771	6792	4344
MEAN	40.77	34.87	28.23	23.87	21.14	23.35	24.43	79.00	245.8	250.7	219.1	144.8
MAX	56	45	35	32	23	40	40	185	964	306	297	208
MIN	31	25	20	15	18	15	16	17	59	178	165	75
AC-FT	2510	2070	1740	1470	1170	1440	1450	4860	14630	15410	13470	8620

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2002, BY WATER YEAR (WY)*

MEAN	76.90	54.36	41.74	33.39	35.98	59.79	40.95	114.6	200.4	258.5	245.4	135.9
MAX	145	71.4	58.5	59.8	65.1	238	162	264	455	367	402	218
(WY)	1976	1986	1986	1997	1986	1978	1975	1975	1969	1970	1975	1972
MIN	40.8	34.9	21.7	19.3	17.5	23.4	21.3	56.3	101	137	138	45.5
(WY)	2002	2002	1973	1973	1985	2002	2000	2001	1985	1980	1977	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1968 - 2002*	
ANNUAL TOTAL	28878		34705			
ANNUAL MEAN	79.12		95.08		109.3	
HIGHEST ANNUAL MEAN					160	1969
LOWEST ANNUAL MEAN					77.2	1985
HIGHEST DAILY MEAN	547	Aug 1	964	Jun 11	2250	May 7 1975
LOWEST DAILY MEAN	11	May 16	15	Jan 28	8.0	Dec 8 1972
ANNUAL SEVEN-DAY MINIMUM	14	May 10	17	Mar 4	13	Dec 8 1972
MAXIMUM PEAK FLOW			1650	Jun 10	3560	May 22 1981
MAXIMUM PEAK STAGE			9.52	Jun 10	a14.72	May 22 1981
ANNUAL RUNOFF (AC-FT)	57280		68840		79160	
10 PERCENT EXCEEDS	212		230		257	
50 PERCENT EXCEEDS	39		35		60	
90 PERCENT EXCEEDS	25		20		27	

*--During periods of operation (July 1968 to September 1987, March 1996 to current year).
a--From floodmark.
e--Estimated.

06088300 MUDDY CREEK NEAR VAUGHN, MT--Continued

PERIOD OF RECORD.--Water years 1968 to September 1982, March 1996 to current year.
PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1968 to September 1982.
SUSPENDED-SEDIMENT DISCHARGE: July 1968 to September 1982.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 6,400 microsiemens per centimeter (µS/cm) Apr. 29, 1976; minimum daily, 365 µS/cm Feb. 20, 1969.
SEDIMENT CONCENTRATION: Maximum daily mean, 13,000 mg/L, Mar. 18, 1978; minimum daily mean observed, 11 mg/L, Oct. 19, 1968, Oct. 19, 1972, Oct. 30, 1973.
SEDIMENT LOAD: Maximum daily, 63,900 tons, May 22, 1981; minimum daily, 0.84 ton, Jan. 8, 1973.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV 2001									
01...	0910	34	8.2	719	6.0	3.5	<.04	2.46	.009
JAN 2002									
24...	1320	29	8.3	702	8.0	1.0	<.04	4.07	E.005
MAR									
14...	0910	26	8.4	883	-1.0	1.0	<.04	3.07	.010
APR									
18...	1440	24	8.6	1060	4.0	6.0	<.04	2.38	.015
MAY									
28...	1730	63	8.4	601	20.0	16.0	<.04	.43	E.006
JUN									
19...	1300	180	8.6	700	20.0	13.0	<.04	1.77	.011
JUL									
18...	1020	183	8.4	650	25.0	14.0	<.04	1.59	.013
AUG									
19...	1430	198	8.7	627	25.0	16.0	<.04	1.53	.014
SEP									
10...	1510	157	8.9	588	21.0	15.0	<.04	1.33	.010

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001						
01...	<.02	<.06	1.9	89	49	4.5
JAN 2002						
24...	<.02	<.06	2.9	96	34	2.7
MAR						
14...	<.02	E.04	2.9	90	35	2.5
APR						
18...	<.02	E.05	2.9	97	38	2.5
MAY						
28...	<.02	.09	1.3	91	78	13.3
JUN						
19...	E.01	.13	2.1	81	148	71.9
JUL						
18...	.07	.21	1.5	80	106	52.4
AUG						
19...	<.02	E.05	1.5	46	66	35.3
SEP						
10...	<.02	E.03	1.1	96	59	25.0

E--Estimated.

SUN RIVER BASIN

06088500 MUDDY CREEK AT VAUGHN, MT

LOCATION.--Lat 47°33'40", long 111°32'15" (NAD 27), in SW$^1/_4$SE$^1/_4$NE$^1/_4$ sec.24, T.21 N., R.1 E., Cascade County, Hydrologic Unit 10030104, on left bank at Vaughn, and at river mile 1.1.

DRAINAGE AREA.--314 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1925 to January 1926, April 1934 to September 1968, July 1971 to current year.

REVISED RECORDS.--WSP 856: 1937. WSP 1509: 1934-35, 1941(M). WSP 1559: 1956. WSP 1629: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,330 ft (NGVD 29). May 21, 1925 to Feb. 8, 1926, nonrecording gage at site 500 ft downstream at different datum. Apr. 19, 1925 to Sept. 30, 1955, at previous site at datum. May 18, 1955 to Apr. 25, 1960 and Sept. 24, 1962 to Sept. 30, 1968, auxiliary crest-stage gage. Oct. 1, 1955 to Sept. 30, 1968, nonrecording gage at bridge 670 ft upstream at previous datum. July 1, 1971 to May 9, 1996, 700 ft upstream at previous datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Natural flow increased by wastage from Sun River Canal and by return flow from irrigation. Diversions for irrigation of about 700 acres upstream from station. Bureau of Reclamation satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1908 reached a stage of about 24 ft, previous datum (discharge not determined); flood in June 1932 reached a stage of about 19 ft, previous datum (discharge not determined); from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	38	e35	e23	e24	e20	e25	33	109	320	322	292
2	51	37	e40	e25	e24	e21	e22	27	157	283	305	295
3	57	37	e38	e30	e24	e23	e25	50	252	280	285	264
4	57	37	e35	e30	e25	e25	e30	49	226	343	322	243
5	60	36	e33	e30	e25	e22	e40	53	204	355	359	217
6	60	36	e36	e32	e26	e18	44	54	210	346	370	239
7	58	36	e35	e35	e26	e17	44	135	224	297	391	290
8	56	35	e40	e33	e25	e17	36	206	300	335	397	260
9	55	34	e35	e30	e23	e18	35	169	356	345	407	224
10	51	35	e32	e29	e24	e20	32	103	734	348	361	209
11	43	34	e32	e28	e23	e30	31	92	1150	321	314	209
12	43	35	e33	e30	e22	e50	30	65	460	331	322	201
13	43	35	e35	e27	e24	e40	28	73	322	317	300	186
14	43	40	e33	e25	e24	e35	28	116	306	276	286	182
15	44	35	e32	e25	e25	e30	26	123	280	309	284	182
16	43	50	e33	e26	e25	e27	24	111	273	262	252	195
17	41	50	e32	e27	e25	e25	24	93	262	266	248	186
18	39	47	e30	e25	e24	e25	27	99	246	245	252	198
19	38	47	e29	e27	e24	e24	30	95	244	249	281	206
20	39	47	e28	e28	e25	e22	27	136	215	263	278	200
21	38	47	e28	e26	e25	e20	25	105	198	265	301	203
22	37	47	e28	e24	e25	e22	23	186	225	296	339	197
23	37	47	e28	e25	e23	e24	21	255	346	306	310	209
24	46	46	e28	e26	e20	e27	18	132	258	366	292	210
25	43	46	e28	e27	e20	e30	19	168	275	364	278	194
26	43	33	e27	e22	e21	e35	20	190	304	378	268	153
27	36	e30	e27	e18	e23	e40	21	188	290	379	291	135
28	35	e28	e25	e17	e20	e38	24	126	265	400	292	129
29	36	e32	e23	e18	---	e35	23	111	245	384	268	112
30	35	e30	e22	e20	---	e32	32	146	294	362	266	114
31	36	---	e22	e22	---	e30	---	123	---	375	306	---
TOTAL	1410	1167	962	810	664	842	834	3612	9230	9966	9547	6134
MEAN	45.48	38.90	31.03	26.13	23.71	27.16	27.80	116.5	307.7	321.5	308.0	204.5
MAX	67	50	40	35	26	50	44	255	1150	400	407	295
MIN	35	28	22	17	20	17	18	27	109	245	248	112
AC-FT	2800	2310	1910	1610	1320	1670	1650	7160	18310	19770	18940	12170

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 2002, BY WATER YEAR (WY)*

MEAN	100.0	59.97	44.24	34.38	37.40	54.93	41.79	137.8	237.2	275.1	284.3	175.5
MAX	200	113	131	68.5	96.9	283	182	305	480	416	488	270
(WY)	1963	1964	1957	1997	1952	1978	1975	1953	1953	1966	1975	1972
MIN	26.3	30.7	16.8	17.3	10.0	22.4	18.3	52.6	86.0	52.1	44.0	40.2
(WY)	1926	1926	1926	1936	1936	1988	1968	1935	1936	1925	1925	1925

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1925 - 2002*	
ANNUAL TOTAL	36499		45178			
ANNUAL MEAN	100.0		123.8		124.9	
HIGHEST ANNUAL MEAN					185	1975
LOWEST ANNUAL MEAN					61.2	1936
HIGHEST DAILY MEAN	546	Aug 1	1150	Jun 11	3500	Jun 4 1953
LOWEST DAILY MEAN	18	May 9	17	Jan 28	4.8	Mar 29 1977
ANNUAL SEVEN-DAY MINIMUM	21	Feb 7	20	Mar 4	7.0	Jan 24 1936
MAXIMUM PEAK FLOW			1740	Jun 11	a7600	Jun 4 1953
MAXIMUM PEAK STAGE			8.34	Jun 11	b17.70	Jun 4 1953
INSTANTANEOUS LOW FLOW					c2.0	Mar 16 1972
ANNUAL RUNOFF (AC-FT)	72400		89610		90520	
10 PERCENT EXCEEDS	280		309		294	
50 PERCENT EXCEEDS	45		43		70	
90 PERCENT EXCEEDS	28		23		26	

*--During periods of operation (June 1925 to January 1926, April 1934 to September 1968, July 1971 to current year).
a--From rating curve extended above 3,000 ft^3/s on basis of slope-area measurement of peak flow.
b--From floodmark, previous datum.
c--Gage height, 1.20 ft, result of freezeup.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968, 1971-82, October 1991 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1967 to September 1968, July 1972 to September 1982.
WATER TEMPERATURE: October 1967 to September 1968, July 1971 to September 1979.
SUSPENDED-SEDIMENT DISCHARGE: July 1971 to September 1982.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1968 1972-82): Maximum daily, 5,400 microsiemens per centimeter (µS/cm) at 25.0°C, Apr. 30, 1976; minimum daily, 470 µS/cm at 25.0°C, June 8, 1974.
WATER TEMPERATURE (water years 1968, 1971-79): Maximum daily, 25.5°C, June 18, 1974, June 28, 1979; minimum daily, 0.0°C, on many days during winters.
SEDIMENT CONCENTRATION (water years 1971-82): Maximum daily, 21,100 mg/L, May 22, 1981; minimum daily, 10 mg/L, Feb. 10, 1973.
SEDIMENT LOAD (water years 1971-82): Maximum daily, 127,000 tons, May 22, 1981; minimum daily, 0.68 ton, Feb. 10, 1973.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV 2001									
01...	1230	38	8.5	730	10.0	5.0	<.04	2.08	.009
JAN 2002									
24...	1510	26	8.5	734	8.0	0.0	<.04	3.84	E.005
MAR									
14...	1100	35	8.7	876	0.0	1.0	<.04	2.87	.011
APR									
17...	1500	24	8.7	1220	7.0	8.0	E.02	1.82	.019
MAY									
28...	1530	115	8.4	513	20.0	16.0	<.04	.21	E.005
JUN									
19...	1510	245	8.6	654	19.0	14.5	<.04	1.35	.016
JUL									
18...	1315	245	8.3	639	26.0	22.0	<.04	1.28	.009
AUG									
19...	1200	279	8.6	647	22.0	15.0	<.04	1.39	.013
SEP									
10...	1340	215	8.6	628	21.0	15.0	<.04	1.03	E.006

E--Estimated.

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001						
01...	<.02	<.06	1.9	84	46	4.7
JAN 2002						
24...	<.02	.07	3.2	84	29	2.0
MAR						
14...	<.02	E.03	2.6	84	30	2.8
APR						
17...	<.02	E.03	3.2	91	43	2.8
MAY						
28...	<.02	.14	.9	89	172	53.4
JUN						
19...	<.02	.19	1.8	85	315	208
JUL						
18...	.05	.22	1.2	78	208	138
AUG						
19...	<.02	.10	1.3	69	144	108
SEP						
10...	<.02	.06	1.1	81	101	58.6

E--Estimated.

SUN RIVER BASIN

06089000 SUN RIVER NEAR VAUGHN, MT

LOCATION.--Lat 47°31'37", long 111°29'05" (NAD 27), in NW$^1/_4$SE$^1/_4$SW$^1/_4$ sec.33, T.21 N., R.2 E., Cascade County, Hydrologic Unit 10030104, on right bank 3.7 mi downstream from Muddy Creek, 3.6 mi southeast of Vaughn, and at river mile 13.6.

DRAINAGE AREA.--1,854 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July to October 1897 (gage heights and discharge measurements only, published as "near Great Falls"), April 1934 to current year. Monthly discharge only for April 1934, published in WSP 1309.

REVISED RECORDS.--WSP 786: 1934. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,317.12 ft (NGVD 29). July 11 to Oct. 30, 1897, nonrecording gage at site 0.8 mi upstream at different datum. Apr. 19 to Aug. 3, 1934, non-recording gage at present site and datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow regulated by Gibson, Pishkun, Willow Creek, and Nilan Reservoirs. Diversion for irrigation of about 110,000 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1964 exceeded the stage of the June 1908 flood by about 3 ft and is the highest since 1908, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	201	276	e170	e140	e190	e160	200	101	3540	1970	429	610
2	222	268	e180	e150	e190	e150	174	98	3390	1380	393	605
3	230	264	e170	e170	e190	e160	157	88	3070	961	372	575
4	229	260	e160	e200	e200	e170	206	72	2610	780	451	536
5	237	258	e170	e190	e200	e180	218	69	2010	669	583	500
6	246	261	e180	e180	e200	e160	211	86	1930	592	632	555
7	244	265	e180	e200	e200	e150	217	204	2070	566	661	647
8	248	258	e190	e300	e190	e140	206	350	2580	575	730	688
9	234	248	e200	e350	e180	e130	196	339	2780	579	844	644
10	220	254	e190	e300	e190	e140	187	258	3580	585	819	613
11	205	253	e170	e250	e180	e160	179	223	5360	514	720	599
12	198	253	e170	e270	e180	e200	170	194	4490	507	700	577
13	216	254	e170	e280	e180	e250	160	200	3770	481	669	547
14	224	260	e180	e260	e190	e220	154	199	3520	386	600	532
15	240	256	e180	e250	e190	e200	159	191	3380	420	584	559
16	270	265	e180	e230	e180	e180	159	168	3340	385	529	561
17	265	268	e180	e210	e180	e170	148	149	3600	381	495	530
18	253	266	e170	e200	e170	e160	158	168	3640	359	485	526
19	259	262	e170	e210	e170	e160	163	145	3600	356	509	531
20	268	264	e160	e210	e180	e150	155	177	3490	374	473	515
21	267	261	e160	e210	e180	e140	146	192	2970	383	460	496
22	264	263	e160	e200	e180	e150	140	398	1970	424	542	501
23	260	263	e160	e190	e160	e160	125	713	1630	459	574	502
24	269	263	e170	e180	e150	e180	113	558	3210	553	535	510
25	270	e250	e170	e190	e150	e200	108	492	3390	513	524	500
26	264	e220	e170	e180	e160	e250	162	489	3120	489	521	456
27	260	e180	e160	e170	e160	e280	164	458	2830	493	543	451
28	263	e160	e150	e160	e170	e300	169	373	2740	535	597	481
29	273	e150	e150	e150	---	e270	139	304	2660	525	576	431
30	275	e160	e140	e160	---	e230	112	984	2660	497	557	402
31	274	---	e140	e180	---	192	---	3000	---	495	588	---
TOTAL	7648	7383	5250	6520	5040	5742	4955	11440	92930	18186	17695	16180
MEAN	246.7	246.1	169.4	210.3	180.0	185.2	165.2	369.0	3098	586.6	570.8	539.3
MAX	275	276	200	350	200	300	218	3000	5360	1970	844	688
MIN	198	150	140	140	150	130	108	69	1630	356	372	402
AC-FT	15170	14640	10410	12930	10000	11390	9830	22690	184300	36070	35100	32090

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2002, BY WATER YEAR (WY)

MEAN	381.4	339.2	301.3	256.2	265.8	326.6	501.2	1581	2561	787.2	565.7	444.1
MAX	779	908	896	656	601	868	3000	4333	8014	2508	1025	1040
(WY)	1952	1990	1996	1986	1986	1969	1934	1976	1964	1975	1975	1993
MIN	143	149	114	66.5	82.4	133	93.3	87.1	280	265	250	164
(WY)	1937	1937	1936	1937	1936	1941	1941	1941	1941	1939	1940	1936

06089000 SUN RIVER NEAR VAUGHN, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1934 - 2002	
ANNUAL TOTAL	95951		198969			
ANNUAL MEAN	262.9		545.1		686.9	
HIGHEST ANNUAL MEAN					1307	1943
LOWEST ANNUAL MEAN					210	1941
HIGHEST DAILY MEAN	1060	Aug 1	5360	Jun 11	37000	Jun 10 1964
LOWEST DAILY MEAN	58	May 16	69	May 5	23	May 26 1941
ANNUAL SEVEN-DAY MINIMUM	91	May 11	89	Apr 30	38	May 21 1941
MAXIMUM PEAK FLOW			5590	Jun 11	b53500	Jun 9 1964
MAXIMUM PEAK STAGE			8.64	Jun 11	c23.40	Jun 9 1964
INSTANTANEOUS LOW FLOW			a60	May 4	d20	Apr 24 1944
ANNUAL RUNOFF (AC-FT)	190300		394700		497600	
10 PERCENT EXCEEDS	453		829		1400	
50 PERCENT EXCEEDS	220		253		362	
90 PERCENT EXCEEDS	155		156		178	

a--Gage height, 0.64 ft.
b--42,200 ft3/s in main channel, plus 11,300 ft3/s in bypass channel.
c--From floodmark.
d--Gage height, 0.52 ft, result of irrigation.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1968 to current year.
WATER TEMPERATURE: October 1968 to September 1979, August 1999 to current year.

INSTRUMENTATION.--Temperature recorder installed Aug. 24, 1999. Specific conductance probe installed Sept. 18, 2001.

REMARKS.--Missing water temperature data for Oct. 14, 15 due to equipment problems. Specific conductance records for Oct. 1 to Apr. 10 are poor based on the magnitude of difference between probe values and actual stream measurements. Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 2,610 microsiemens per centimeter (µS/cm), Apr. 8, 1977; minimum daily, 214 µS/cm, June 8, 1970.
WATER TEMPERATURE: Maximum daily, 29.5°C, July 14, 18, 2002; minimum daily, 0.0°C on many days during winter.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 952 microsiemens per centimeter (µS/cm), May 6; minimum daily, 286 µS/cm, June 29.
WATER TEMPERATURE: Maximum daily, 29.5°C, July 14, 18; minimum daily, 0.0°C on many days November to April.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV										
01...	1420	274	8.4	639	11.0	8.0	<.04	.24	.743	.006
JAN										
25...	1000	191	8.4	577	5.0	0.0	E.02	--	1.08	E.004
MAR										
14...	1240	221	8.5	670	8.0	1.0	<.04	.25	.792	.005
APR										
10...	1630	187	8.6	769	14.0	10.5	<.04	.34	.408	.006
MAY										
24...	1500	519	8.4	633	18.0	14.0	<.04	.52	.218	.004
JUN										
19...	1745	3550	8.5	304	18.5	12.0	<.04	.38	.106	<.002
JUL										
18...	1530	360	8.6	659	27.0	29.0	<.04	.45	.772	.008
AUG										
21...	0815	415	8.7	642	17.0	17.0	<.04	.35	.759	.005
SEP										
10...	1700	625	8.5	642	25.0	17.0	<.04	.29	.526	.005

SUN RIVER BASIN

06089000 SUN RIVER NEAR VAUGHN, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV						
01...	<.007	.010	.7	93	57	42.2
JAN						
25...	<.020	<.06	1.1	89	26	13.4
MAR						
14...	<.007	.017	1.1	96	10	6.0
APR						
10...	<.007	.030	.8	93	31	15.7
MAY						
24...	<.007	.111	.9	99	96	135
JUN						
19...	<.007	.135	.4	63	183	1750
JUL						
18...	.039	.094	1.0	99	33	32.1
AUG						
21...	<.007	.047	1.0	98	70	78.4
SEP						
10...	<.007	.035	.8	95	57	96.2

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CAC03) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
NOV											
01...	1420	320	65.2	39.1	1.81	.8	32.6	246	4.11	.4	5.77
MAY											
24...	1500	280	59.6	31.8	1.91	.8	32.3	196	3.32	.3	6.62

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
NOV											
01...	145	.60	329	444	<4	<.1	<.8	1.5	<1	3	2
MAY											
24...	152	.55	570	407	2	<.1	1.0	4.3	2	4	9

E--Estimated.

SUN RIVER BASIN

06089000 SUN RIVER NEAR VAUGHN, MT--Continued

SPECIFIC CONDUCTANCE, µS/CM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	771	652	795	643	611	682	732	815	319	345	620	689
2	764	648	776	648	594	689	747	841	308	291	659	706
3	750	622	769	646	561	690	748	884	289	297	695	703
4	749	599	771	634	545	688	750	885	351	301	691	686
5	745	573	788	601	539	682	755	910	338	323	673	670
6	740	562	830	576	536	673	720	952	304	303	652	691
7	732	574	843	562	534	669	741	950	305	297	638	669
8	728	582	788	539	528	672	800	724	321	387	662	701
9	727	589	716	523	524	679	802	660	396	597	673	696
10	728	598	715	516	528	693	790	709	416	652	542	657
11	728	603	740	520	535	707	764	792	533	642	510	654
12	731	602	770	527	543	708	754	732	468	655	522	636
13	729	605	774	523	551	693	749	730	398	658	515	648
14	722	610	736	517	552	673	743	755	379	694	518	660
15	711	619	720	527	553	660	744	688	363	697	523	650
16	709	633	698	539	555	650	728	649	307	703	531	646
17	707	642	701	554	547	649	738	692	306	712	605	675
18	710	650	698	568	550	661	746	698	305	666	662	693
19	707	658	689	573	550	683	745	721	309	659	658	679
20	703	669	713	579	548	705	755	717	302	648	629	680
21	698	690	745	583	558	728	798	673	330	747	646	706
22	691	700	749	583	553	749	812	697	358	709	650	697
23	689	708	731	577	561	755	816	651	375	682	649	692
24	688	715	717	555	560	755	817	645	354	672	642	681
25	685	726	710	540	561	738	818	595	309	650	661	682
26	674	726	690	527	582	721	812	536	314	649	670	707
27	660	726	663	516	624	709	842	542	324	662	668	733
28	660	759	647	517	661	697	759	533	299	642	675	730
29	654	786	637	531	---	692	753	561	286	634	692	748
30	648	809	638	563	---	717	776	526	309	629	682	746
31	644	---	641	598	---	740	---	355	---	624	677	---
MEAN	709	654	729	561	559	697	768	704	342	575	629	687
MAX	771	809	843	648	661	755	842	952	533	747	695	748
MIN	644	562	637	516	524	649	720	355	286	291	510	636

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	19.0	11.0	14.0	8.0	4.5	5.5	0.0	0.0	0.0	0.0	0.0	0.0
2	17.0	10.0	12.5	7.0	4.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
3	15.5	9.0	11.5	9.0	4.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
4	10.5	6.5	9.0	9.0	5.5	6.5	0.0	0.0	0.0	0.0	0.0	0.0
5	12.5	5.0	8.0	10.0	5.5	7.0	0.0	0.0	0.0	0.0	0.0	0.0
6	11.5	5.0	8.0	8.0	4.5	6.0	0.0	0.0	0.0	0.0	0.0	0.0
7	12.5	6.5	9.0	7.0	2.5	4.0	0.0	0.0	0.0	0.0	0.0	0.0
8	13.0	7.0	9.5	4.0	2.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0
9	11.5	7.0	9.0	5.0	2.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
10	12.0	6.0	8.0	6.5	2.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0
11	9.5	6.5	7.5	6.5	1.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
12	8.0	4.5	6.0	7.5	2.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
13	8.0	4.5	6.0	7.5	3.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0
14	---	---	---	8.0	4.5	6.0	0.0	0.0	0.0	0.0	0.0	0.0
15	---	---	---	9.0	5.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0
16	10.5	4.5	6.5	9.5	6.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0
17	9.5	5.0	7.0	7.5	5.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0
18	7.0	4.0	5.0	7.0	2.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0
19	6.5	4.0	5.0	5.5	2.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0
20	7.5	3.5	5.0	6.5	2.5	4.0	0.0	0.0	0.0	0.0	0.0	0.0
21	6.5	3.5	5.0	6.5	3.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0
22	8.0	4.0	6.0	6.5	3.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0
23	7.0	4.0	5.0	5.0	3.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
24	6.0	2.5	4.0	5.0	2.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
25	5.5	2.0	3.5	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
26	8.5	2.5	4.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	10.5	4.5	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	7.5	4.5	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	9.5	5.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	9.5	6.5	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	10.0	6.0	7.5	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0
MONTH	---	---	---	10.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0

SUN RIVER BASIN

06089000 SUN RIVER NEAR VAUGHN, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.5	17.5	5.0	10.5
2	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	1.0	16.0	6.0	10.5
3	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	1.0	14.5	6.0	9.0
4	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0	2.5	13.5	4.5	8.0
5	0.0	0.0	0.0	0.0	0.0	0.0	9.5	1.0	4.5	13.0	5.5	8.5
6	0.0	0.0	0.0	0.0	0.0	0.0	11.5	4.0	6.5	14.0	4.0	8.5
7	0.0	0.0	0.0	0.0	0.0	0.0	8.5	4.5	6.0	7.5	4.0	5.5
8	0.0	0.0	0.0	0.0	0.0	0.0	12.0	3.5	6.5	8.5	4.0	5.5
9	0.0	0.0	0.0	0.0	0.0	0.0	9.0	5.0	6.5	13.0	4.5	8.5
10	0.0	0.0	0.0	0.0	0.0	0.0	11.5	5.0	8.0	14.5	7.5	10.5
11	0.0	0.0	0.0	0.0	0.0	0.0	11.5	5.0	8.5	17.0	8.0	12.0
12	0.0	0.0	0.0	0.0	0.0	0.0	13.5	6.5	9.0	20.5	9.0	14.5
13	0.0	0.0	0.0	0.0	0.0	0.0	14.5	7.0	10.0	22.0	10.5	15.5
14	0.0	0.0	0.0	0.0	0.0	0.0	15.0	6.5	10.5	18.5	10.0	14.0
15	0.0	0.0	0.0	0.0	0.0	0.0	12.5	5.0	8.5	16.5	9.0	12.5
16	0.0	0.0	0.0	0.0	0.0	0.0	12.0	5.0	8.5	20.5	9.0	13.5
17	0.0	0.0	0.0	0.0	0.0	0.0	10.5	5.0	7.0	20.0	7.5	13.5
18	0.0	0.0	0.0	0.0	0.0	0.0	12.5	3.5	7.0	22.5	10.0	15.5
19	0.0	0.0	0.0	0.0	0.0	0.0	15.0	3.0	8.0	26.0	10.5	17.0
20	0.0	0.0	0.0	0.0	0.0	0.0	16.5	4.0	9.5	26.0	12.5	18.0
21	0.0	0.0	0.0	0.0	0.0	0.0	15.0	5.5	9.5	16.0	10.5	13.5
22	2.0	0.0	0.5	0.0	0.0	0.0	15.0	6.0	9.5	10.5	4.0	6.5
23	0.0	0.0	0.0	0.0	0.0	0.0	9.0	4.5	7.0	9.5	5.0	7.0
24	0.0	0.0	0.0	0.0	0.0	0.0	10.0	2.5	6.0	14.0	8.0	11.0
25	0.0	0.0	0.0	0.0	0.0	0.0	14.5	3.0	7.5	15.5	10.5	13.0
26	0.0	0.0	0.0	0.0	0.0	0.0	15.5	5.0	9.0	17.5	12.5	15.0
27	0.0	0.0	0.0	0.0	0.0	0.0	9.0	5.5	7.0	20.0	13.5	16.5
28	0.0	0.0	0.0	0.0	0.0	0.0	11.0	4.0	7.5	18.5	13.5	16.0
29	---	---	---	0.0	0.0	0.0	14.5	5.0	9.5	18.5	12.5	15.0
30	---	---	---	0.0	0.0	0.0	11.0	5.5	8.0	15.5	13.0	14.5
31	---	---	---	2.0	0.0	0.5	---	---	---	13.0	10.0	12.0
MONTH	2.0	0.0	0.0	2.0	0.0	0.0	16.5	0.0	7.0	26.0	4.0	12.0

		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.0	11.0	12.0	16.5	14.5	15.5	22.5	16.0	18.5	18.5	15.5	17.0
2	11.0	10.0	10.5	17.5	15.0	16.5	23.0	15.0	18.5	19.0	14.5	16.5
3	11.5	9.5	10.5	19.0	16.5	17.5	20.5	14.5	16.5	20.5	15.5	17.5
4	13.0	11.0	12.0	21.5	17.0	19.0	19.0	14.0	15.5	22.5	16.5	19.0
5	14.0	11.5	13.0	22.0	18.5	20.0	19.0	14.0	16.5	20.0	17.0	18.0
6	13.5	11.5	12.5	23.0	18.0	20.5	20.0	16.5	17.5	17.0	14.5	16.0
7	14.0	11.5	12.5	25.0	19.0	21.5	18.0	16.0	17.0	16.0	13.5	14.5
8	13.0	10.0	11.5	23.0	17.0	20.5	16.0	14.5	15.5	16.0	13.0	14.5
9	10.0	8.0	8.5	21.5	15.5	18.5	17.5	13.5	15.5	17.5	13.0	15.0
10	8.0	6.0	7.0	23.5	17.0	20.5	19.5	16.5	18.0	18.5	13.5	15.5
11	8.5	6.0	7.0	26.5	19.0	22.5	18.5	16.0	17.5	20.0	14.5	16.5
12	12.5	8.5	10.0	28.0	20.0	24.0	19.0	15.0	16.5	21.0	15.0	17.5
13	13.5	11.0	12.5	29.0	21.0	25.0	21.0	16.5	18.5	20.5	15.0	17.5
14	15.0	12.5	13.5	29.5	22.0	24.5	20.0	16.0	18.0	21.0	14.5	17.0
15	15.5	13.5	14.5	27.5	21.5	24.0	19.5	15.0	17.0	19.5	15.5	17.0
16	16.0	14.0	15.0	28.0	21.0	23.5	17.0	13.5	15.5	19.5	15.0	16.5
17	15.0	12.5	14.0	28.0	20.0	23.5	18.5	12.0	15.0	16.5	14.5	15.5
18	14.0	11.5	12.5	29.5	20.0	24.5	20.0	14.0	16.5	17.5	13.0	15.0
19	13.0	10.5	11.5	28.0	21.5	23.5	21.0	14.5	17.0	17.0	11.5	14.0
20	14.0	11.5	13.0	27.5	20.0	23.5	21.0	15.5	18.0	17.5	11.5	13.5
21	16.0	13.5	15.0	26.5	18.5	22.0	20.0	16.0	18.0	15.5	11.0	13.0
22	18.0	15.5	17.0	25.0	18.0	21.0	20.5	15.5	18.0	15.5	9.5	12.0
23	18.0	17.0	17.5	25.5	18.5	21.0	21.5	16.5	18.5	16.5	10.0	12.5
24	18.0	15.0	16.5	24.0	19.0	21.5	21.0	17.0	19.0	13.0	10.5	11.5
25	17.0	15.0	16.0	26.0	20.0	22.0	21.5	17.0	18.5	14.5	9.0	11.5
26	18.5	16.0	17.5	23.0	19.0	20.5	22.0	16.5	18.5	12.5	9.0	10.5
27	19.5	17.5	18.5	22.0	18.0	19.5	21.0	17.0	18.5	11.5	9.5	10.5
28	18.5	16.5	17.0	21.0	17.0	18.5	21.0	16.0	18.0	13.5	8.0	10.5
29	16.5	15.0	15.5	21.0	16.5	18.5	22.0	17.0	19.0	14.5	8.5	11.0
30	16.5	14.0	15.0	22.0	17.0	19.5	22.5	17.0	19.0	13.0	8.5	10.5
31	---	---	---	22.5	17.0	19.5	21.5	17.0	19.0	---	---	---
MONTH	19.5	6.0	13.5	29.5	14.5	21.0	23.0	12.0	17.5	22.5	8.0	14.5

MISSOURI RIVER MAIN STEM

06090300 MISSOURI RIVER NEAR GREAT FALLS, MT

LOCATION.--Lat 47°35'04", long 111°03'35" (NAD 27), in SW$^1/_4$SE$^1/_4$SW$^1/_4$ sec.11, T.21 N., R.5 E., Cascade County, Hydrologic Unit 10030102, on left bank 700 ft downstream from Morony Dam, 12.6 mi northeast of Great Falls, and at river mile 2,105.4.

DRAINAGE AREA.--23,292 mi^2.

PERIOD OF RECORD.--May to July 1953 (in WSP 1320-B), October 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,807.21 ft (NGVD 29). Prior to July 27, 1977, nonrecording gage at same site at datum 2.00 ft higher. July 27, 1977 to May 26, 1987, at site 600 ft upstream at datum 2.00 ft higher. October 1971 to July 27, 1977, discharges were obtained from the Montana Power Company at Rainbow Dam 7.05 mi upstream. Prior to October 1971, Foxboro meters were used for determining discharge through powerplant. Water-stage recorder on Morony Reservoir was used for determining head on taintor gates with datum of gage at sea level (level by Montana Power Company).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by 18 smaller irrigation reservoirs and powerplants upstream, Clark Canyon Reservoir (station number 06015300), and Canyon Ferry Lake (station number 06058500). Diversion for irrigation of about 750,400 acres upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3760	4090	4070	e3500	3800	4360	4190	4170	8820	7250	4510	4730
2	3860	3930	4030	e3600	4180	4180	4210	4300	8420	6130	4340	4540
3	3990	4020	3920	3720	4330	4100	4180	4290	8160	5770	4180	4470
4	3810	4020	4030	4100	4470	4460	4120	4250	8040	5320	4570	4550
5	3730	4050	3830	4380	4460	4620	4130	4270	7490	5550	4640	4190
6	3760	4020	3700	4430	4430	4210	4350	4300	6790	5260	4640	4130
7	3830	4000	3940	4340	4120	3470	4230	4380	6810	5330	4590	4530
8	3760	3950	3870	4370	4070	e2900	4380	4540	7370	5250	4840	4630
9	3830	4050	3980	4590	4390	e3700	4490	4790	7770	5200	5090	4750
10	3790	3970	4020	4490	4360	3770	4500	4680	9660	5150	4930	4670
11	3800	3950	3830	4360	4220	4410	4320	4470	13100	5060	5100	4570
12	3960	4010	3810	4050	4150	4700	4210	4320	15000	4890	4880	4440
13	3910	3990	3580	4060	4040	4850	4240	4320	12600	4840	4680	4170
14	3770	4060	4300	4220	4000	4960	4270	4340	12000	4700	4650	4150
15	3900	3930	3920	3990	4230	5030	4120	4300	11900	4900	4490	4060
16	4040	3900	3770	3480	4630	4480	4150	4370	11500	4610	4580	4230
17	4020	3980	3960	3210	4440	4150	4280	4440	11200	4540	4150	4380
18	4070	3910	3800	3140	4040	3600	4310	4630	11000	4500	4770	4300
19	3810	4020	3680	3490	4170	3570	4360	4720	10700	4580	4840	4000
20	3760	3940	3800	3290	3930	3020	4260	4710	9910	4360	4660	4150
21	3820	4020	3000	3530	3870	2500	4200	5050	9200	4670	4520	4220
22	3940	4060	3220	4080	4180	e3200	4210	5950	7910	4570	4590	4170
23	4110	4140	3140	3950	3990	4500	4020	6190	7000	4550	4430	4480
24	4030	4040	e3200	3760	3900	4820	3810	6870	8240	4450	4360	4230
25	3980	3960	e3700	3720	3590	5050	3810	6430	9140	4590	4360	4140
26	3970	4070	4170	4090	2700	5130	3990	5990	8390	4510	4630	3970
27	3950	3850	3980	4140	2670	4960	4040	6250	7850	4330	4830	4170
28	4130	3960	3790	3570	3480	4960	4040	6050	8260	4800	4590	4600
29	3900	3870	3800	3380	---	4650	4060	5620	6610	4840	4400	4490
30	4080	4060	3610	e3200	---	4150	4300	5700	7260	4600	4710	4410
31	3990	---	3520	e3700	---	4150	---	7310	---	4530	4450	---
TOTAL	121060	119820	116970	119930	112840	130610	125780	156000	278100	153630	143000	130520
MEAN	3905	3994	3773	3869	4030	4213	4193	5032	9270	4956	4613	4351
MAX	4130	4140	4300	4590	4630	5130	4500	7310	15000	7250	5100	4750
MIN	3730	3850	3000	3140	2670	2500	3810	4170	6610	4330	4150	3970
AC-FT	240100	237700	232000	237900	223800	259100	249500	309400	551600	304700	283600	258900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2002, BY WATER YEAR (WY)

MEAN	5840	6190	6174	6330	6534	6833	7497	11000	13840	8691	5962	5586
MAX	11940	10430	11520	8232	9252	10820	13200	24780	30160	23560	9946	9992
(WY)	1966	1966	1960	1971	1997	1968	1976	1976	1964	1975	1993	1984
MIN	3829	3950	3773	3869	4030	4021	3526	4454	3758	3817	3719	3109
(WY)	1989	1993	2002	2002	2002	1961	1961	1961	1977	1977	1988	1959

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1957 - 2002	
ANNUAL TOTAL	1552110		1708260			
ANNUAL MEAN	4252		4680		7539	
HIGHEST ANNUAL MEAN					11490	1975
LOWEST ANNUAL MEAN					4349	2001
HIGHEST DAILY MEAN	6300	Jun 16	15000	Jun 12	63400	Jun 10 1964
LOWEST DAILY MEAN	3000	Dec 21	2500	Mar 21	1760	Apr 16 1961
ANNUAL SEVEN-DAY MINIMUM	3390	Dec 19	3390	Dec 19	2740	Sep 5 1959
MAXIMUM PEAK FLOW			15800	Jun 12	a72000	Jun 10 1964
MAXIMUM PEAK STAGE			5.39	Jun 12	b9.02	May 24 1981
INSTANTANEOUS LOW FLOW					c1.0	Apr 16 1962
ANNUAL RUNOFF (AC-FT)	3079000		3388000		5462000	
10 PERCENT EXCEEDS	4810		6150		12000	
50 PERCENT EXCEEDS	4190		4230		6450	
90 PERCENT EXCEEDS	3780		3730		4260	

a--From hydrographic comparison with nearby stations.
b--Site and datum then in use.
c--About, powerplant shutdown.
e--Estimated.

06090650 LAKE CREEK NEAR POWER, MT

LOCATION.--Lat 47°41'55", long 111°23'23" (NAD 27), in SE$^1/_4$SE$^1/_4$sE$^1/_4$ sec.31, T.23 N., R.3 E., Chouteau County, Hydrologic Unit 10030102, on left bank 1.9 mi downstream from county bridge, 1.5 mi upstream from Benton Lake, and 14 mi east of Power.

DRAINAGE AREA.--83.8 mi^2, of which 11.4 mi^2 is noncontributing.

PERIOD OF RECORD.--July 1990 to current year (seasonal records only).

GAGE.--Water-stage recorder. Parshall flume since Apr. 1, 1997. Prior to Apr. 1, 1997 water-stage recorder located at site 1.9 mi upstream. Elevation of gage is 3,620 ft (NGVD 29).

REMARKS.--Seasonal records fair except those for estimated daily discharges, which are poor. Seasonal flows from Muddy Creek diverted into Lake Creek, most years. U. S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				e0.00	e0.00	29	0.74	0.00	e0.00	25	1.3	
2				e0.00	e0.00	30	0.57	0.00	e0.00	21	1.3	
3				e0.00	e0.00	30	0.54	0.00	e1.0	20	1.1	
4				e0.03	e0.00	29	0.51	0.00	e10	20	0.95	
5				e0.05	e0.00	28	0.47	0.00	28	20	e0.80	
6				e0.10	e0.00	27	0.45	0.00	29	19	e0.60	
7				e0.20	e0.00	27	0.38	0.00	30	17	e0.40	
8				e0.50	e0.00	33	0.37	0.00	30	20	e0.20	
9				1.4	e0.00	32	0.34	7.2	29	20	e0.00	
10				e1.4	e0.00	83	0.28	1.7	28	20	e0.00	
11				e1.4	e0.00	128	0.21	0.66	28	20	e0.00	
12				e1.4	e0.00	72	0.18	0.42	28	20	e0.00	
13				e1.4	e0.00	15	0.05	0.30	28	20	e0.00	
14				e0.20	e0.00	9.8	0.00	0.23	27	20	e0.00	
15				e0.10	e0.00	7.0	0.00	0.23	27	20	e0.00	
16				e0.00	e10	4.8	0.00	0.18	27	20	e0.00	
17				e0.00	e20	3.2	0.00	0.04	27	20	e0.00	
18				e0.00	e20	2.2	0.00	0.00	27	20	e0.00	
19				e0.00	e20	1.5	0.00	0.00	27	18	e0.00	
20				e0.00	e20	1.1	0.00	0.00	26	18	e0.00	
21				e0.00	e20	0.67	0.00	0.00	27	18	e0.00	
22				e0.00	e20	0.64	0.00	0.00	27	18	e0.00	
23				e0.00	e20	58	0.00	0.00	26	18	e0.00	
24				e0.00	e30	9.2	0.00	0.00	25	18	e0.00	
25				e0.00	e30	2.4	0.28	0.00	26	17	e0.00	
26				e0.00	e30	1.5	0.51	0.00	25	3.9	e0.00	
27				e0.00	e30	1.2	0.37	0.00	26	2.0	e0.00	
28				e0.00	e30	1.0	0.29	0.00	25	1.5	e0.00	
29				e0.00	36	1.0	0.12	e0.00	25	1.0	e0.00	
30				e0.00	30	0.91	0.00	e0.00	26	1.3	e0.00	
31				---	29	---	0.00	e0.00	---	1.3	---	
TOTAL				8.18	395.00	669.12	6.66	10.96	715.00	498.0	6.65	
MEAN				0.273	12.74	22.30	0.215	0.354	23.83	16.06	0.222	
MAX				1.4	36	128	0.74	7.2	30	25	1.3	
MIN				0.00	0.00	0.64	0.00	0.00	0.00	1.0	0.00	
AC-FT				16	783	1330	13	22	1420	988	13	

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1990 - 2002

MEAN	.637	3.840	14.37	12.63	1.592	12.10	26.74	16.95	4.458
MAX	4.8	8.56	30.9	29.8	9.51	35.5	38.1	30.1	10.2
(WY)	1993	1993	1992	1991	1993	1990	1990	2000	1999
MIN	0.055	0.22	0.49	1.05	0.000	1.26	13.4	0.19	0.35
(WY)	2000	2001	1993	1999	1992	1995	1993	1994	1992

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1990 - 2002	
HIGHEST DAILY MEAN	128	Jun 11	300	Mar 6 1993
LOWEST DAILY MEAN	.00	many days	0.00	Jul 1 1990
MAXIMUM PEAK FLOW	138	Jun 11	a300	Mar 6 1993
MAXIMUM PEAK STAGE	3.10	Jun 11	b7.30	Mar 6 1993

a--Daily mean discharge.
b--From floodmarks, site and datum then in use.
e--Estimated.

MISSOURI RIVER MAIN STEM

06090800 MISSOURI RIVER AT FORT BENTON, MT

LOCATION.--Lat 47°49'03", long 110°39'59" (NAD 27), in NW$^1/_4$SE$^1/_4$SE$^1/_4$ sec.23, T.24 N., R.8 E., Chouteau County, Hydrologic Unit 10030102, on left bank at downstream side of Old Fort Benton Bridge at Fort Benton, 3.8 mi upstream from Shonkin Creek, and at river mile 2,073.2.

DRAINAGE AREA.--24,749 mi^2.

PERIOD OF RECORD.--October 1890 to current year. Records for June 1881 to September 1890, published in WSP 546 and 761, have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 746: 1932. WSP 1146: 1891-1907, 1908(M), 1909-18, 1937-38. WSP 1209: 1948(P). WSP 1309: 1929(M). WSP 1629: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 2,614.05 ft (NGVD 1929). Prior to Oct. 11, 1920, nonrecording gages, and Oct. 11, 1920, to Apr. 25, 1924, water-stage recorder, all at present site at datum 1.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by 18 smaller irrigation reservoirs and powerplants, Clark Canyon Reservoir (station number 06015300), and Canyon Ferry Lake (station number 06058500). Diversions for irrigation of about 751,000 acres upstream from station. Extreme diurnal fluctuation caused by powerplant at Morony Dam. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3780	4070	3980	e3430	e3690	4270	4100	4240	9380	7680	4210	4320
2	3790	3970	4060	e3510	e4000	e4210	4150	4280	9120	6790	4180	4450
3	3980	3990	3860	e3620	e4220	4130	4160	4300	8760	6150	3880	4160
4	3880	4020	3920	e3910	e4370	4210	4070	4250	8760	5600	4080	4440
5	3780	4020	3880	e4230	e4390	4500	4080	4250	8090	5660	4320	4060
6	3760	4050	3610	e4370	e4390	e4220	4300	4250	7340	5470	4280	3960
7	3820	3980	3740	e4330	e4170	e3670	4130	4310	7200	5520	4250	4160
8	3790	3930	3850	e4300	e4010	e2960	4360	4380	7520	5550	4370	4320
9	3790	4030	3820	e4470	4370	e3390	4380	4670	8240	5400	4810	4410
10	3850	3960	3980	e4450	4480	e3680	4460	4670	9830	5400	4470	4390
11	3750	3990	3790	e4350	4280	e4150	4380	4520	12800	5270	4770	4240
12	3900	3940	3740	e4090	4260	e4580	4240	4270	15700	5120	4630	4270
13	3950	3970	3400	e3970	4130	e4780	4200	4230	14000	5060	4240	3930
14	3790	4010	4070	e4070	3990	e4860	4270	4250	13100	4940	4320	3870
15	3910	3960	3990	e3970	4200	5070	4200	4160	13200	5030	4030	3820
16	3970	3900	3650	e3540	4510	4730	4180	4250	12900	5060	4150	3840
17	4010	3920	3780	e3220	4620	4170	4260	4260	12400	4860	3770	4070
18	4010	3940	3760	e3050	4120	e3640	4300	4380	12100	4820	4170	4030
19	4010	3920	3620	e3310	4160	e3450	4380	4570	11700	4900	4500	3790
20	3580	3950	e3710	e3290	3990	e3140	4410	4420	11000	4670	4420	3810
21	3890	3990	e3120	e3350	3900	e2600	4360	4840	10300	4910	4230	3750
22	3780	3930	e3060	e3820	3930	e2870	4330	6050	8940	4830	4270	3890
23	4100	4140	e3100	e3920	4220	e4000	4210	6900	7790	4820	4220	3930
24	4060	4050	e3110	e3770	3760	e4690	4100	7440	8320	4710	4180	4000
25	4000	3920	e3440	e3650	3900	e4940	4030	7190	10000	4680	4100	3730
26	3960	4020	e3940	e3860	3120	e5090	4110	6590	9070	4640	4280	3680
27	3890	3880	e3970	e4050	2610	4860	4180	6750	8540	4410	4550	3620
28	4200	3930	e3750	e3640	2950	4730	4170	6750	8930	4480	4430	4060
29	3920	3800	e3710	e3390	---	4780	4160	6150	6910	4670	4270	4150
30	4070	3990	e3590	e3160	---	4160	4260	5970	7720	4440	4360	4000
31	3990	---	e3470	e3480	---	4090	---	6890	---	4270	4350	---
TOTAL	120960	119170	114470	117570	112740	128620	126920	158430	299660	159810	133090	121150
MEAN	3902	3972	3693	3793	4026	4149	4231	5111	9989	5155	4293	4038
MAX	4200	4140	4070	4470	4620	5090	4460	7440	15700	7680	4810	4450
MIN	3580	3800	3060	3050	2610	2600	4030	4160	6910	4270	3770	3620
AC-FT	239900	236400	227100	233200	223600	255100	251700	314200	594400	317000	264000	240300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1891 - 2002, BY WATER YEAR (WY)

MEAN	5320	5492	5197	5064	5361	6263	8126	13630	18470	9162	5078	4861
MAX	12610	10850	11640	8380	9327	11800	15540	28600	53620	26580	10550	10240
(WY)	1966	1966	1960	1997	1997	1910	1910	1894	1908	1907	1993	1984
MIN	2441	2789	2446	2377	2492	2986	3574	4144	4055	2433	1576	1890
(WY)	1920	1920	1932	1932	1937	1938	1961	1941	1977	1919	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1891 - 2002	
ANNUAL TOTAL	1585640		1712590			
ANNUAL MEAN	4344		4692		7669	
HIGHEST ANNUAL MEAN					11850	1894
LOWEST ANNUAL MEAN					3619	1937
HIGHEST DAILY MEAN	6580	Jun 16	15700	Jun 12	107000	Jun 7 1908
LOWEST DAILY MEAN	3060	Dec 22	2600	Mar 21	627	Jul 5 1936
ANNUAL SEVEN-DAY MINIMUM	3310	Dec 19	3310	Dec 19	1190	Jan 10 1932
MAXIMUM PEAK FLOW			a15900	Jun 12	c140000	Jun 6 1908
MAXIMUM PEAK STAGE			b9.81	Jan 31	d18.50	Jun 6 1908
INSTANTANEOUS LOW FLOW					f320	Jul 5 1936
ANNUAL RUNOFF (AC-FT)	3145000		3397000		5556000	
10 PERCENT EXCEEDS	5210		6770		14400	
50 PERCENT EXCEEDS	4200		4160		5650	
90 PERCENT EXCEEDS	3770		3650		3500	

a--Gage height, 5.11 ft.
b--Backwater from ice.
c--About, observed, from rating table extended above 63,000 ft^3/s.
d--Present datum.
e--Estimated.
f--Gage height, -0.05 ft.

MARIAS RIVER BASIN

06091700 TWO MEDICINE RIVER BELOW SOUTH FORK, NEAR BROWNING, MT

LOCATION.--Lat 48°25'36", long 112°59'20" (NAD 27), in SE$^1/_4$SE$^1/_4$SE$^1/_4$ sec. 23, T.31 N., R.11 W., Glacier County, Hydrologic Unit 10030201, Blackfeet Indian Reservation, on left bank 15 ft downstream from bridge on Blackfeet Secondary Highway No. 1, 9.7 mi south of Browning, and 12.3 mi northwest of Heart Butte.

DRAINAGE AREA.--250 mi^2.

PERIOD OF RECORD.--May 1977 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,180 ft (NGVD 29). May 1977 to September 1997 at datum 1.00 ft higher.

REMARKS.--Records good except those for May to June, which are fair, and those for estimated daily discharges, which are poor. Flow regulated by Lower Two Medicine Lake (station number 06090900). Diversions for irrigation of about 64 acres upstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water discharge and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 100,000 ft^3/s, June 8, 1964, as determined at Two Medicine River near Browning (station number 06092000) located about 10 mi downstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	73	e60	e40	e40	e90	e90	438	2360	1650	247	114
2	20	67	e60	e45	e40	e90	e90	554	2210	1310	296	120
3	20	67	e60	e50	e40	e100	e100	763	2160	1120	339	114
4	21	68	e55	e50	e40	e110	e100	594	2130	1020	338	97
5	22	67	e55	e50	e45	e100	e110	532	2460	960	345	92
6	21	69	e60	e50	e50	e80	e130	499	2840	884	373	100
7	21	65	e60	e55	e45	e70	e120	491	2150	847	424	118
8	20	60	e65	e55	e40	e70	e110	448	2170	959	416	104
9	20	42	e65	e50	e45	e80	e110	416	2820	992	410	94
10	21	29	e60	e50	e55	e100	e120	427	3300	890	394	91
11	24	27	e55	e45	e60	e150	e150	463	2710	811	389	88
12	25	26	e55	e45	e50	e140	448	548	3300	752	383	86
13	26	26	e60	e40	e50	e120	1300	768	3700	722	345	85
14	26	25	e60	e35	e50	e110	1760	1060	3970	702	311	84
15	26	27	e60	e30	e50	e100	1090	949	4230	659	361	83
16	25	30	e65	e30	e55	e100	971	837	4430	618	363	80
17	27	32	e65	e30	e55	e100	1150	931	4190	577	356	80
18	30	33	e60	e35	e60	e90	1160	1080	3800	527	341	80
19	29	31	e55	e35	e60	e80	1090	1360	3640	491	282	76
20	27	e30	e50	e40	e70	e80	1050	2250	2970	450	170	67
21	27	e30	e50	e40	e90	e90	1070	2560	2720	416	165	65
22	27	e28	e50	e40	e100	e90	946	2370	2830	381	131	62
23	34	e25	e50	e40	e90	e100	793	1760	3020	349	96	62
24	34	e22	e55	e45	e80	e100	541	1620	3310	319	90	63
25	31	e20	e55	e40	e80	e100	389	1690	2740	294	65	64
26	32	e25	e55	e30	e90	e120	367	1840	2340	298	131	63
27	32	e35	e55	e25	e100	e110	340	2280	2400	291	148	80
28	52	e55	e50	e20	e100	e100	324	2860	2350	271	129	75
29	52	e60	e45	e20	---	e100	348	3270	2280	248	124	67
30	48	e60	e40	e25	---	e100	448	3580	2140	240	121	66
31	59	---	e40	e35	---	e100	---	2790	---	284	118	---
TOTAL	898	1254	1730	1220	1730	3070	16815	42028	87670	20332	8201	2520
MEAN	28.97	41.80	55.81	39.35	61.79	99.03	560.5	1356	2922	655.9	264.5	84.00
MAX	59	73	65	55	100	150	1760	3580	4430	1650	424	120
MIN	19	20	40	20	40	70	90	416	2130	240	65	62
AC-FT	1780	2490	3430	2420	3430	6090	33350	83360	173900	40330	16270	5000
*	615	0	0	0	0	0	0	1640	2400	6180	7220	3590

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2002, BY WATER YEAR (WY)

MEAN	96.59	131.0	80.00	61.73	92.56	143.9	493.5	1184	1067	366.1	161.3	104.4
MAX	533	558	394	180	394	474	923	2040	2922	656	265	240
(WY)	1986	1996	1996	1981	1996	1986	1990	1991	2002	2002	2002	1985
MIN	25.0	18.8	19.7	17.9	26.4	40.5	140	439	282	173	41.2	24.4
(WY)	1980	1980	1999	1982	1980	1980	2001	1977	1977	1994	1994	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1977 - 2002	
ANNUAL TOTAL	73496		187468			
ANNUAL MEAN	201.4		513.6		338.0	
HIGHEST ANNUAL MEAN					542	1991
LOWEST ANNUAL MEAN					199	2001
HIGHEST DAILY MEAN	1550	May 14	4430	Jun 16	8600	Jun 7 1995
LOWEST DAILY MEAN	19	Sep 27	19	Oct 1	10	Jan 29 1980
ANNUAL SEVEN-DAY MINIMUM	19	Sep 26	21	Oct 1	13	Feb 3 1982
MAXIMUM PEAK FLOW			a5100	Jun 16	c11700	May 19 1991
MAXIMUM PEAK STAGE			6.45	Jun 16	d8.25	Jun 7 1995
INSTANTANEOUS LOW FLOW			b19	Oct 1		
ANNUAL RUNOFF (AC-FT)	145800		371800		244800	
10 PERCENT EXCEEDS	760		2140		977	
50 PERCENT EXCEEDS	56		90		121	
90 PERCENT EXCEEDS	25		30		33	

*--Flows, in acre-ft, Two Medicine Canal.
a--About.
b--Gage height, 1.18 ft, but may have been lower during ice-affected period.
c--Gage height, 7.78 ft, previous datum; from rating curve extended above 5,500 ft^3/s.
d--Previous datum.
e--Estimated.

MARIAS RIVER BASIN

06093200 BADGER CREEK BELOW FOUR HORNS CANAL, NEAR BROWNING, MT

LOCATION.--Lat 48°22'12", long 112°48'07" (NAD 27), in NW$^1/_4$SW$^1/_4$SE$^1/_4$ sec.8, T.30 N., R.9 W., Glacier County, Hydrologic Unit 10030201, Blackfeet Indian Reservation, on left bank, 3.4 mi downstream from point of diversion to Four Horns Canal, 15.5 mi southeast of Browning, and at river mile 11.6.

DRAINAGE AREA.--152 mi^2.

PERIOD OF RECORD.--October 1973 to current year. Records equivalent to those published as Badger Creek near Browning (station number 06092500) if diversion to Four Horns Canal is added to flow past station.

GAGE.--Water-stage recorder. Elevation of gage is 4,140 ft (NGVD 29). May 1951 to September 1973, water-stage recorder at site 3.4 mi upstream (station number 06092500) at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Four Horns Canal diverts water from right bank in NE$^1/_4$ sec.24, T.30 N., R.10 W., at diversion dam 3.4 mi upstream for irrigation of about 6,000 acres downstream from station. Recorded diversions by Four Horns Canal are listed in daily table below. Several observations of water temperature and specific conductance were made during the year. Bureau of Reclamation satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 49,700 ft^3/s, June 8, 1964, gage height, 10.37 ft, from rating curve extended above 2,000 ft^3/s on basis of slope-area measurement of peak flow, as determined at Badger Creek near Browning site (station number 06092500) 3.4 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	33	73	e65	e60	e60	71	72	1170	879	134	81
2	35	32	72	70	e60	e55	65	71	920	741	130	83
3	35	31	72	72	e55	e60	73	92	798	691	128	81
4	35	32	69	67	e60	e70	80	95	795	662	127	80
5	35	32	65	68	e65	e60	77	91	908	635	127	81
6	35	33	69	69	66	e50	84	88	1110	576	132	84
7	35	33	66	82	67	e45	87	92	961	551	126	94
8	35	32	70	93	66	e45	83	88	937	569	123	86
9	35	32	68	95	65	e55	82	95	1010	534	122	81
10	35	31	61	84	63	e75	84	95	1050	473	113	78
11	34	31	67	80	e60	83	93	97	967	441	110	76
12	34	31	60	80	e60	88	101	104	1030	424	108	75
13	34	31	67	73	60	78	126	124	994	404	103	74
14	34	31	77	71	63	76	188	186	1100	396	101	73
15	34	31	65	66	60	72	227	195	1480	371	102	72
16	33	31	71	e60	64	e60	197	193	1950	347	106	70
17	33	32	75	e55	65	e60	168	196	2400	330	103	70
18	34	31	68	e60	65	e55	147	213	2420	307	99	70
19	33	31	67	e65	64	e50	134	263	1980	281	97	68
20	33	31	67	e60	63	e45	129	609	1620	239	96	70
21	33	31	64	e60	64	e45	130	890	1520	198	96	70
22	32	31	53	e55	e65	e55	133	765	1680	187	95	68
23	33	51	52	e55	e60	e60	139	535	1700	178	90	68
24	33	69	53	e60	e55	e65	131	426	1720	172	88	69
25	33	64	59	e55	e50	e70	125	364	1660	164	94	69
26	32	61	64	e50	e55	74	124	355	1560	157	91	68
27	32	69	67	e45	e65	76	122	467	1500	161	91	77
28	34	72	e65	e45	e70	72	116	735	1500	153	101	73
29	33	75	e60	e50	---	72	107	1000	1380	147	91	68
30	33	72	e55	e55	---	72	89	1460	1120	142	88	68
31	33	---	e55	e60	---	75	---	1300	---	138	84	---
TOTAL	1047	1227	2016	2025	1735	1978	3512	11356	40940	11648	3296	2245
MEAN	33.77	40.90	65.03	65.32	61.96	63.81	117.1	366.3	1365	375.7	106.3	74.83
MAX	35	75	77	95	70	88	227	1460	2420	879	134	94
MIN	32	31	52	45	50	45	65	71	795	138	84	68
AC-FT	2080	2430	4000	4020	3440	3920	6970	22520	81200	23100	6540	4450
+	2950	1810					107	4920	3880	3630	4900	4190

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2002, BY WATER YEAR (WY)

MEAN	83.42	112.2	97.17	89.23	90.30	94.25	171.6	502.9	585.6	169.8	76.40	68.92
MAX	316	295	184	160	198	205	321	899	2240	568	184	199
(WY)	1986	1990	1976	1976	1996	1986	1990	1976	1975	1975	1975	1993
MIN	9.13	40.9	42.9	57.0	52.5	44.6	62.3	140	58.9	17.5	16.4	15.6
(WY)	1978	2002	1984	2001	2001	1977	1977	1977	1977	1977	1984	1988

06093200 BADGER CREEK BELOW FOUR HORNS CANAL, NEAR BROWNING, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1974 - 2002	
ANNUAL TOTAL	33586		83025			
ANNUAL MEAN	130		228*		178.5**	
HIGHEST ANNUAL MEAN					350	1975
LOWEST ANNUAL MEAN					68.1	1977
HIGHEST DAILY MEAN	738	Jun 4	2420	Jun 18	14000	Jun 19 1975
LOWEST DAILY MEAN	31	Nov 3	31	Nov 3	6.5	Sep 17 1984
ANNUAL SEVEN-DAY MINIMUM	31	Nov 10	31	Nov 10	7.7	Oct 25 1977
MAXIMUM PEAK FLOW			2750	Jun 18	a20700	Jun 19 1975
MAXIMUM PEAK STAGE			8.81	Jun 18	13.58	Jun 19 1975
ANNUAL RUNOFF (AC-FT)	66620		164700		129300	
10 PERCENT EXCEEDS	248		751		404	
50 PERCENT EXCEEDS	59		73		96	
90 PERCENT EXCEEDS	34		34		42	

+--Diversion, in acre-feet, by Four Horns Canal.
*--264 ft^3/s adjusted for flow in Four Horns Canal.
**-218 ft^3/s adjusted for flow in Four Horns Canal.
a--From rating curve extended above 7,700 ft^3/s, based on comparison with previous site 3.4 miles upstream (station number 06092500).
e--Estimated.

MARIAS RIVER BASIN

06098500 CUT BANK CREEK NEAR BROWNING, MT

LOCATION--Lat 48°37'00", long 113°02'06" (NAD 27), in NE$^1/_4$NW$^1/_4$SW$^1/_4$ sec. 15, T.33 N., R.11 W., Glacier County, Hydrologic Unit 10030202, Blackfeet Indian Reservation, on right bank 20 ft downstream from bridge on Montana Secondary Highway 464, 4.0 mile north of Browning, and at river mile 73.3.

DRAINAGE AREA.--123 mi^2.

PERIOD OF RECORD.--April 1918 to October 1925 (seasonal records only), April 1991 to current year.

REVISED RECORDS.--WDR MT-93-1: 1992(M).

GAGE.--Water-stage recorder. Elevation of gage is 4,380 ft (NGVD 29). April 1918 to October 1925, water-stage recorder at site about 120 ft upstream at different datum. April 1991 to September 1995 at datum 1.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 1,200 acres upstream from station. Several observations of water temperature and specific conductance were made during the year. Bureau of Reclamation satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	29	30	e12	e17	e20	e22	136	1060	740	143	54
2	11	34	29	e13	e18	e15	e20	142	874	576	131	56
3	11	33	30	e15	e19	e17	e18	228	685	502	120	53
4	12	33	29	e15	e20	e20	e20	195	598	477	118	57
5	13	32	27	e15	e22	e17	22	167	632	475	122	63
6	13	32	25	e16	e25	e14	24	163	848	453	117	74
7	13	31	24	e18	e23	e12	31	161	826	440	110	87
8	13	29	22	e22	e20	e11	31	146	806	499	105	74
9	13	28	23	e30	e22	e10	33	138	821	528	98	64
10	13	27	22	e28	e22	e12	39	138	912	498	88	59
11	14	26	22	e25	e21	e15	55	148	725	455	90	56
12	14	25	19	e27	e21	e25	92	157	684	424	88	55
13	14	25	20	e28	e20	e30	236	192	854	423	82	53
14	15	23	19	e26	e20	e28	481	259	926	408	78	53
15	15	23	17	e24	e19	e25	480	294	1050	397	80	49
16	15	25	22	e22	e19	e23	303	272	1200	363	83	47
17	16	29	19	e21	e18	e20	231	258	1420	321	85	48
18	17	34	21	e20	e18	e18	189	281	1350	293	76	53
19	17	40	19	e20	e18	e17	168	316	1210	271	70	45
20	17	41	e17	e20	17	e17	157	562	1010	234	67	46
21	16	40	e15	e20	17	e15	169	872	894	218	67	50
22	16	39	e13	e20	e17	e13	184	957	919	204	63	47
23	17	36	e13	e18	e16	e15	183	696	1030	185	60	45
24	16	35	e14	e17	e14	e17	149	531	1160	172	57	45
25	16	34	e14	e20	e12	e20	124	485	1170	167	57	46
26	17	35	15	e17	e12	e22	120	454	1080	161	56	46
27	16	33	15	e13	e16	e24	105	561	1030	168	60	54
28	18	33	15	e10	e25	e25	99	806	995	162	64	58
29	20	32	e14	e10	---	e23	98	937	963	152	62	51
30	20	31	e13	e12	---	e21	144	1210	915	146	62	48
31	22	---	e12	e15	---	e20	---	1220	---	146	58	---
TOTAL	471	947	609	589	528	581	4027	13082	28647	10658	2617	1636
MEAN	15.19	31.57	19.65	19.00	18.86	18.74	134.2	422.0	954.9	343.8	84.42	54.53
MAX	22	41	30	30	25	30	481	1220	1420	740	143	87
MIN	11	23	12	10	12	10	18	136	598	146	56	45
AC-FT	934	1880	1210	1170	1050	1150	7990	25950	56820	21140	5190	3250

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1918 - 2002, BY WATER YEAR (WY)*

MEAN	55.42	62.51	42.36	31.67	40.72	53.24	133.6	421.1	512.1	190.1	68.08	43.09
MAX	136	216	157	73.8	139	110	217	740	955	344	140	81.8
(WY)	1996	1996	1996	1996	1996	1997	1996	1991	2002	2002	1923	1993
MIN	15.2	25.4	17.3	18.5	15.4	17.8	57.1	248	184	57.9	15.6	11.7
(WY)	2002	2001	2001	2001	2001	2001	2001	1992	1992	2001	2001	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1918 - 2002*	
ANNUAL TOTAL	24549.6		64392			
ANNUAL MEAN	67.26		176.4		132.7	
HIGHEST ANNUAL MEAN					201	1996
LOWEST ANNUAL MEAN					69.0	2001
HIGHEST DAILY MEAN	709	May 14	1420	Jun 17	3400	Jun 7 1995
LOWEST DAILY MEAN	9.1	Sep 3	10	Jan 28	9.1	Sep 3 2001
ANNUAL SEVEN-DAY MINIMUM	9.8	Aug 30	12	Oct 1	9.8	Aug 30 2001
MAXIMUM PEAK FLOW			1560	Jun 17	b5480	Jun 7 1995
MAXIMUM PEAK STAGE			4.52	Jun 17	c5.59	Jun 7 1995
INSTANTANEOUS LOW FLOW			a5.0	Dec 12	d4.9	Nov 22 1994
ANNUAL RUNOFF (AC-FT)	48690		127700		96160	
10 PERCENT EXCEEDS	226		653		350	
50 PERCENT EXCEEDS	20		34		52	
90 PERCENT EXCEEDS	12		15		21	

*--During periods of operation (April 1918 to October 1925, seasonal records only; April 1991 to current year).
a--Gage height, 1.38 ft.
b--From rating curve extended above 2,500 ft^3/s
c--Previous datum.
d--Gage height, 0.60 ft, result of freezeup.
e--Estimated.

MARIAS RIVER BASIN

06099000 CUT BANK CREEK AT CUT BANK, MT

LOCATION.--Lat 48°38'00", long 112°20'46" (NAD 27), in SW$^1/_4$SE$^1/_4$NE$^1/_4$ sec.11, T.33 N., R.6 W., Glacier County, Hydrologic Unit 10030202, Blackfeet Indian Reservation, on right bank, 0.1 mi downstream from bridge on U.S. Highway 2, 0.7 mi west of Cut Bank, 0.8 mi downstream from Old Maids Coulee, and at river mile 17.7.

DRAINAGE AREA.--1,041 mi^2.

PERIOD OF RECORD.--August 1905 to October 1919, May to July 1920, May 1922 to October 1924, May 1951 to September 1973, October 1981 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309; 1907-8, 1910-11, 1924-25. WSP 1509: 1911, 1916(M). WSP 1559: 1905(M), 1908(M). WSP 1709: 1959. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,561.42 ft (NGVD 29). Prior to May 12, 1922, nonrecording gage at several sites 0.5 mi upstream at various datums. May 12, 1922 to Nov. 1, 1924, nonrecording gage at present site and different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Few minor diversions for irrigation and municipal water supply for city of Cut Bank upstream from station. Natural flow of stream may be affected by return flow from Two Medicine Canal which irrigates lands upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 20, 1975 reached a discharge of 5,200 ft^3/s, gage height, 8.2 ft, from floodmarks.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.6	16	e20	e13	e15	e23	e23	177	1250	904	122	90
2	4.6	16	e22	e13	e17	e18	e25	172	1140	743	121	78
3	4.0	15	e22	e15	e18	e20	e22	171	979	621	115	74
4	5.2	16	e20	e18	e20	e23	e23	236	836	564	116	72
5	7.7	16	e17	e17	e25	e25	e25	225	778	539	120	77
6	10	18	e17	e17	e30	e20	e30	201	844	528	140	99
7	11	18	e18	e20	e27	e15	e35	207	976	497	142	133
8	10	17	e19	e25	e25	e12	e40	219	1050	509	137	152
9	12	24	e20	e35	e23	e10	e50	209	3080	562	124	134
10	10	20	e18	e32	e25	e12	e70	229	7630	562	115	116
11	10	19	e16	e30	e25	e20	e90	243	7750	546	108	105
12	9.8	21	e15	e30	e24	e30	e150	251	3420	501	108	91
13	10	22	e17	e32	e24	e35	264	232	1840	454	105	80
14	9.5	22	e18	e30	e23	e35	344	252	1570	416	97	80
15	8.4	21	e18	e27	e23	e30	450	310	1490	383	90	81
16	11	20	e18	e35	e22	e25	437	337	1490	360	91	77
17	14	20	e18	e23	e22	e22	438	316	1550	333	106	75
18	10	21	e18	e22	e21	e20	444	305	1690	298	113	81
19	11	18	e17	e22	e21	e20	441	320	1600	281	104	80
20	12	24	e17	e22	e20	e18	302	349	1400	265	95	77
21	13	e23	e16	e21	e20	e16	230	e200	1170	230	93	77
22	14	e22	e15	e21	e20	e15	228	e800	1060	219	93	77
23	14	e20	e14	e20	e17	e17	248	e1000	1080	210	83	77
24	14	e18	e14	e18	e14	e20	247	e800	1160	189	74	76
25	13	e15	e15	e20	e13	e23	212	e700	1230	168	64	77
26	14	e12	e15	e23	e20	e26	189	e650	1220	152	68	78
27	16	e15	e16	e17	e25	e28	187	e600	1120	146	80	79
28	15	e22	e16	e12	e30	e30	169	e700	1040	148	75	82
29	15	e21	e15	e10	---	e30	152	e1000	1020	139	90	79
30	16	e20	e13	e10	---	e28	144	1130	970	129	92	75
31	16	---	e13	e12	---	e25	---	1300	---	133	108	---
TOTAL	345.8	572	530	662	609	691	5709	13841	53433	11729	3189	2629
MEAN	11.15	19.07	17.00	21.35	21.75	22.29	190.3	446.5	1781	378.4	102.9	87.63
MAX	16	24	25	35	30	35	450	1300	7750	904	142	152
MIN	4.0	12	13	10	13	10	22	171	778	129	64	72
AC-FT	686	1130	1050	1310	1210	1370	11320	27450	106000	23260	6330	5210

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 2002, BY WATER YEAR (WY)*

MEAN	84.34	76.54	47.73	36.94	58.18	150.6	241.8	486.1	635.4	244.2	90.29	75.86
MAX	268	271	185	152	414	1053	664	894	1781	605	233	298
(WY)	1952	1990	1996	2002	1986	1972	1952	1954	2002	1951	1972	1911
MIN	11.2	20.7	15.0	1.61	11.1	6.90	79.4	198	174	17.0	5.56	5.92
(WY)	2002	2002	1984	1982	1985	1907	1984	1984	1992	1988	1988	1988

06099000 CUT BANK CREEK AT CUT BANK, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1905 - 2002*	
ANNUAL TOTAL	26614.8		93939.8			
ANNUAL MEAN	72.92		257.4		182.5	
HIGHEST ANNUAL MEAN					317	1972
LOWEST ANNUAL MEAN					73.9	1988
HIGHEST DAILY MEAN	520	May 27	7750	Jun 11	11200	Jun 9 1964
LOWEST DAILY MEAN	4.0	Oct 3	4.0	Oct 3	1.0	Jan 22 1982
ANNUAL SEVEN-DAY MINIMUM	5.2	Aug 17	6.9	Oct 1	1.1	Jan 20 1982
MAXIMUM PEAK FLOW			10100	Jun 10	b16600	Jun 9 1964
MAXIMUM PEAK STAGE			10.95	Jun 10	13.93	Jun 9 1964
INSTANTANEOUS LOW FLOW			a2.1	Oct 3	c0.92	Sep 10 1988
ANNUAL RUNOFF (AC-FT)	52790		186300		132200	
10 PERCENT EXCEEDS	264		787		485	
50 PERCENT EXCEEDS	19		32		82	
90 PERCENT EXCEEDS	10		14		25	

*--During periods of operation (August 1905 to October 1919, May to July 1920, May 1922 to October 1924, May 1951 to September 1973, October 1981 to current year).
a--Gage height, 1.35 ft.
b--From rating curve extended above 12,000 ft^3/s on basis of slope-area measurement of peak flow.
c--Gage height, 0.59 ft.
e--Estimated.

MARIAS RIVER BASIN

06099500 MARIAS RIVER NEAR SHELBY, MT

LOCATION.--Lat 48°25'38", long 111°53'20" (NAD 27), in SE$^1/_4$NW$^1/_4$SE$^1/_4$ sec.20, T.31 N., R.2 W., Toole County, Hydrologic Unit 10030203, on left bank 20 ft downstream from bridge on old U.S. Highway 91, 5.1 mi south of Shelby, 24 mi downstream from Cut Bank Creek, and at river mile 140.6.

DRAINAGE AREA.--3,242 mi^2, of which 518 mi^2 is probably noncontributing.

PERIOD OF RECORD.--April 1902 to December 1904, May 1905 to December 1906, May 1907 to January 1908, April 1911 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1903-4, 1918, 1921, 1933, 1935, 1947. WSP 1509: 1902, 1912(M), 1916, 1943(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,087.72 ft (NGVD 29). Prior to Dec. 23, 1947, nonrecording gage or water-stage recorder at several sites within 1,000 ft of present site at approximately the same datum. Dec. 23, 1947, to Apr. 6, 1976, water-stage recorder at site 150 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some regulation by Lower Two Medicine Lake (station number 06090900), Four Horns Reservoir (station number 06093000) Swift Reservoir (station number 06094000), and Lake Frances (station number 06095500), having a combined capacity of 172,630 acre-ft. Diversions for irrigation of about 50,000 acres upstream from station and about 15,000 acres downstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	95	e95	e90	e150	e130	e190	762	5570	3880	510	513
2	61	109	e100	e90	e140	e120	e170	760	5010	3300	509	394
3	61	130	e110	e100	e140	e130	e150	836	4390	2850	495	332
4	61	133	e100	e120	e150	e140	e180	1140	3930	2570	534	323
5	64	132	e90	e110	e160	e150	e220	1040	3810	2380	575	350
6	68	133	e95	e100	e160	e120	e250	933	4140	2270	614	364
7	70	137	e100	e150	e160	e100	e280	904	4440	2140	646	455
8	69	140	e110	e250	e150	e90	e300	958	4310	2140	695	517
9	69	142	e120	e300	e140	e80	e320	890	6460	2290	689	482
10	73	140	e110	e250	e150	e90	e350	869	12400	2170	653	395
11	78	139	e100	e230	e150	e120	e450	859	19300	2010	617	343
12	78	121	e100	e250	e140	e140	576	893	11200	1880	606	321
13	77	115	e100	e260	e140	e170	760	947	7880	1750	601	299
14	73	114	e110	e240	e140	e150	1530	1170	7100	1640	574	276
15	74	110	e120	e220	e150	e140	2510	1550	6950	1560	523	269
16	76	109	e110	e200	e160	e130	2150	1550	7310	1470	542	263
17	74	106	e120	e190	e150	e110	1850	1470	7850	1380	576	250
18	72	106	e120	e180	e150	e100	1760	1540	8120	1290	606	243
19	74	104	e110	e180	e140	e100	1690	1700	7570	1200	579	246
20	73	104	e110	e190	e150	e100	1550	2110	6510	1120	543	237
21	76	116	e100	e180	e160	e90	1500	3130	5840	1010	456	237
22	78	113	e100	e180	e160	e90	1480	4040	5470	895	405	239
23	78	117	e100	e160	e140	e110	1430	3800	5580	836	384	237
24	79	121	e100	e150	e120	e140	1290	3320	5650	767	343	233
25	80	121	e110	e170	e110	e150	1040	3480	5660	686	309	234
26	80	e100	e110	e140	e130	e180	845	3540	5230	624	296	237
27	81	e95	e100	e120	e140	e220	793	4080	4910	604	308	239
28	82	e90	e100	e110	e140	e250	751	4250	4870	614	354	255
29	83	e90	e95	e100	---	e240	697	4560	4580	586	348	314
30	83	e95	e90	e120	---	e220	681	5360	4360	538	337	307
31	84	---	e90	e140	---	e200	---	5850	---	499	456	---
TOTAL	2289	3477	3225	5270	4070	4300	27743	68291	196400	48949	15683	9404
MEAN	73.84	115.9	104.0	170.0	145.4	138.7	924.8	2203	6547	1579	505.9	313.5
MAX	84	142	120	300	160	250	2510	5850	19300	3880	695	517
MIN	60	90	90	90	110	80	150	760	3810	499	296	233
AC-FT	4540	6900	6400	10450	8070	8530	55030	135500	389600	97090	31110	18650

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1902 - 2002, BY WATER YEAR (WY)*

MEAN	404.9	394.1	304.4	254.5	318.2	578.7	1135	2716	3090	1057	388.3	357.5
MAX	1448	1485	1135	700	1173	2300	3149	5300	10190	3982	1100	1853
(WY)	1952	1990	1996	1918	1986	1947	1934	1927	1948	1902	1927	1911
MIN	73.8	116	103	41.9	58.7	139	280	711	409	147	67.1	66.4
(WY)	2002	2002	1937	1937	1936	2002	1931	1977	1977	1940	1988	1988

06099500 MARIAS RIVER NEAR SHELBY, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1902 - 2002*	
ANNUAL TOTAL	128180		389101			
ANNUAL MEAN	351.2		1066		905.8	
HIGHEST ANNUAL MEAN					1929	1927
LOWEST ANNUAL MEAN					302	1977
HIGHEST DAILY MEAN	2610	May 16	19300	Jun 11	109000	Jun 9 1964
LOWEST DAILY MEAN	58	Sep 27	60	Oct 1	10	Aug 20 1919
ANNUAL SEVEN-DAY MINIMUM	59	Sep 26	64	Oct 1	21	Jan 25 1937
MAXIMUM PEAK FLOW			20700	Jun 11	b241000	Jun 9 1964
MAXIMUM PEAK STAGE			12.30	Jun 11	c23.64	Jun 9 1964
INSTANTANEOUS LOW FLOW			a57	Oct 1	d10	Aug 20 1919
ANNUAL RUNOFF (AC-FT)	254200		771800		656200	
10 PERCENT EXCEEDS	1230		3840		2340	
50 PERCENT EXCEEDS	130		237		400	
90 PERCENT EXCEEDS	74		90		159	

*--During periods of operation (1903-04, 1906, 1912 to current year).
a--Gage height, 2.29 ft.
b--Largely due to the failure of Swift Dam, from slope-area measurement of peak flow. Maximum unaffected by dam failure, 75,000 ft^3/s, June 20, 1975, gage height, 18.21 ft.
c--From floodmark.
d--Observed, site and datum in use.
e--Estimated.

MARIAS RIVER BASIN

06101500 MARIAS RIVER NEAR CHESTER, MT

LOCATION.--Lat 48°18'23", long 111°04'47" (NAD 27), in SW$^1/_4$SW$^1/_4$SW$^1/_4$ sec.34, T.30 N., R.5 E., Liberty County, Hydrologic Unit 10030203, on left bank 2.0 mi downstream from Tiber Dam, 4.4 mi upstream from Pondera Coulee, 15 mi southwest of Chester, and at river mile 78.3.

DRAINAGE AREA.--4,927 mi^2, of which 518 mi^2 is probably noncontributing.

PERIOD OF RECORD.--April to September 1921, October 1945 to September 1947, October 1955 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1629: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,814.03 ft (NGVD) (Bureau of Reclamation bench mark). Prior to Oct. 1, 1921, nonrecording gage at bridge 2.5 mi downstream at different datum. Oct. 4, 1945, to Sept. 30, 1946, nonrecording gage at site 3 mi downstream at different datum.

REMARKS.--Records good. Flow completely regulated by Lake Elwell since Oct. 28, 1955 (see preceding page). Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1948 reached a stage of 16 ft, present datum.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	335	327	320	309	234	233	225	355	543	5220	1010	1010
2	334	327	318	279	234	233	227	352	546	5210	1010	1010
3	335	327	318	271	234	232	228	356	545	5210	1010	1010
4	333	327	318	281	234	231	227	355	548	5210	1020	1010
5	336	327	318	242	234	230	228	360	548	5190	1020	1010
6	335	328	318	241	234	232	227	331	544	5180	1010	1010
7	334	327	318	240	234	232	226	343	548	5170	1010	1010
8	332	327	318	240	234	231	228	362	550	5160	1010	1010
9	333	327	316	241	234	232	228	401	553	4860	1010	1010
10	333	327	318	242	234	231	227	442	554	4370	1010	1010
11	332	327	316	241	232	231	227	441	909	3870	1010	1010
12	332	327	318	240	234	229	227	443	2240	3650	1010	1010
13	332	327	318	239	233	230	226	467	3790	3650	1010	1010
14	332	327	316	242	233	231	227	504	4500	3650	1010	1010
15	332	327	316	241	234	229	227	529	4530	3390	1010	1010
16	332	327	315	240	234	228	249	531	4540	2980	1010	1010
17	332	327	314	241	233	231	293	541	4530	2370	1010	1010
18	331	327	315	239	233	230	340	544	4670	1780	1010	1010
19	331	327	310	238	234	229	355	564	5080	1440	1010	1010
20	332	326	315	238	232	230	355	549	5270	1440	1010	1010
21	332	326	310	238	234	231	355	539	5270	1430	1010	1010
22	332	326	309	238	232	230	354	543	5280	1280	1010	1010
23	330	325	309	238	232	228	355	545	5280	1010	1010	1010
24	331	325	309	238	234	228	355	547	5280	1010	1010	1010
25	332	323	309	238	233	227	357	549	5260	1130	1010	1010
26	332	325	309	238	234	227	356	552	5260	1210	1010	1010
27	330	324	309	239	233	227	358	554	5260	1210	1010	1010
28	331	323	309	240	232	227	356	546	5250	1210	1010	1010
29	332	322	309	238	---	227	353	537	5250	1110	1010	1010
30	332	321	309	238	---	227	350	542	5230	1010	1010	1010
31	329	---	309	236	---	227	---	542	---	1010	1010	---
TOTAL	10301	9780	9733	7604	6536	7121	8546	14766	98158	91620	31330	30300
MEAN	332.3	326.0	314.0	245.3	233.4	229.7	284.9	476.3	3272	2955	1011	1010
MAX	336	328	320	309	234	233	358	564	5280	5220	1020	1010
MIN	329	321	309	236	232	227	225	331	543	1010	1010	1010
AC-FT	20430	19400	19310	15080	12960	14120	16950	29290	194700	181700	62140	60100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 2002, BY WATER YEAR (WY)*

MEAN	731.7	591.1	442.1	401.7	439.1	604.6	816.8	1234	1722	1246	932.7	856.9
MAX	2758	1733	1050	1079	1068	2400	2343	3541	6254	5325	2909	3063
(WY)	1966	1986	1990	1990	1990	1947	1996	1947	1964	1975	1964	1965
MIN	208	0.40	15.7	35.0	35.0	47.7	46.1	51.0	58.9	57.5	82.5	173
(WY)	1983	1956	1956	1956	1956	1956	1956	1956	1956	1956	1956	1921

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1921 - 2002*	
ANNUAL TOTAL	116769		325795			
ANNUAL MEAN	319.9		892.6		834.4	
HIGHEST ANNUAL MEAN					1488	1959
LOWEST ANNUAL MEAN					97.5	1956
HIGHEST DAILY MEAN	395	Jan 1	5280	Jun 22	10100	Jun 12 1964
LOWEST DAILY MEAN	300	Jan 20	225	Apr 1	0.20	Oct 29 1955
ANNUAL SEVEN-DAY MINIMUM	301	Jan 15	227	Mar 26	0.20	Oct 29 1955
MAXIMUM PEAK FLOW			5300	Jun 20	a10400	Jun 16 1964
MAXIMUM PEAK STAGE			7.76	Jun 20	10.63	Jun 16 1964
INSTANTANEOUS LOW FLOW					b0.20	Nov 10 1955
ANNUAL RUNOFF (AC-FT)	231600		646200		604500	
10 PERCENT EXCEEDS	332		1960		1690	
50 PERCENT EXCEEDS	318		332		571	
90 PERCENT EXCEEDS	306		231		219	

*--During period of operation (April to September 1921, October 1945 to September 1947, October 1955 to current year).
a--Since dam completion. Maximum discharge not determined; occurred about Mar. 20, 1947.
b--Probably less than; during Tiber Dam shutdown.

MARIAS RIVER BASIN

06102050 MARIAS RIVER NEAR LOMA, MT

LOCATION.--Lat 47°55'59", long 111°31'02" (NAD 27) , in SW$^1/_4$NE$^1/_4$SE$^1/_4$ sec.12, T.25 N., R.9 E., Choteau County, Hydrologic Unit 10030203, on left bank 600 ft upstream from Teton River, 800 ft upstream from highway bridge, 0.2 mi southwest of Loma, and at river mile 2.5.
DRAINAGE AREA.--7,137 mi^2, of which 518 mi^2 is probably noncontributing.
PERIOD OF RECORD.--October 1959 to September 1972, June 2001 to current year (seasonal records only).
GAGE.--Water-stage recorder. Datum of gage is 2,570 ft (NGVD 29). Prior to June 2001, water-stage recorder at site 4.5 mi upstream at different datum.
REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow completely regulated by Lake Elwell. Numerous diversions for irrigation upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				e220	333	504	e5150	954	999	960		
2				e220	327	510	e5150	959	984	941		
3				e220	321	532	e5150	962	976	946		
4				e220	320	528	e5150	947	988	910		
5				e220	324	518	e5130	951	982	838		
6				e220	332	492	e5100	1000	1000	834		
7				e220	349	492	e5080	998	1050	828		
8				e220	339	524	e5080	1020	1020	832		
9				e220	354	557	e5000	1060	989	832		
10				e220	354	937	e4650	999	984	837		
11				e220	375	1050	e4200	971	995	834		
12				e220	391	e1400	e3800	978	997	833		
13				e220	392	e2400	e3600	990	999	838		
14				e220	387	e3600	e3600	984	992	840		
15				e220	418	e4200	e3400	973	992	840		
16				e260	469	e4200	e3000	971	996	843		
17				254	485	e4200	e2500	966	997	851		
18				266	497	e4300	2000	965	997	854		
19				281	511	e4400	1650	959	991	854		
20				307	501	e4800	1470	950	979	860		
21				320	498	e5100	1460	949	976	860		
22				319	569	e5200	1470	952	972	863		
23				322	620	e5250	1440	941	970	872		
24				323	566	e5200	1110	943	972	879		
25				331	531	e5200	977	940	964	850		
26				332	525	e5200	1010	939	965	790		
27				322	527	e5200	1110	949	963	796		
28				328	530	e5200	1110	963	960	e790		
29				334	528	e5200	1120	967	956	e750		
30				332	500	e5200	1070	984	975	e650		
31				---	507	---	960	986	---	e550		
TOTAL				7931	13680	92094	92697	30070	29580	25865		
MEAN				264.4	441.3	3070	2990	970.0	986.0	834.4		
MAX				334	620	5250	5150	1060	1050	960		
MIN				220	320	492	960	939	956	550		
AC-FT				15730	27130	182700	183900	59640	58670	51300		

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1972, AND 2001 - 2002 SEASONS

MEAN	297.7	433.7	568.1	877.9	1323	2261	1399	1199	1111	934.0	722.6	402.0
MAX	517	910	1290	2184	2175	6018	2959	3040	3258	2750	1580	908
(WY)	1968	1968	1967	1972	1972	1964	2002	1965	1965	1966	1966	1968
MIN	105	110	117	180	441	693	250	137	296	292	78.5	107
(WY)	1964	1964	1964	1961	2002	1969	1962	1961	2001	1964	1963	1963

SUMMARY STATISTICS	FOR 2002 SEASON		WATER YEARS 1960 - 1972		SEASONS 2001 - 2002	
ANNUAL MEAN			977.1			
HIGHEST ANNUAL MEAN			1330	1967		
LOWEST ANNUAL MEAN			522	1963		
HIGHEST DAILY MEAN	5250	Jun 23	10300	Jun 16 1964	5250	Jun 23 2002
LOWEST DAILY MEAN	220	Apr 1	45	Dec 11 1962	220	Apr 1 2002
ANNUAL SEVEN-DAY MINIMUM			49	Dec 5 1962		
MAXIMUM PEAK FLOW	e5250	Jun 23	10800	Jun 16 1964	e5250	Jun 23 2002
MAXIMUM PEAK STAGE	a5.29	Jun 24	b8.72	Jun 16 1964	a5.29	Jun 24 2002
ANNUAL RUNOFF (AC-FT)			707900			
10 PERCENT EXCEEDS			1940			
50 PERCENT EXCEEDS			800			
90 PERCENT EXCEEDS			180			

a--From high-water mark.
b--Site and datum then in use.
e--Estimated.

MARIAS RIVER BASIN

06102500 TETON RIVER BELOW SOUTH FORK, NEAR CHOTEAU, MT

LOCATION.--Lat 47°52'59", long 112°36'40" (NAD 27), in NE$^1/_4$NE$^1/_4$NE$^1/_4$ sec.34, T.25 N., R.8 W., Teton County, Hydrologic Unit 10030205, on right bank at county road bridge, 1.1 mi downstream from South Fork, 7.6 mi southwest of Bynum Reservoir, 20 mi northwest of Choteau, and at river mile 194.7.

WATER-DISCHARGE RECORDS

DRAINAGE AREA.--105 mi^2.
PERIOD OF RECORD.--June 1947 to October 1954 (published as "near Farmington"), June 1998 to current year, seasonal records only.
GAGE.--Water-stage recorder. Elevation of gage is 4,770 ft (NGVD 29). June 1947 to October 1954, water-stage recorder 300 ft downstream at different datum.
REMARKS.--Seasonal water-discharge records good. Negligible diversion for irrigation upstream from station.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 8, 1964 reached a discharge of 54,600 ft^3/s, from slope-area measurement of peak flow.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				45	51	693	439	130	92	75		
2				44	52	596	384	127	91	73		
3				e43	57	528	351	128	89	73		
4				44	58	504	333	129	91	73		
5				45	59	533	318	127	113	74		
6				47	59	635	294	128	109	75		
7				48	60	575	286	128	116	74		
8				47	59	531	296	128	105	74		
9				48	58	467	274	121	97	73		
10				47	56	448	257	115	94	72		
11				49	55	381	245	118	91	73		
12				50	55	395	233	114	90	73		
13				56	61	460	223	109	88	72		
14				70	74	591	210	109	87	72		
15				71	83	826	204	109	86	70		
16				64	87	981	194	111	84	70		
17				61	88	1160	192	106	85	68		
18				58	95	1060	184	104	83	69		
19				56	119	834	179	103	81	69		
20				54	266	702	169	104	83	68		
21				54	481	665	164	115	83	68		
22				54	436	758	160	106	81	69		
23				56	329	853	156	100	80	67		
24				55	270	833	149	97	81	66		
25				54	239	791	145	96	79	65		
26				53	231	758	143	95	78	65		
27				53	292	744	147	105	83	65		
28				51	442	719	139	105	76	66		
29				51	564	662	135	97	74	64		
30				52	756	541	134	101	74	59		
31				---	716	---	131	97	---	64		
TOTAL				1580	6308	20224	6868	3462	2644	2158		
MEAN				52.67	203.5	674.1	221.5	111.7	88.13	69.61		
MAX				71	756	1160	439	130	116	75		
MIN				43	51	381	131	95	74	59		
AC-FT				3130	12510	40110	13620	6870	5240	4280		

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1954 AND SEASONS 1998-2002*

MEAN	47.85	46.26	45.07	80.26	323.7	512.7	238.9	113.6	86.44	78.59	68.61	56.92
MAX	59.0	59.0	48.9	142	516	1178	468	182	134	133	89.8	68.2
(WY)	1952	1952	1952	1952	1951	1953	1951	1951	1951	1952	1952	1951
MIN	24.9	25.1	36.5	45.0	195	230	92.9	61.8	57.3	54.6	44.0	40.7
(WY)	1950	1949	1950	2001	2001	2000	1949	1949	1949	1950	1950	1950

SUMMARY STATISTIS	FOR 2002 SEASON		WATER YEARS 1947 - 1954*		SEASONS 1998 - 2002*	
ANNUAL MEAN			166			
HIGHEST ANNUAL MEAN			225	1953		
LOWEST ANNUAL MEAN			92.9	1949		
HIGHEST DAILY MEAN	1160	Jun 17	2380	Jun 5 1948	1160	Jun 17 2002
LOWEST DAILY MEAN	43	Apr 3	20	Jan 24 1949	36	Apr 13 2001
ANNUAL SEVEN-DAY MINIMUM			22	Jan 24 1949		
MAXIMUM PEAK FLOW	1280	Jun 17	a2780	Jun 3 1948	1280	Jun 17 2002
MAXIMUM PEAK STAGE	5.78	Jun 17	b7.34	Jan 6 1950	5.78	Jun 17 2002
INSTANTANEOUS LOW FLOW			c12	Mar 28 1951	d35	Apr 15 2001
ANNUAL RUNOFF (AC-FT)			199900			
10 PERCENT EXCEEDS			418			
50 PERCENT EXCEEDS			80			
90 PERCENT EXCEEDS			43			

*--During periods of operation (June 1947 to October 1954, June 1998 to current year; seasonal records beginning 1998).
a--From rating curve extended above 1,100 ft^3/s, gage height, 5.32 ft, previous site and datum.
b--Backwater from ice, previous site and datum.
c--Gage height, 2.82 ft, previous site and datum.
d--Gage height, 3.71 ft.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1998 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001									
30...	1130	55	8.2	379	14.0	6.0	<.04	E.03	<.008
JAN 2002									
23...	1200	45	8.1	335	-6.0	.5	<.04	.06	<.008
MAR									
12...	1010	46	8.5	379	.5	2.5	<.04	.05	<.008
APR									
10...	1200	47	8.5	373	8.0	5.0	<.04	.06	<.008
MAY									
23...	1500	311	8.5	294	6.0	8.0	<.04	.06	<.008
JUN									
18...	1100	1030	8.5	269	12.0	5.5	<.04	E.04	.009
JUL									
16...	1745	191	8.6	347	25.0	14.0	<.04	E.03	<.008
AUG									
20...	0930	106	8.4	377	13.0	8.0	<.04	E.04	<.008
SEP									
10...	1000	97	8.5	380	13.0	7.5	<.04	E.03	<.008

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001						
30...	<.02	<.06	.4	67	15	2.2
JAN 2002						
23...	<.02	<.06	.5	90	5	.61
MAR						
12...	<.02	<.06	.6	60	4	.50
APR						
10...	<.02	<.06	.4	89	7	.89
MAY						
23...	<.02	<.06	E.3	79	9	7.6
JUN						
18...	<.02	.09	E.2	66	217	603
JUL						
16...	<.02	<.06	.4	76	9	4.6
AUG						
20...	<.02	<.06	.6	60	19	5.4
SEP						
10...	<.02	<.06	.4	72	16	4.2

E--Estimated.

MARIAS RIVER BASIN

06108000 TETON RIVER NEAR DUTTON, MT

LOCATION.--Lat 47°55'49", long 111°33'07" (NAD 27), in SE$^1/_4$SW$^1/_4$SW$^1/_4$ sec.12, T.25 N., R.1 E., Teton County, Hydrologic Unit 10030205, on right bank 150 ft upstream from Kerr Bridge, 0.9 mi downstream from Hunt Coulee, 9.5 mi northeast of Dutton, and at river mile 100.9.

DRAINAGE AREA.--1,307 mi^2. Area at site used prior to July 17, 1965, 1,308 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1954 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,235 ft (NGVD 29). Prior to July 17, 1965, water-stage recorder at site 1,800 ft downstream at datum 1.97 ft lower.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Water is diverted on left bank in sec.34, T.25 N., R.7 W., for storage in Bynum Reservoir (usable capacity, 75,000 acre-ft). Diversions for irrigation of about 44,000 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.6	20	e16	e13	e15	e14	e60	35	31	82	13	32
2	9.8	19	e17	e14	e14	e15	e50	33	44	73	16	26
3	10	19	e15	e16	e14	e18	e55	34	41	64	15	20
4	11	18	e15	e15	e15	e20	67	32	44	59	16	18
5	11	19	e16	e15	e16	e18	74	31	44	56	20	18
6	12	19	e17	e14	e17	e16	79	31	35	55	27	24
7	13	19	e18	e16	e16	e15	90	35	31	49	38	36
8	13	18	e18	e20	e16	e15	91	39	42	48	46	44
9	13	19	e17	e18	e15	e18	120	38	75	51	48	49
10	13	20	e16	e16	e16	e25	118	39	394	53	47	56
11	14	20	e15	e16	e16	e30	108	45	1720	58	43	49
12	14	21	e15	e17	e16	e35	98	45	1900	52	39	41
13	15	21	e16	e16	e17	e33	83	40	1020	48	37	37
14	15	20	e16	e15	e17	e30	74	36	632	43	29	33
15	16	20	e16	e14	e17	e27	64	33	483	35	26	29
16	17	20	e16	e13	e18	e23	58	31	390	28	24	25
17	17	21	e16	e12	e18	e20	53	29	333	26	23	23
18	17	22	e15	e12	e18	e18	52	29	305	23	24	24
19	17	21	e15	e13	e18	e16	48	28	291	31	21	24
20	17	21	e15	e14	e18	e15	45	27	261	33	27	24
21	18	21	e14	e14	e18	e15	43	27	215	35	29	23
22	18	21	e14	e13	e18	e17	40	38	185	31	32	23
23	18	e20	e14	e16	e16	e20	38	48	167	29	32	23
24	19	e18	e14	e13	e14	e25	37	66	159	27	e34	25
25	18	e15	e15	e11	e13	e35	35	69	154	26	e36	26
26	18	e12	e16	e10	e13	e50	34	59	133	21	e37	27
27	18	e12	e15	e10	e15	66	34	49	123	22	38	31
28	18	e12	e14	e10	e14	61	34	43	113	21	39	34
29	19	e13	e13	e11	---	59	34	38	106	17	39	36
30	19	e14	e12	e13	---	61	35	35	93	15	40	42
31	19	---	e12	e15	---	64	---	31	---	13	33	---
TOTAL	476.4	555	473	435	448	894	1851	1193	9564	1224	968	922
MEAN	15.37	18.50	15.26	14.03	16.00	28.84	61.70	38.48	318.8	39.48	31.23	30.73
MAX	19	22	18	20	18	66	120	69	1900	82	48	56
MIN	9.6	12	12	10	13	14	34	27	31	13	13	18
AC-FT	945	1100	938	863	889	1770	3670	2370	18970	2430	1920	1830

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 2002, BY WATER YEAR (WY)

MEAN	70.50	71.21	64.68	55.63	86.57	184.4	159.5	248.3	391.8	160.2	74.16	65.97
MAX	223	176	209	167	388	819	495	957	2727	551	263	211
(WY)	1966	1976	1960	1976	1986	1969	1965	1976	1964	1958	1972	1993
MIN	15.4	18.5	14.8	13.2	15.2	28.8	46.6	20.1	16.9	1.30	0.000	7.39
(WY)	2002	2002	2001	1985	1985	2002	2000	2000	1988	1985	1988	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1954 - 2002	
ANNUAL TOTAL	9645.26		19003.4			
ANNUAL MEAN	26.43		52.06		135.9	
HIGHEST ANNUAL MEAN					350	1964
LOWEST ANNUAL MEAN					26.9	2001
HIGHEST DAILY MEAN	195	Apr 10	1900	Jun 12	20000	Jun 9 1964
LOWEST DAILY MEAN	0.00	Aug 23	9.6	Oct 1	0.00	Jul 21 1984
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 22	11	Oct 1	0.00	Jul 21 1984
MAXIMUM PEAK FLOW			2240	Jun 11	a71300	Jun 9 1964
MAXIMUM PEAK STAGE			7.07	Jun 11	b20.48	Jun 9 1964
INSTANTANEOUS LOW FLOW					c0.00	Jul 21 1984
ANNUAL RUNOFF (AC-FT)	19130		37690		98490	
10 PERCENT EXCEEDS	63		66		270	
50 PERCENT EXCEEDS	19		23		70	
90 PERCENT EXCEEDS	5.2		14		23	

a--From slope-area measurement of peak flow.
b--From floodmark.
c--No flow at times during 1984, 1985, 1988, 2000, and 2001.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1998 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001									
30...	1500	19	8.4	820	16.0	8.4	<.04	E.04	<.008
JAN 2002									
23...	1515	19	8.3	789	0.0	1.0	<.04	1.02	<.008
MAR									
11...	1630	32	8.2	637	10.0	0.0	<.04	.66	<.008
APR									
09...	1550	108	8.6	652	8.0	3.5	.05	.61	.013
MAY									
24...	1230	67	8.6	747	13.0	12.0	<.04	<.05	<.008
JUN									
18...	1510	301	8.5	828	21.0	19.0	<.04	.28	.016
JUL									
16...	1315	28	8.5	1170	26.0	26.0	<.04	<.05	<.008
AUG									
20...	1330	28	8.5	794	23.0	20.0	<.04	<.05	<.008
SEP									
09...	1445	47	8.6	785	25.0	17.0	E.04	<.05	<.008

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001						
30...	<.02	<.06	.7	88	67	3.4
JAN 2002						
23...	<.02	<.06	1.1	80	32	1.6
MAR						
11...	<.02	<.06	.8	94	32	2.8
APR						
09...	<.02	.18	.8	98	235	68.5
MAY						
24...	<.02	E.03	.8	97	70	12.7
JUN						
18...	<.02	.24	1.1	97	380	309
JUL						
16...	<.02	E.05	.8	98	62	4.7
AUG						
20...	<.02	E.04	.9	95	78	5.9
SEP						
09...	<.02	E.04	.9	99	86	10.9

E--Estimated.

MARIAS RIVER BASIN

06108800 TETON RIVER AT LOMA, MT

LOCATION.--Lat 47°55'57", long 110°30'49" (NAD 27), in NW$^1/_4$SW$^1/_4$SE$^1/_4$ sec.12, T.25 N., R.9 E., Choteau County, Hydrologic Unit 10030205, on left bank 25 ft downstream from county bridge, 0.5 mi southwest of Loma, and at river mile 0.3.
DRAINAGE AREA.--2,010 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1998 to current year. Prior to October 1, 1999, seasonal records only.
GAGE.--Water-stage recorder. Elevation of gage is 2,560 ft (NGVD 29).
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. U. S. Geological Survey satellite telemeter at station. Numerous diversions upstream from station for irrigation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	e2.0	e15	e45	35	25	108	2.3	16
2	0.00	0.00	0.00	0.00	e3.0	e16	e40	31	28	89	1.8	17
3	0.00	0.00	0.00	0.00	e2.5	e20	e45	28	30	73	1.4	16
4	0.00	0.00	0.00	0.00	e5.0	e25	e50	27	33	65	1.3	14
5	0.00	0.00	0.00	0.00	e10	e16	e70	25	31	51	1.2	13
6	0.00	0.00	0.00	0.00	e15	e12	e80	28	27	40	0.95	12
7	0.00	0.00	0.00	e0.5	e25	e11	91	31	26	31	0.30	14
8	0.00	0.00	0.00	e2.0	e27	e10	80	40	33	39	1.6	15
9	0.00	0.00	1.5	e10	e25	e10	86	43	34	30	2.6	15
10	0.00	0.00	e2.0	e5.0	e22	e12	83	42	91	23	8.0	16
11	0.00	0.00	e1.0	e5.0	e20	e17	96	39	134	20	13	17
12	0.00	0.00	e0.7	e6.0	e20	e24	104	37	1020	20	20	22
13	0.00	0.00	e1.0	e7.0	e21	e22	98	35	1740	21	21	29
14	0.00	0.00	e2.0	e9.0	e23	e17	88	37	1240	25	21	24
15	0.00	0.00	e2.0	e7.0	e25	e13	77	38	759	35	18	22
16	0.00	0.00	e3.0	e4.0	e27	e10	62	36	509	20	17	18
17	0.00	0.00	e3.0	e4.5	e30	e10	50	34	405	16	15	16
18	0.00	0.00	e2.0	e4.0	e28	e9.0	46	31	341	14	14	15
19	0.00	0.00	e2.0	e4.5	e28	e7.0	42	29	316	12	12	13
20	0.00	0.00	e1.5	e5.0	e28	e6.0	40	27	305	9.9	10	12
21	0.00	0.00	e1.1	e5.5	e30	e7.0	39	26	288	8.8	9.8	12
22	0.00	0.00	e0.8	e5.0	e35	e8.0	36	43	273	10	7.0	13
23	0.00	0.00	e0.6	e3.0	e25	e9.0	36	46	281	9.7	4.8	14
24	0.00	0.00	e0.4	e4.5	e15	e10	34	42	220	9.6	4.4	14
25	0.00	0.00	e0.4	e6.0	e17	e15	33	40	195	10	5.1	13
26	0.00	0.00	e0.2	e5.0	e20	e20	32	43	178	8.3	4.6	13
27	0.00	0.00	e0.2	e3.0	e24	e40	31	49	165	6.6	4.3	15
28	0.00	0.00	e0.1	e2.0	e20	e70	30	51	147	5.0	7.0	17
29	0.00	0.00	e0.00	e1.5	---	e60	29	45	136	5.3	13	17
30	0.00	0.00	0.00	e1.0	---	e50	31	36	122	4.9	30	22
31	0.00	---	0.00	e1.3	---	e55	---	31	---	3.3	15	---
TOTAL	0.00	0.00	25.50	111.30	572.5	626.0	1704	1125	9132	823.4	287.45	486
MEAN	0.000	0.000	0.823	3.590	20.45	20.19	56.80	36.29	304.4	26.56	9.273	16.20
MAX	0.00	0.00	3.0	10	35	70	104	51	1740	108	30	29
MIN	0.00	0.00	0.00	0.00	2.0	6.0	29	25	25	3.3	0.30	12
AC-FT	0.00	0.00	51	221	1140	1240	3380	2230	18110	1630	570	964

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2002, BY WATER YEAR (WY)*

MEAN	14.57	16.05	14.78	14.54	22.32	56.19	63.70	34.97	139.7	45.07	16.40	11.72
MAX	29.4	43.4	39.5	35.0	31.6	87.7	82.2	74.8	304	151	62.6	24.8
(WY)	2000	2000	2000	2000	2000	2000	2001	1999	2002	1998	1998	1999
MIN	0.000	0.000	0.83	3.46	14.8	20.2	43.4	10.2	4.98	2.48	0.000	0.000
(WY)	2002	2002	2002	2002	2001	2002	2000	2000	2001	2000	2000	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1998 - 2002*	
ANNUAL TOTAL	5791.66		14893.15			
ANNUAL MEAN	15.87		40.80		28.85	
HIGHEST ANNUAL MEAN					40.8	2002
LOWEST ANNUAL MEAN					16.6	2001
HIGHEST DAILY MEAN	144	Apr 12	1740	Jun 13	1740	Jun 13 2002
LOWEST DAILY MEAN	0.00	Jun 30	0.00	Oct 1	0.00	Jul 30 1999
ANNUAL SEVEN-DAY MINIMUM	0.00	Jun 30	0.00	Oct 1	0.00	Jul 30 1999
MAXIMUM PEAK FLOW			2000	Jun 13	2000	Jun 13 2002
MAXIMUM PEAK STAGE			5.87	Jun 13	5.87	Jun 13 2002
ANNUAL RUNOFF (AC-FT)	11490		29540		20900	
10 PERCENT EXCEEDS	65		67		65	
50 PERCENT EXCEEDS	1.5		13		12	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

*--Seasonal records prior to water year 2000.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1965, May 1998 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1999 to current year (seasonal records).

INSTRUMENTATION.--Temperature recorder installed Oct. 20, 1999.

REMARKS.--No samples collected in October due to no flow. Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (October 1999 to current year, seasonal records): Maximum, 35.5°C, July 13, 2002; minimum, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 35.5°C, July 13; minimum, 0.0°C , Apr. 1-6.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
JAN										
24...	1000	E4.5	8.3	1200	8.0	0.0	<.04	.38	.649	.011
MAR										
13...	1630	E22	8.4	955	10.0	0.0	<.04	.28	.352	.005
APR										
12...	1110	104	8.6	739	14.0	8.0	E.03	1.5	.485	.011
MAY										
29...	1320	43	8.6	878	30.0	20.0	<.04	.44	<.013	<.002
JUN										
19...	0900	314	8.6	893	13.0	14.5	<.04	1.7	.231	.005
JUL										
17...	1945	14	8.6	1400	25.0	31.0	<.04	.52	<.013	<.002
AUG										
20...	1615	9.9	8.6	1040	27.5	26.0	<.04	.30	<.013	<.002
SEP										
11...	1300	17	8.6	963	27.0	20.0	<.04	.29	<.013	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SED - MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
JAN					
24...	<.007	.014	97	27	E.33
MAR					
13...	<.007	.042	95	53	E3.1
APR					
12...	<.007	.53	99	704	198
MAY					
29...	<.007	.074	99	85	9.9
JUN					
19...	.007	.50	93	725	615
JUL					
17...	<.007	.040	94	53	2.0
AUG					
20...	<.007	.010	69	29	.78
SEP					
11...	<.007	.030	98	51	2.3

MARIAS RIVER BASIN

06108800 TETON RIVER AT LOMA, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
MAY											
29...	1320	350	56.4	51.8	2.73	1	60.5	219	8.80	.4	1.32

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
MAY											
29...	246	64.9	559	E1	<.1	1.0	3.4	<1	4	1.2	6

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	0.0	0.0	0.0	18.0	6.0	11.5	20.5	15.0	18.0	23.5	17.0	20.5
2	0.0	0.0	0.0	19.0	8.0	13.0	17.0	15.0	16.0	26.0	15.5	20.5
3	0.5	0.0	0.0	14.0	7.0	10.5	20.0	13.5	16.0	23.5	18.0	20.5
4	2.0	0.0	0.5	12.0	6.5	9.5	25.5	12.5	19.0	29.0	19.0	23.0
5	4.5	0.0	1.5	13.5	7.0	10.0	24.0	16.0	19.5	28.5	19.0	23.5
6	6.0	0.0	2.5	15.5	6.5	10.5	21.0	13.5	17.0	30.5	19.0	24.5
7	6.5	3.0	4.5	10.0	5.0	6.5	24.5	12.5	18.0	31.5	21.5	26.0
8	10.5	2.0	6.0	13.0	3.0	7.0	17.5	13.0	14.0	26.5	21.0	23.5
9	8.5	5.5	7.0	17.0	5.0	10.5	13.5	10.5	12.0	26.5	17.0	21.5
10	12.5	5.5	8.5	17.5	7.5	12.5	12.0	8.5	10.0	30.5	18.5	24.0
11	11.5	5.5	9.0	18.5	8.0	13.5	13.0	8.0	10.0	34.0	20.0	26.5
12	12.5	7.0	9.5	21.0	11.0	15.5	14.0	10.5	12.0	35.0	22.5	28.5
13	15.5	8.0	11.0	24.5	11.5	18.0	15.5	10.5	13.0	35.5	23.5	29.5
14	14.5	8.5	11.5	20.0	12.5	16.5	20.0	13.5	16.5	35.0	25.0	29.0
15	12.5	5.0	8.5	12.5	8.5	10.5	23.0	17.0	20.0	33.0	23.5	28.0
16	14.5	6.5	9.5	20.0	7.5	13.0	24.5	19.0	22.0	33.5	24.0	28.0
17	11.0	6.0	8.5	20.0	10.0	14.5	23.5	20.0	22.0	34.0	22.0	27.5
18	13.0	3.5	8.0	19.0	11.0	15.0	22.5	18.5	20.0	35.0	22.5	28.5
19	14.0	4.5	9.0	23.0	11.0	16.5	19.5	15.0	17.5	30.5	23.5	27.0
20	16.5	4.5	10.0	22.5	11.5	17.0	23.0	15.0	19.0	32.5	22.0	27.0
21	12.0	5.5	9.5	25.0	13.5	18.0	24.5	18.0	21.5	29.0	20.5	24.5
22	16.0	6.0	10.5	13.5	4.5	8.5	26.5	20.5	23.0	29.5	17.0	23.0
23	10.0	6.5	8.5	16.0	4.0	9.5	25.0	19.0	22.0	30.5	19.0	24.5
24	13.0	3.5	7.5	18.5	10.0	14.0	26.0	20.5	23.0	30.0	19.5	25.0
25	11.0	4.0	7.0	18.5	11.5	15.0	28.5	19.5	24.0	30.5	19.5	25.0
26	15.0	3.5	8.5	23.0	14.0	18.0	30.0	21.5	25.5	28.0	20.0	23.5
27	11.5	6.0	8.5	22.5	15.0	18.5	31.5	24.0	27.0	26.5	19.5	22.5
28	14.0	4.0	9.0	22.0	15.0	18.5	27.5	22.5	25.0	28.0	19.0	22.5
29	16.0	6.0	11.0	23.0	14.0	18.5	24.5	20.0	22.5	27.5	17.0	21.5
30	13.0	7.5	10.0	20.5	16.5	18.5	24.5	17.0	20.5	26.5	16.5	21.5
31	---	---	---	26.0	13.5	19.5	---	---	---	25.5	17.0	21.0
MONTH	16.5	0.0	7.0	26.0	3.0	14.0	31.5	8.0	19.0	35.5	15.5	24.5

MARIAS RIVER BASIN

06108800 TETON RIVER AT LOMA, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER	
1	27.5	14.5	20.5	21.5	16.0	18.5
2	28.5	15.5	21.5	25.0	13.0	18.5
3	22.5	14.0	18.5	26.0	15.5	20.0
4	22.0	15.0	18.0	28.0	17.5	22.0
5	26.5	17.5	21.5	22.5	17.0	19.5
6	24.5	19.5	22.0	19.0	16.0	17.5
7	21.5	17.5	19.0	21.0	15.5	18.0
8	18.5	16.0	17.0	22.0	14.5	17.5
9	26.5	14.5	20.0	23.0	11.5	17.0
10	27.5	17.0	22.0	25.0	13.0	18.5
11	22.0	17.0	19.0	25.5	14.5	19.5
12	27.0	14.0	20.0	26.0	15.0	20.0
13	28.0	17.0	22.0	23.5	15.5	19.0
14	23.0	17.0	20.0	25.0	14.0	19.0
15	26.5	14.0	19.5	23.5	15.0	19.0
16	20.5	14.5	16.5	25.0	15.5	19.5
17	25.0	10.5	17.0	19.5	16.0	17.5
18	25.5	15.5	20.0	21.0	14.0	17.0
19	27.0	15.0	21.0	21.0	11.5	15.5
20	26.5	17.0	21.5	19.5	10.5	14.5
21	26.0	18.0	21.5	17.0	11.0	13.5
22	28.5	17.0	22.5	17.0	7.5	12.0
23	30.0	16.5	23.0	19.0	9.5	14.0
24	27.5	18.0	22.5	15.5	11.5	13.0
25	29.0	19.0	23.0	18.0	8.0	12.5
26	27.0	17.0	21.5	15.5	9.0	12.0
27	25.5	16.5	21.0	13.5	11.0	12.0
28	27.5	17.0	22.0	18.0	8.0	12.5
29	29.5	18.0	23.0	17.5	9.0	13.0
30	26.5	18.0	21.5	14.0	9.5	12.0
31	26.5	17.5	22.0	---	---	---
MONTH	30.0	10.5	20.5	28.0	7.5	16.5

MISSOURI RIVER MAIN STEM

06109500 MISSOURI RIVER AT VIRGELLE, MT

LOCATION.--Lat 48°00'18", long 110°15'25" (NAD 27), in SW$^1/_4$SW$^1/_4$SE$^1/_4$ sec.13, T.26 N., R.11 E., Chouteau County, Hydrologic Unit 10040101, on left bank 0.2 mi upstream from Virgelle ferry, 0.6 mi southwest of Virgelle, 1.8 mi downstream from Spring Coulee, and at river mile 2,034.2.

DRAINAGE AREA.--34,379 mi^2.

PERIOD OF RECORD.--February 1935 to current year. Prior to October 1953, published as "at Loma."

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,507.50 ft (NGVD 29). Prior to Sept. 30, 1953, water-stage recorder at Loma, 18 mi upstream, 2,543.40 ft.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by 23 smaller irrigation reservoirs and powerplants, Clark Canyon Reservoir (station number 06015300), Canyon Ferry Lake (station number 06058500), and Lake Elwell (station number 06101300). Diversions for irrigation of about 850,400 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1908 reached a stage about 2 ft higher than that of June 5, 1953, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3720	4000	e4110	e3500	e3790	e3560	4300	4400	9010	12500	4770	4820
2	3720	4090	4210	e3480	e4050	e4280	4100	4270	9700	12100	4790	5080
3	3820	3980	4150	e3600	e4310	e4240	4120	4330	9320	11000	4600	4870
4	3930	4040	4040	e3840	e4470	e4240	4170	4310	9170	10600	4530	4920
5	3780	4040	4180	e4100	e4620	e4480	4050	4270	8780	10100	4900	4840
6	3720	4050	4230	e4470	e4650	e4430	4180	4310	8050	10200	4970	4690
7	3750	4110	4150	e4520	e4550	e4050	4310	4350	7510	9890	4970	4730
8	3790	4030	4040	e4470	e4340	e3400	4220	4460	7690	10100	5040	5020
9	3730	4010	3970	e4590	e4450	e3030	4280	4610	8540	9830	5580	5000
10	3810	4080	4080	4760	e4620	e3620	4430	4810	9850	9450	5410	5110
11	3780	4040	e4090	4500	e4560	e3850	4410	4710	12900	8820	5420	5010
12	3820	4010	e3940	4360	e4470	e4480	4260	4490	17100	8170	5470	4950
13	3950	4070	e3780	4040	e4340	e4780	4180	4380	18600	7680	5190	4800
14	3900	4070	3810	4040	e4240	e4950	4190	4380	18100	7570	5070	4600
15	3770	4110	4350	4310	e4310	e5020	4180	4360	18600	7570	4950	4580
16	3940	3990	4080	4060	e4580	e5070	4110	4390	18300	7460	4850	4500
17	4030	3970	3860	3580	4760	e4530	4150	4440	17900	6810	4830	4660
18	4010	4040	e3970	3500	4300	e4020	4230	4520	17400	6250	4600	4770
19	4080	3970	e3800	3420	3980	e3590	4290	4690	17100	5650	5130	4680
20	3770	4110	e3770	3830	4010	e3410	4430	4720	16800	5290	5140	4430
21	3780	4020	e3690	3550	3810	e2850	4420	4780	16000	5050	4970	4540
22	3810	4070	e3080	3870	3840	e2670	4390	5750	14800	5290	4840	4630
23	3990	4170	e3070	e4170	4150	e3350	4330	7290	13500	5180	4860	4510
24	4100	4250	e3080	4260	3760	e4570	4210	7580	13000	4920	4720	4870
25	4020	4100	e3250	3800	3900	e4850	4050	7880	14800	4800	4690	4550
26	3980	4080	e3810	3800	3390	e5160	4060	7260	14500	4900	4710	4520
27	3980	4090	e4130	e4180	2940	e5170	4200	6980	13900	5000	4950	4370
28	4040	3910	e3930	e4400	2790	e4970	4220	7240	13100	4880	5100	4600
29	4120	3870	e3810	e3800	---	e4980	4210	6830	13100	5280	4910	4940
30	3960	4000	e3780	e3530	---	e4580	4240	6310	12500	5180	4850	4930
31	4100	---	e3600	e3430	---	4350	---	6570	---	4840	5050	---
TOTAL	120700	121370	119840	123760	115980	130530	126920	163670	399620	232360	153860	142520
MEAN	3894	4046	3866	3992	4142	4211	4231	5280	13320	7495	4963	4751
MAX	4120	4250	4350	4760	4760	5170	4430	7880	18600	12500	5580	5110
MIN	3720	3870	3070	3420	2790	2670	4050	4270	7510	4800	4530	4370
AC-FT	239400	240700	237700	245500	230000	258900	251700	324600	792600	460900	305200	282700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2002, BY WATER YEAR (WY)

MEAN	6183	6347	6271	6268	6598	7357	8702	13400	17970	9807	6165	5851
MAX	15340	12470	12220	8997	10240	14490	17720	28260	51960	29670	11950	11590
(WY)	1966	1966	1960	1976	1971	1978	1943	1976	1948	1975	1993	1965
MIN	3533	3207	3221	2716	2600	3784	4062	4819	4646	3704	2821	2818
(WY)	1938	1938	1937	1936	1937	1938	1961	1992	1977	1940	1937	1937

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1935 - 2002	
ANNUAL TOTAL	1605090		1951130			
ANNUAL MEAN	4398		5346		8438	
HIGHEST ANNUAL MEAN					13660	1975
LOWEST ANNUAL MEAN					4152	1937
HIGHEST DAILY MEAN	6960	May 1	18600	Jun 13	119000	Jun 5 1953
LOWEST DAILY MEAN	3070	Dec 23	2670	Mar 22	638	Jul 5 1936
ANNUAL SEVEN-DAY MINIMUM	3390	Dec 19	3390	Dec 19	2020	Feb 2 1937
MAXIMUM PEAK FLOW			a19200	Jun 13	c122000	Jun 5 1953
MAXIMUM PEAK STAGE			b10.52	Mar 12	d23.40	Jun 5 1953
ANNUAL RUNOFF (AC-FT)	3184000		3870000		6113000	
10 PERCENT EXCEEDS	5100		8800		14700	
50 PERCENT EXCEEDS	4350		4370		6770	
90 PERCENT EXCEEDS	3770		3780		4230	

a--Gage height, 7.37 ft.
b--Backwater from ice.
c--From rating curve for former site at Loma, extended above 66,000 ft^3/s.
d--From floodmark.
e--Estimated.

MISSOURI RIVER BASIN

06114700 JUDITH RIVER NEAR MOUTH, NEAR WINIFRED, MT

LOCATION.--Lat 47°40'06", long 109°39'09" (NAD 27), in SW$^1/_4$NW$^1/_4$NE$^1/_4$ sec.22, T.22 N., R.16 E., Fergus County, Hydrologic Unit 10040103, on right bank 0.2 mi downstream from private road bridge, 5.3 mi south of Judith Landing, 15 mi northwest of Winifred, and at river mile 7.7.
DRAINAGE AREA.--2,731 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 2000 to current year.
GAGE.--Water-stage recorder. Datum of gage is 2,490 ft (NGVD 29).
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Numerous diversions for irrigation upstream from station. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	166	262	e245	e250	e290	e290	372	224	257	298	83	210
2	171	256	e230	e250	e295	e290	312	211	284	280	89	210
3	187	255	e235	e265	e295	e290	273	209	324	269	85	208
4	197	254	e235	e270	e295	e290	288	204	352	254	88	204
5	210	257	e235	e280	e295	e290	312	198	324	272	364	209
6	208	260	e215	e290	e295	e290	366	215	294	245	274	218
7	211	259	e220	e290	e295	e285	382	248	279	223	129	256
8	209	258	e210	e290	e295	e280	364	268	278	517	357	253
9	214	258	e220	e290	e295	e285	338	267	236	320	459	240
10	226	258	e220	e290	e295	e295	328	253	308	260	321	233
11	245	262	e215	e290	e295	e300	320	243	399	237	248	227
12	246	263	e210	e290	e295	e300	321	243	412	222	224	223
13	246	264	e205	e290	e295	e300	319	238	372	197	239	218
14	251	264	e210	e290	e295	e300	313	224	326	158	248	210
15	253	262	e215	e285	e295	e300	323	207	297	154	245	207
16	252	262	e220	e290	e295	e300	325	197	288	145	239	202
17	252	263	e220	e280	e295	e300	303	205	273	150	241	200
18	248	261	e220	e290	e295	e300	282	205	259	141	236	207
19	250	263	e220	e285	e295	e295	272	191	298	110	235	213
20	252	262	e220	e280	e295	e290	265	180	307	114	233	207
21	251	262	e225	e285	e270	e285	262	184	305	126	251	206
22	251	262	e225	e290	e270	e290	256	247	391	140	266	209
23	252	263	e230	e290	e250	e295	253	288	418	124	269	208
24	248	265	e230	e290	e260	e300	247	358	417	176	247	210
25	254	264	e235	e285	e270	e300	246	334	452	145	249	213
26	257	e250	e235	e270	e260	e300	244	311	415	141	243	214
27	254	e240	e235	e250	e270	e300	241	282	369	139	235	217
28	263	e245	e235	e240	e280	e265	244	252	326	107	234	225
29	275	e250	e240	e245	---	e280	241	233	317	107	239	223
30	272	e255	e240	e260	---	e290	241	226	313	99	234	222
31	268	---	e240	e280	---	e310	---	246	---	90	226	---
TOTAL	7339	7759	6990	8620	8025	9085	8853	7391	9890	5960	7330	6502
MEAN	236.7	258.6	225.5	278.1	286.6	293.1	295.1	238.4	329.7	192.3	236.5	216.7
MAX	275	265	245	290	295	310	382	358	452	517	459	256
MIN	166	240	205	240	250	265	241	180	236	90	83	200
AC-FT	14560	15390	13860	17100	15920	18020	17560	14660	19620	11820	14540	12900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

MEAN	254.5	263.3	224.2	266.0	260.4	305.4	293.8	197.9	323.9	209.3	198.2	205.6
MAX	272	268	225	278	287	318	295	238	330	226	236	217
(WY)	2001	2001	2002	2002	2002	2001	2002	2002	2002	2001	2002	2002
MIN	237	259	223	254	234	293	293	157	318	192	160	194
(WY)	2002	2002	2001	2001	2001	2002	2001	2001	2001	2002	2001	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 2001 - 2002	
ANNUAL TOTAL	87382		93744			
ANNUAL MEAN	239.4		256.8		249.9	
HIGHEST ANNUAL MEAN					257	2002
LOWEST ANNUAL MEAN					243	2001
HIGHEST DAILY MEAN	605	Jun 15	517	Jul 8	605	Jun 15 2001
LOWEST DAILY MEAN	80	Jun 2	83	Aug 1	80	Jun 2 2001
ANNUAL SEVEN-DAY MINIMUM	89	May 27	92	Jul 29	89	May 27 2001
MAXIMUM PEAK FLOW			a3150	Aug 5	a3150	Aug 5 2002
MAXIMUM PEAK STAGE			b7.01	Jan 6	b8.00	Nov 17 2000
INSTANTANEOUS LOW FLOW			c72	Aug 3	c72	Aug 3 2002
ANNUAL RUNOFF (AC-FT)	173300		185900		181000	
10 PERCENT EXCEEDS	310		312		311	
50 PERCENT EXCEEDS	240		256		252	
90 PERCENT EXCEEDS	149		204		158	

a--Gage height, 6.99 ft, from slope-area computation of peak flow.
b--Backwater from ice.
c--Gage height, 2.62 ft.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 2001 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records): April 2002 to September 2002.
INSTRUMENTATION.--Temperature recorder installed Sept. 9, 2000.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District Office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records): Maximum, 32.0°C, July 13, 2002; minimum, 0.0°C Apr. 1-3, 2002.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum 32.0°C, July 13, minimum, 0.0°C, Apr. 1-3.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT									
31...	1015	262	8.1	697	12.0	9.5	.20	.022	E.002
APR									
11...	1350	319	8.5	854	18.0	11.0	.57	.261	.004
MAY									
29...	1045	238	8.5	733	20.0	16.5	.35	.016	<.002
JUL									
17...	1630	111	8.6	807	27.0	28.0	.27	<.013	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT					
31...	<.007	.028	72	85	60.1
APR					
11...	<.007	.174	81	268	231
MAY					
29...	<.007	.072	86	73	46.9
JUL					
17...	<.007	.046	98	71	21.3

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT											
31...	1015	370	92.1	34.7	1.78	.3	15.2	155	3.58	.8	4.64
MAY											
29...	1045	360	88.4	34.5	1.83	.4	19.0	148	2.53	.7	4.12

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT											
31...	244	.67	347	490	E2	<.1	E.7	2.3	<1	4	5
MAY											
29...	240	.65	309	480	E2	E.1	.8	2.9	1	4	7

E--Estimated.

MISSOURI RIVER BASIN

06114700 JUDITH RIVER NEAR MOUTH, NEAR WINIFRED, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	6.0	0.0	3.5	15.0	7.0	11.0	20.5	16.5	18.5	23.5	18.0	20.5
2	1.5	0.0	0.5	17.0	8.0	12.5	18.0	16.0	16.5	24.0	16.0	20.0
3	5.0	0.0	2.0	14.0	9.0	11.5	16.5	14.0	15.0	22.5	17.5	20.0
4	8.0	1.0	4.5	11.5	7.0	9.5	21.5	12.5	17.0	27.5	18.5	22.5
5	10.0	3.0	7.0	10.5	8.0	9.5	21.5	16.0	19.0	25.0	19.5	22.5
6	11.0	7.0	9.0	14.5	7.0	10.0	20.0	16.0	17.5	27.5	19.0	23.5
7	9.5	7.0	8.0	10.0	5.5	7.0	22.5	15.0	18.5	28.0	22.0	25.0
8	11.0	5.5	8.0	7.5	3.5	5.5	19.0	15.0	16.0	24.5	19.5	22.0
9	10.0	7.0	8.5	13.0	4.5	8.5	15.5	13.0	13.5	23.5	18.5	21.0
10	12.5	7.5	10.0	14.0	8.0	11.0	13.5	9.5	12.0	27.0	18.5	22.5
11	13.0	7.0	10.0	15.0	8.0	11.5	12.0	8.5	10.0	29.5	20.0	24.5
12	12.5	8.5	10.5	18.5	10.0	14.5	17.0	10.0	13.5	31.0	22.0	26.5
13	15.0	8.5	11.5	20.5	12.0	16.5	21.5	12.0	16.5	32.0	23.0	27.5
14	13.5	9.5	11.5	18.0	13.5	16.0	24.0	15.5	20.0	30.5	23.5	27.0
15	11.5	6.5	9.0	13.5	10.0	12.0	26.0	17.5	21.5	30.5	22.5	26.5
16	12.0	7.5	9.5	15.5	9.5	12.5	26.0	19.0	22.5	30.0	24.0	26.5
17	10.0	6.5	8.5	17.5	10.0	13.5	25.0	19.5	22.5	29.5	21.5	25.5
18	11.5	6.0	8.5	17.5	11.5	14.5	23.5	18.0	20.0	30.5	21.5	26.0
19	11.5	5.0	8.5	20.0	11.5	15.5	19.0	15.0	17.0	26.5	22.5	24.5
20	12.5	5.0	8.5	20.5	12.5	16.5	23.5	15.0	19.0	28.5	21.0	24.5
21	11.5	5.5	9.0	23.0	15.5	18.0	24.0	17.5	20.5	26.0	21.0	23.5
22	15.0	7.0	11.0	15.5	6.5	10.0	25.5	18.0	21.5	26.0	18.0	22.0
23	11.5	7.5	9.5	13.5	5.0	9.0	24.0	18.5	21.5	26.5	18.5	22.0
24	10.5	4.5	7.5	15.5	9.5	12.0	25.5	19.5	22.5	26.0	19.0	22.5
25	8.5	4.5	6.5	17.0	11.5	14.5	27.0	19.5	23.0	28.0	19.5	24.0
26	11.5	3.0	7.5	20.0	14.0	16.5	29.0	21.0	25.0	26.5	20.0	23.5
27	9.0	6.5	7.5	21.5	15.0	18.0	30.5	23.0	26.5	24.0	20.0	22.0
28	10.0	5.0	7.5	20.5	15.5	18.0	29.0	23.0	26.0	25.0	18.5	21.5
29	12.5	6.5	9.5	22.0	14.5	18.0	25.5	20.5	22.5	25.0	18.0	21.0
30	11.0	8.0	9.5	20.0	17.0	18.5	25.0	17.0	21.0	26.0	17.5	21.5
31	---	---	---	23.0	15.5	19.5	---	---	---	24.0	18.5	21.0
MONTH	15.0	0.0	8.0	23.0	3.5	13.5	30.5	8.5	19.0	32.0	16.0	23.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER	
1	24.0	14.0	19.0	21.5	17.0	18.5
2	22.5	15.0	19.0	22.0	14.5	18.0
3	22.0	14.5	18.5	24.0	16.5	20.0
4	23.5	15.5	19.5	25.0	18.5	21.5
5	25.5	15.0	21.0	22.5	19.0	20.5
6	24.5	15.0	20.0	19.5	17.0	18.0
7	22.5	19.0	20.5	19.5	16.0	17.5
8	19.0	15.5	17.0	19.5	15.5	17.0
9	20.5	14.0	17.0	19.5	13.0	16.5
10	24.0	16.5	20.0	21.0	13.5	17.5
11	22.0	17.0	18.5	22.0	15.0	18.5
12	22.0	14.0	18.0	22.0	15.5	19.0
13	23.5	16.0	20.0	21.0	15.5	18.5
14	22.0	17.5	20.0	21.5	14.5	18.0
15	22.5	15.0	18.5	22.0	15.5	18.5
16	19.5	14.0	17.0	21.5	16.0	18.5
17	20.5	11.5	15.5	18.0	15.0	16.0
18	20.5	14.5	17.5	17.5	13.5	15.5
19	23.0	15.0	18.5	19.0	12.0	15.5
20	22.5	16.5	19.5	17.5	13.0	15.0
21	23.5	17.5	20.5	14.0	11.0	12.5
22	24.0	17.5	20.5	14.0	8.5	11.0
23	24.0	17.0	20.5	16.0	10.0	12.5
24	23.0	18.0	20.5	14.0	11.5	12.5
25	23.5	17.5	20.5	14.5	8.5	11.5
26	24.0	17.5	20.5	13.5	9.5	11.5
27	24.0	18.0	21.0	12.5	11.0	12.0
28	24.5	18.0	21.5	14.5	8.5	11.5
29	24.5	18.0	21.5	15.5	10.0	13.0
30	24.0	18.5	21.0	14.5	11.0	13.0
31	24.5	18.0	21.0	---	---	---
MONTH	25.5	11.5	19.5	25.0	8.5	16.0

MISSOURI RIVER MAIN STEM

06115200 MISSOURI RIVER NEAR LANDUSKY, MT

LOCATION.--Lat 47°37'51", long 108°41'13" (NAD 27), in NW$^1/_4$NE$^1/_4$ sec.31, T.22 N., R.24 E., Fergus County, Hydrologic Unit 10040104, Fort Peck Game Range, on right bank 380 ft upstream from bridge on U.S. Highway 191, 0.9 mi upstream from Armells Creek, 20 mi south of Landusky, and at river mile 1,921.61.

DRAINAGE AREA.--40,987 mi^2. Area at site used prior to Dec. 13, 1968, 40,763 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1934 to current year. Prior to October 1968, published as "at powerplant ferry, near Zortman."

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,239.96 ft (NGVD 29) (State Highway bench mark). Prior to Feb. 7, 1935, nonrecording gage, and Feb. 7, 1935, to Dec. 12, 1968, water-stage recorder, at site 16.5 mi upstream at datum 33.06 ft higher.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Flow regulated by 24 smaller irrigation reservoirs and powerplants, Clark Canyon Reservoir (station number 06015300), Canyon Ferry Lake (station number 06058500), and Lake Elwell (station number 06101300). Diversions for irrigation of about 870,400 acres upstream from station. U. S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3710	4100	e4100	e3900	e3800	e3200	e4700	4520	6500	12800	5200	5160
2	3690	4060	e4200	e3800	e3900	e3500	e4700	4560	8420	13000	4970	5180
3	3680	4110	e4200	e3700	e4100	e4100	e4300	4550	10100	12800	4930	5140
4	3710	4080	e4300	e3800	e4300	e4400	e4200	4490	9750	11900	4960	5550
5	3870	4070	e4200	e3900	e4500	e4400	e4300	4550	9570	11500	4840	5090
6	3870	4100	e4200	e4200	e4700	e4500	e4400	4550	9330	10800	11400	5320
7	3790	4090	e4200	e4400	e4700	e4600	e4500	4600	8590	11100	5790	5060
8	3770	4140	e4300	e4600	e4700	e4400	e4500	4700	7880	12700	7030	5070
9	3820	4090	e4200	e4600	e4600	e3900	e4500	4760	7990	13600	10300	5210
10	3790	4070	e4100	e4600	e4500	e3500	4900	4750	9640	11400	6980	5340
11	3810	4120	e4100	e4800	e4700	e3600	4900	5000	11200	11200	6360	5450
12	3930	4130	e4200	e4700	e4700	e4000	4940	5000	13100	9720	5770	5490
13	3830	4190	e4100	e4600	e4600	e4300	4820	4890	16700	9110	6000	5320
14	3910	4110	e4000	e4400	e4500	e4700	4620	4640	18500	8410	5830	5320
15	4000	4170	e3900	e4200	e4400	e4900	4490	4490	18200	8330	5430	4960
16	3930	4170	e4100	e4300	e4400	e5100	4550	4460	18700	8030	5430	4920
17	3930	4160	e4300	e4400	e4600	e5100	4490	4450	18500	8090	5140	4850
18	4030	4080	e4100	e4000	e4800	e4900	4530	4570	18100	7440	5230	4880
19	4050	4070	e4000	e3800	e4700	e4500	4570	4570	17700	6830	4940	5100
20	4070	4120	e4000	e3700	e4300	e4000	4630	4630	17400	6180	5230	5110
21	4140	4090	e3900	e3800	e4200	e3800	4710	4850	17200	5760	5560	4880
22	3800	4150	e3900	e3900	e4100	e3400	4770	4940	16600	5370	5420	4870
23	3960	4150	e3600	e3900	e4000	e3400	4690	5520	17100	5520	5270	4850
24	3900	4160	e3300	e4200	e4100	e3300	4620	7030	14500	5530	5210	5030
25	4120	4340	e3300	e4400	e4100	e4100	4550	7610	13800	5390	5130	5060
26	4160	4300	e3400	e4200	e4000	e4800	4440	8160	15200	5130	5020	5190
27	4100	4190	e3700	e4000	e3800	e5100	4360	7720	15200	5130	4920	4910
28	4080	4330	e4100	e4100	e3500	e5200	4440	7170	14600	5330	5090	4910
29	4060	e4100	e4100	e4400	---	e5100	4520	7350	13800	5170	5370	4860
30	4250	e4100	e4000	e4200	---	e5000	4500	7200	13700	5240	5260	5320
31	4090	---	e3900	e3900	---	e4900	---	6570	---	5450	5130	---
TOTAL	121850	124140	124000	129400	121300	133700	137140	166850	407570	263960	179140	153400
MEAN	3931	4138	4000	4174	4332	4313	4571	5382	13590	8515	5779	5113
MAX	4250	4340	4300	4800	4800	5200	4940	8160	18700	13600	11400	5550
MIN	3680	4060	3300	3700	3500	3200	4200	4450	6500	5130	4840	4850
AC-FT	241700	246200	246000	256700	240600	265200	272000	330900	808400	523600	355300	304300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2002, BY WATER YEAR (WY)

MEAN	6546	6753	6629	6620	7141	8544	9571	14290	19510	10770	6600	6219
MAX	16480	13920	13180	10840	11380	19700	19240	30510	55270	33590	12620	12310
(WY)	1966	1966	1960	1979	1965	1978	1952	1975	1948	1975	1975	1965
MIN	3270	3581	3121	2805	2511	4313	4338	4860	4939	3956	2075	2501
(WY)	1935	1938	1937	1937	1936	2002	1961	1992	1977	1940	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1934 - 2002	
ANNUAL TOTAL	1614750		2062450			
ANNUAL MEAN	4424		5651		9125	
HIGHEST ANNUAL MEAN					15280	1975
LOWEST ANNUAL MEAN					4438	1937
HIGHEST DAILY MEAN	6500	Jul 22	18700	Jun 16	136000	Jun 6 1953
LOWEST DAILY MEAN	3300	Dec 24	3200	Mar 1	1220	Dec 13 1936
ANNUAL SEVEN-DAY MINIMUM	3590	Dec 21	3590	Dec 21	1620	Dec 9 1936
MAXIMUM PEAK FLOW			18900	Jun 16	a137000	Jun 3 1953
MAXIMUM PEAK STAGE			19.44	Jun 16	b34.17	Mar 22 1978
INSTANTANEOUS LOW FLOW					1120	Jul 8 1936
ANNUAL RUNOFF (AC-FT)	3203000		4091000		6611000	
10 PERCENT EXCEEDS	5150		9670		16200	
50 PERCENT EXCEEDS	4360		4570		7340	
90 PERCENT EXCEEDS	3730		3900		4440	

a--Gage height, 22.20 ft, from graph based on gage readings, site and datum then in use.
b--Backwater from ice jam.
e--Estimated.

06115200 MISSOURI RIVER NEAR LANDUSKY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: March 1979 to September 1981.
WATER TEMPERATURE: March to September 1979.
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1991, October 1991 to current year (seasonal records only, March through November).

REMARKS.--Missing data for November sample due to breakage in the lab. Daily sediment data not available from December to April due to ice cover. Unpublished records of instantaneous water temperature and conductance are available in files of District office. Prior to July 1972, sampling and record computations were under supervision of Corps of Engineers, U.S. Army.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1979-81): Maximum daily, 1,240 microsiemens per centimeter (µS/cm), June 20, 1979; minimum daily, 410 µS/cm, July 3, 1980.
WATER TEMPERATURE (water year 1979): Maximum, 24.0°C, on several days during June to August 1979; minimum, 0.5°C, on several days during March 1979.
SEDIMENT CONCENTRATION: Maximum daily mean, 27,400 mg/L, June 22, 1976; minimum daily mean, 2 mg/L, Dec. 21, 1983.
SEDIMENT LOAD: Maximum daily, 1,680,000 tons, June 22, 1976; minimum daily, 33 tons, Dec. 21, 1983.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATION: During period of collection, maximum daily mean, 26,000 mg/L, July 9 and Aug. 6; minimum daily mean, 56 mg/L, Oct. 16.
SEDIMENT LOAD: During period of seasonal collection, maximum daily, 952,000 tons, July 9; minimum daily, 595 tons, Oct. 16.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)
OCT 2001										
09...	1245	3830	486	18.5	12.0	52	84	869	<1	<1
NOV										
14...	1600	4100	480	--	5.0	37	74	819	--	--
APR 2002										
24...	1345	4620	480	--	9.5	68	199	2480	--	<1
MAY										
21...	1145	4810	483	--	17.5	71	231	3000	<1	3
JUN										
04...	1230	9820	405	21.0	16.5	69	809	21400	<1	<1
14...	1130	18600	588	--	14.0	77	3190	160000	<1	1
JUL										
09...	1630	11800	927	29.0	22.0	98	25300	805000	2	4

DATE	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
OCT 2001								
09...	22	76	90	92	93	93	96	100
NOV								
14...	--	--	--	--	--	--	--	--
APR 2002								
24...	5	73	96	100	100	--	--	--
MAY								
21...	33	95	100	--	--	--	--	--
JUN								
04...	4	55	91	98	100	100	--	--
14...	13	58	81	84	86	90	94	100
JUL								
09...	8	18	24	31	41	54	62	100

MISSOURI RIVER MAIN STEM

06115200 MISSOURI RIVER NEAR LANDUSKY, MT--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	OCTOBER MEAN CONCEN-TRATION (MG/L)	OCTOBER LOAD (TONS/DAY)	NOVEMBER MEAN CONCEN-TRATION (MG/L)	NOVEMBER LOAD (TONS/DAY)	DECEMBER MEAN CONCEN-TRATION (MG/L)	DECEMBER LOAD (TONS/DAY)	JANUARY MEAN CONCEN-TRATION (MG/L)	JANUARY LOAD (TONS/DAY)	FEBRUARY MEAN CONCEN-TRATION (MG/L)	FEBRUARY LOAD (TONS/DAY)	MARCH MEAN CONCEN-TRATION (MG/L)	MARCH LOAD (TONS/DAY)
1	81	811	67	742	---	---	---	---	---	---	---	---
2	76	758	70	768	---	---	---	---	---	---	---	---
3	74	736	69	766	---	---	---	---	---	---	---	---
4	74	742	67	737	---	---	---	---	---	---	---	---
5	76	794	67	735	---	---	---	---	---	---	---	---
6	76	794	66	731	---	---	---	---	---	---	---	---
7	77	789	66	728	---	---	---	---	---	---	---	---
8	78	794	65	726	---	---	---	---	---	---	---	---
9	77	794	64	707	---	---	---	---	---	---	---	---
10	70	717	63	693	---	---	---	---	---	---	---	---
11	64	659	67	746	---	---	---	---	---	---	---	---
12	63	668	68	759	---	---	---	---	---	---	---	---
13	64	662	72	814	---	---	---	---	---	---	---	---
14	63	665	72	800	---	---	---	---	---	---	---	---
15	59	637	71	800	---	---	---	---	---	---	---	---
16	56	595	70	788	---	---	---	---	---	---	---	---
17	57	605	67	752	---	---	---	---	---	---	---	---
18	63	686	63	695	---	---	---	---	---	---	---	---
19	68	743	60	660	---	---	---	---	---	---	---	---
20	72	791	59	656	---	---	---	---	---	---	---	---
21	72	806	61	673	---	---	---	---	---	---	---	---
22	76	780	61	684	---	---	---	---	---	---	---	---
23	95	1020	60	673	---	---	---	---	---	---	---	---
24	85	896	65	730	---	---	---	---	---	---	---	---
25	74	822	68	796	---	---	---	---	---	---	---	---
26	72	809	69	801	---	---	---	---	---	---	---	---
27	66	731	69	780	---	---	---	---	---	---	---	---
28	65	717	69	807	---	---	---	---	---	---	---	---
29	62	679	69	764	---	---	---	---	---	---	---	---
30	68	781	69	764	---	---	---	---	---	---	---	---
31	72	796	---	---	---	---	---	---	---	---	---	---
TOTAL	---	23277	---	22275	---	---	---	---	---	---	---	---

DAY	APRIL MEAN CONCEN-TRATION (MG/L)	APRIL LOAD (TONS/DAY)	MAY MEAN CONCEN-TRATION (MG/L)	MAY LOAD (TONS/DAY)	JUNE MEAN CONCEN-TRATION (MG/L)	JUNE LOAD (TONS/DAY)	JULY MEAN CONCEN-TRATION (MG/L)	JULY LOAD (TONS/DAY)	AUGUST MEAN CONCEN-TRATION (MG/L)	AUGUST LOAD (TONS/DAY)	SEPTEMBER MEAN CONCEN-TRATION (MG/L)	SEPTEMBER LOAD (TONS/DAY)
1	---	---	144	1760	495	8690	630	21800	275	3860	539	7500
2	---	---	156	1920	1100	25000	580	20300	251	3370	512	7160
3	---	---	178	2180	1440	39300	505	17500	250	3330	511	7100
4	---	---	174	2110	905	23800	460	14700	250	3350	575	8620
5	---	---	160	1960	730	18900	425	13200	580	7570	520	7150
6	---	---	132	1620	680	17100	420	12200	26000	801000	555	7970
7	---	---	132	1640	630	14600	480	14300	18800	294000	525	7170
8	---	---	219	2780	615	13100	14700	505000	20600	391000	470	6430
9	---	---	608	7820	600	12900	26000	952000	21800	607000	442	6210
10	715	9460	340	4360	3950	103000	6200	190000	3400	64000	420	6050
11	530	7010	200	2700	11600	351000	1300	39200	750	12900	396	5820
12	445	5930	184	2480	4290	151000	800	21000	735	11400	380	5630
13	472	6150	175	2310	3910	177000	700	17200	850	13800	365	5240
14	402	5020	166	2080	3160	158000	590	13400	621	9770	348	5000
15	295	3570	159	1930	2320	114000	4250	95600	600	8790	332	4450
16	260	3190	151	1820	2100	106000	3150	68300	600	8800	318	4220
17	239	2900	145	1740	1750	87500	2500	54600	595	8260	310	4060
18	207	2530	160	1980	1220	59800	1090	21900	580	8200	310	4080
19	191	2360	188	2320	970	46400	605	11200	554	7390	336	4620
20	205	2560	220	2750	870	40900	483	8060	590	8330	310	4280
21	207	2630	232	3040	820	38200	368	5720	665	9990	276	3640
22	222	2860	244	3260	780	34900	259	3750	705	10300	257	3380
23	281	3560	1320	19700	1960	90500	270	4020	689	9810	235	3080
24	230	2870	1400	26600	1550	60600	280	4180	662	9320	249	3380
25	180	2210	1600	32900	1050	39100	275	4000	638	8840	260	3550
26	160	1920	1280	28200	920	37700	270	3740	610	8270	292	4090
27	150	1770	1020	21300	735	30100	282	3910	607	8060	270	3580
28	150	1800	700	13600	770	30400	346	4980	638	8770	254	3370
29	152	1850	702	13900	685	25600	344	4810	666	9660	247	3240
30	148	1800	625	12200	730	26900	345	4880	645	9160	256	3680
31	---	---	515	9140	---	---	329	4840	585	8100	---	---
TOTAL	---	---	---	234100	---	1981990	---	2160290	---	2376400	---	153750

MISSOURI RIVER BASIN

06115270 ARMELLS CREEK NEAR LANDUSKY, MT

LOCATION.--Lat 47°36'38", long 108°41'41" (NAD 27), in NE$^1/_4$NW$^1/_4$SW$^1/_4$ sec.6, T.21 N., R.24 E., Fergus County, Hydrologic Unit 10040104, on right bank at downstream side of bridge on U.S. Highway 191, 1.5 mi south of Fred Robinson Bridge, 22 mi south of Landusky, and at river mile 1.1.

DRAINAGE AREA.--397 mi^2.

PERIOD OF RECORD.--February 2000 to current year.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,280 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. U. S.Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	0.00	0.00	7.0	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	8.7	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	e0.00	2.2	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	e0.50	1.9	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	e0.00	2.0	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	e0.00	1.9	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	e0.00	6.2	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	e0.00	8.4	0.00	0.00	0.00	2.0	0.00
9	0.00	0.00	0.00	0.00	0.00	e0.00	4.2	0.00	0.00	24	0.18	0.00
10	0.00	0.00	0.00	0.00	0.00	e0.00	1.8	0.00	0.06	5.1	40	0.00
11	0.00	0.00	0.00	0.00	0.00	e0.00	0.73	0.00	86	0.82	17	0.00
12	0.00	0.00	0.00	0.00	0.00	e0.00	0.22	0.00	25	0.03	6.1	0.00
13	0.00	0.00	0.00	0.00	0.00	e0.00	0.02	0.00	6.8	0.00	1.8	0.00
14	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	2.7	0.00	0.25	0.00
15	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	1.3	0.00	0.01	0.00
16	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.36	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.03	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	52	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	18	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	4.2	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	2.5	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	e2.0	0.00	0.00	0.62	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	e6.0	0.00	0.00	0.04	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	---	e11	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	---	16	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	---	0.00	0.00	---	7.1	---	0.00	---	0.00	0.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	42.60	45.27	0.00	199.61	29.95	67.34	0.00
MEAN	0.000	0.000	0.000	0.000	0.000	1.374	1.509	0.000	6.654	0.966	2.172	0.000
MAX	0.00	0.00	0.00	0.00	0.00	16	8.7	0.00	86	24	40	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	0.00	0.00	0.00	0.00	84	90	0.00	396	59	134	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2002, BY WATER YEAR (WY)

MEAN	0.000	0.000	0.000	0.000	0.778	1.672	0.735	0.136	5.036	11.95	1.030	0.000
MAX	0.000	0.000	0.000	0.000	2.28	3.11	1.51	0.41	8.45	32.1	2.17	0.000
(WY)	2001	2001	2001	2001	2000	2000	2002	2000	2001	2001	2002	2000
MIN	0.000	0.000	0.000	0.000	0.000	0.53	0.000	0.000	0.003	0.97	0.000	0.000
(WY)	2001	2001	2001	2001	2001	2001	2001	2001	2000	2002	2000	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 2000 - 2002	
ANNUAL TOTAL	1294.78		384.77			
ANNUAL MEAN	3.547		1.054		2.301	
HIGHEST ANNUAL MEAN					3.55	2001
LOWEST ANNUAL MEAN					1.05	2002
HIGHEST DAILY MEAN	582	Jul 18	86	Jun 11	582	Jul 18 2001
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	0.00	Feb 1 2000
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00	Oct 1	0.00	Feb 1 2000
MAXIMUM PEAK FLOW			192	Jun 23	a1440	Jul 18 2001
MAXIMUM PEAK STAGE			4.76	Jun 23	10.05	Jul 18 2001
ANNUAL RUNOFF (AC-FT)	2570		763		1670	
10 PERCENT EXCEEDS	1.4		0.29		0.98	
50 PERCENT EXCEEDS	0.00		0.00		0.00	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

a--On basis of slope-area measurement of peak flow.
e--Estimated.

06115300 DUVAL CREEK NEAR LANDUSKY, MT

LOCATION.--Lat 47°45'17", long 108°42'23" (NAD 27), in SW$^1/_4$NW$^1/_4$ SE$^1/_4$ sec.13, T.23 N., R.23 E., Phillips County, Hydrologic Unit 10040104, at culvert on U.S. Highway 191 at milepost 98, 10.0 miles north of Fred Robinson Bridge, and 11 mi southwest of Landusky.

DRAINAGE AREA.--3.3 mi^2.

PERIOD OF RECORD.--February 2000 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,900 ft (NGVD 29), from topographic map. Prior to Jan. 19, 2000, peak flow gage only at present site and datum.

REMARKS.--Records good except those days with flow, which are fair. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 660 ft^3/s, June 29, 1991, gage height, 13.83 ft, present site and datum. Site operated as crest-stage May 1963 to January 2000.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19	6.3	0.00
9	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	11	0.00
10	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.9	0.00	0.15	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.02	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.1	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	---	0.15	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	---	0.00	0.00	---	0.00	---	0.00	---	0.00	0.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	5.15	19.50	17.47	0.00
MEAN	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.172	0.629	0.564	0.000
MAX	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	2.9	19	11	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	0.00	0.00	0.00	0.00	0.8	0.00	0.00	10	39	35	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2002, BY WATER YEAR (WY)

MEAN	0.000	0.000	0.000	0.000	0.024	0.004	0.000	0.000	0.068	0.213	0.188	0.000
MAX	0.000	0.000	0.000	0.000	0.069	0.012	0.000	0.000	0.17	0.63	0.56	0.000
(WY)	2001	2001	2001	2001	2000	2002	2000	2000	2002	2002	2002	2000
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	2001	2001	2001	2001	2001	2000	2000	2000	2000	2000	2000	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR			FOR 2002 WATER YEAR			WATER YEARS 2000 - 2002		
ANNUAL TOTAL	1.23			42.50					
ANNUAL MEAN	0.003			0.116			0.060		
HIGHEST ANNUAL MEAN							0.12		2002
LOWEST ANNUAL MEAN							0.003		2001
HIGHEST DAILY MEAN	0.51	Jun	5	19	Jul	8	19	Jul	8 2002
LOWEST DAILY MEAN	0.00	Jan	1	0.00	Oct	1	0.00	Feb	1 2000
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan	1	0.00	Oct	1	0.00	Feb	1 2000
MAXIMUM PEAK FLOW				238	Jul	8	238	Jul	8 2002
MAXIMUM PEAK STAGE				6.55	Jul	8	6.55	Jul	8 2002
ANNUAL RUNOFF (AC-FT)	2.4			84			43		
10 PERCENT EXCEEDS	0.00			0.00			0.00		
50 PERCENT EXCEEDS	0.00			0.00			0.00		
90 PERCENT EXCEEDS	0.00			0.00			0.00		

e--Estimated.

MISSOURI RIVER BASIN

06115350 ROCK CREEK NEAR LANDUSKY, MT

LOCATION.--Lat 47°42'17", long 108°32'49" (NAD 27), in NW$^1/_4$NW$^1/_4$ NW$^1/_4$ sec.5, T.22 N., R.25 E., Phillips County, Hydrologic Unit 10040104, on left bank at Charles M. Russell National Wildlife Refuge boundary and 14 mi southeast of Landusky.

DRAINAGE AREA.--72.9 mi^2.

PERIOD OF RECORD.--November 1999 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,670 ft (NGVD 29), from topographic map.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	e0.00	e0.00	e0.00	e0.50	e2.0	1.3	0.00	0.00	0.00	0.00
2	0.00	0.00	e0.00	e0.00	e0.00	e0.50	e2.0	1.3	0.00	0.00	0.00	0.00
3	0.00	0.00	e0.00	e0.00	e0.00	e0.50	e2.0	1.1	0.48	0.00	0.00	0.00
4	0.00	0.00	e0.00	e0.00	e0.50	e0.50	e3.0	0.98	0.24	0.00	0.00	0.00
5	0.00	0.00	e0.00	e0.00	e0.50	e0.50	e5.0	1.6	0.00	0.00	0.00	0.00
6	0.00	0.00	e0.00	e0.00	e0.50	e0.50	5.1	2.3	0.00	0.00	0.00	0.00
7	0.00	0.00	e0.00	e0.00	e0.50	e0.50	5.1	2.5	0.00	0.00	0.00	0.00
8	0.00	0.00	e0.00	e0.00	e0.50	e0.50	5.0	2.6	0.00	90	0.00	0.00
9	0.00	0.00	e0.00	e0.00	e0.50	e0.50	4.3	3.2	2.0	88	0.00	0.00
10	0.00	0.00	e0.00	0.00	e0.50	e0.50	4.5	2.6	20	25	16	0.00
11	0.00	e0.00	e0.00	0.00	e0.50	e1.0	4.6	2.3	32	14	6.3	0.00
12	0.00	e0.00	e0.00	0.00	e0.50	e1.0	4.2	2.0	14	5.3	1.8	0.00
13	0.00	e0.00	0.00	0.00	e0.50	e1.0	4.0	1.6	7.9	2.7	0.38	0.00
14	0.00	0.00	0.00	0.00	e0.50	e1.0	3.9	1.1	5.7	1.3	0.09	0.00
15	0.00	0.00	0.00	0.00	e0.50	e1.0	3.0	1.00	3.6	0.63	0.00	0.00
16	0.00	0.00	0.00	e0.00	e1.0	e1.0	2.4	0.90	2.6	0.79	0.00	0.00
17	0.00	0.00	e0.00	e0.00	e1.0	e1.0	2.2	0.89	2.0	0.85	0.00	0.00
18	0.00	e0.00	e0.00	e0.00	e1.0	e1.0	1.9	0.85	1.6	0.52	0.00	0.00
19	0.00	e0.00	e0.00	e0.00	e1.0	e1.0	2.0	0.76	1.4	0.34	0.00	0.00
20	0.00	e0.00	e0.00	e0.00	e1.0	e1.0	1.8	0.68	1.3	0.08	0.00	0.00
21	0.00	e0.00	e0.00	e0.00	e1.0	e1.0	1.3	0.91	0.91	0.00	0.00	0.00
22	0.00	e0.00	e0.00	e0.00	e1.0	e1.0	1.3	1.9	0.80	0.00	0.00	0.00
23	0.00	e0.00	e0.00	e0.00	e1.0	e1.0	1.1	1.8	2.8	0.00	0.00	0.00
24	0.00	0.00	e0.00	e0.00	e1.0	e1.0	1.2	1.4	2.9	0.00	0.00	0.00
25	0.00	0.00	e0.00	e0.00	e1.0	e1.0	1.3	1.3	1.7	0.00	0.00	0.00
26	0.00	e0.00	e0.00	e0.00	e1.0	e1.0	1.3	1.2	1.1	0.00	0.00	0.00
27	0.00	e0.00	e0.00	e0.00	e1.0	e1.0	1.4	1.1	0.58	0.00	0.00	0.00
28	0.00	0.00	e0.00	e0.00	e0.50	e1.0	1.4	0.66	0.14	0.00	0.00	0.00
29	0.00	0.00	e0.00	e0.00	---	e1.0	1.3	0.49	0.00	0.00	0.00	0.00
30	0.00	e0.00	e0.00	e0.00	---	e2.0	1.7	0.18	0.00	0.00	0.00	0.00
31	0.00	---	e0.00	e0.00	---	e2.0	---	0.03	---	0.00	0.00	---
TOTAL	0.00	0.00	0.00	0.00	18.50	28.00	81.3	42.53	105.75	229.51	24.57	0.00
MEAN	0.000	0.000	0.000	0.000	0.661	0.903	2.710	1.372	3.525	7.404	0.793	0.000
MAX	0.00	0.00	0.00	0.00	1.0	2.0	5.1	3.2	32	90	16	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.50	1.1	0.03	0.00	0.00	0.00	0.00
AC-FT	0.00	0.00	0.00	0.00	37	56	161	84	210	455	49	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2002, BY WATER YEAR (WY)

MEAN	0.062	0.952	0.720	0.841	1.294	3.124	3.018	1.344	1.908	7.028	0.338	0.000
MAX	0.12	2.78	2.00	1.97	2.19	5.27	3.38	2.18	3.52	13.6	0.79	0.000
(WY)	2001	2000	2000	2000	2000	2001	2000	2000	2002	2000	2002	2000
MIN	0.000	0.000	0.000	0.000	0.66	0.90	2.71	0.48	0.87	0.072	0.016	0.000
(WY)	2002	2002	2002	2002	2002	2002	2002	2001	2000	2001	2001	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 2000 - 2002	
ANNUAL TOTAL	354.92		530.16			
ANNUAL MEAN	0.972		1.452		1.228	
HIGHEST ANNUAL MEAN					1.45	2002
LOWEST ANNUAL MEAN					1.00	2001
HIGHEST DAILY MEAN	12	Mar 9	90	Jul 8	115	Jul 8 2000
LOWEST DAILY MEAN	0.00	May 17	0.00	Oct 1	0.00	Jun 19 2000
ANNUAL SEVEN-DAY MINIMUM	0.00	May 17	0.00	Oct 1	0.00	Jun 19 2000
MAXIMUM PEAK FLOW			350	Jul 8	a1660	Jul 8 2000
MAXIMUM PEAK STAGE			5.08	Jul 8	6.99	Jul 8 2000
ANNUAL RUNOFF (AC-FT)	704		1050		889	
10 PERCENT EXCEEDS	3.5		2.2		2.8	
50 PERCENT EXCEEDS	0.00		0.00		0.00	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

a--On basis of slope-area measurement of peak flow.
e--Estimated.

MUSSELSHELL RIVER BASIN

06120500 MUSSELSHELL RIVER AT HARLOWTON, MT

LOCATION.--Lat 46°25'48", long 109°50'24" (NAD 27), in NE$^1/_4$ sec.28, T.8 N., R.15 E., Wheatland County, Hydrologic Unit 10040201, on left bank 350 ft downstream from bridge on U.S. Highway 191, 1.0 mi southwest of Harlowton, 6 mi upstream from American Fork, and at river mile 327.8.
DRAINAGE AREA.--1,125 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1907 to November 1929, March 1930 to December 1932, April to August 1933, February 1934 to current year. Monthly discharge only for some periods, published in WSP 1309.
REVISED RECORDS.--WSP 1309: 1912, 1915(M), 1918, 1925. WSP 1729: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 4,171.46 ft (NGVD 29) (levels by Morrison and Maierle, Inc.). Prior to Dec. 8, 1937, nonrecording gages at site 1.2 mi downstream at different datums. Dec. 8, 1937, to Aug. 26, 1955, nonrecording gage at bridge 300 ft upstream at different datums.
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Some regulation by Bair and Martinsdale Reservoirs. Diversions for irrigation of about 21,900 acres upstream from station of which about 21,400 acres are flood irrigated. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	28	e30	e15	e35	e30	e40	22	171	94	19	e12
2	3.6	29	e30	e25	e35	e35	e45	21	213	86	19	e12
3	3.4	29	e30	e35	e35	e40	e45	18	346	79	19	e12
4	3.4	28	e25	e35	e35	e40	e50	20	384	76	19	e12
5	4.0	28	e30	e35	e40	e35	49	21	321	72	24	e12
6	5.5	27	e30	e40	e40	e30	43	18	267	69	29	e12
7	6.9	28	e30	e45	e40	e20	45	21	223	66	33	e14
8	8.2	30	e35	e40	e40	e25	43	25	194	67	38	e14
9	9.5	30	e30	e35	e40	e30	40	27	189	64	50	e14
10	11	30	e25	e30	e35	e40	42	31	208	57	51	e14
11	11	30	e25	e30	e40	e45	40	34	211	51	48	e14
12	11	30	e30	e30	e40	e40	38	35	185	42	45	e14
13	11	32	e30	e25	e40	e35	37	33	184	33	42	e14
14	13	32	e30	e25	e45	e35	34	27	174	28	36	e14
15	14	30	e30	e25	e45	e30	37	23	186	24	28	e14
16	16	30	e30	e25	e45	e30	53	22	182	25	21	e14
17	17	30	e35	e25	e50	e30	47	25	177	31	20	e14
18	17	31	e30	e30	e50	e30	44	21	173	28	19	e14
19	18	33	e25	e30	e45	e25	40	22	184	25	17	e14
20	19	35	e25	e30	e50	e20	37	22	190	28	16	e14
21	19	35	e25	e30	e50	e25	34	25	154	28	15	e16
22	20	35	e25	e25	e55	e30	31	117	141	24	14	e18
23	21	34	e30	e25	e40	e30	30	178	210	12	13	e20
24	21	35	e30	e30	e35	e30	29	187	237	10	14	e20
25	21	37	e30	e35	e30	e40	26	164	190	13	14	e20
26	22	e35	e30	e30	e30	e50	26	140	140	14	14	e25
27	24	e35	e30	e20	e35	e50	26	128	110	14	14	e25
28	25	e30	e25	e20	e30	e45	26	124	107	14	e14	e25
29	25	e25	e20	e20	---	e40	23	134	107	20	e14	e30
30	27	e30	e15	e20	---	e45	20	156	101	24	e14	e30
31	28	---	e15	e30	---	e40	---	166	---	22	e14	---
TOTAL	459.5	931	860	895	1130	1070	1120	2007	5859	1240	747	497
MEAN	14.82	31.03	27.74	28.87	40.36	34.52	37.33	64.74	195.3	40.00	24.10	16.57
MAX	28	37	35	45	55	50	53	187	384	94	51	30
MIN	3.4	25	15	15	30	20	20	18	101	10	13	12
AC-FT	911	1850	1710	1780	2240	2120	2220	3980	11620	2460	1480	986

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1907 - 2002, BY WATER YEAR (WY)*

MEAN	74.15	78.14	67.37	59.00	65.78	113.2	175.9	406.0	506.9	161.4	75.93	63.37
MAX	226	176	206	250	190	500	632	1957	2467	751	292	290
(WY)	1919	1942	1976	1918	1996	1918	1943	1917	1917	1975	1993	1993
MIN	0.000	0.000	0.000	0.000	10.0	20.4	22.1	11.8	27.9	0.84	0.000	0.000
(WY)	1932	1932	1932	1932	1936	1935	1931	1931	1930	1936	1931	1931

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1907 - 2002*	
ANNUAL TOTAL	13421.02		16815.5			
ANNUAL MEAN	36.77		46.07		156.1	
HIGHEST ANNUAL MEAN					483	1917
LOWEST ANNUAL MEAN					21.1	1935
HIGHEST DAILY MEAN	447	Jun 19	384	Jun 4	6200	Jun 20 1975
LOWEST DAILY MEAN	0.00	Aug 29	3.4	Oct 3	0.00	Aug 4 1910
ANNUAL SEVEN-DAY MINIMUM	0.76	Aug 24	4.4	Oct 1	0.00	Aug 4 1910
MAXIMUM PEAK FLOW			398	Jun 4	7270	Jun 20 1975
MAXIMUM PEAK STAGE			2.84	Jun 4	10.01	Jun 20 1975
INSTANTANEOUS LOW FLOW			a3.4	Oct 2	0.01	Aug 29 2001
ANNUAL RUNOFF (AC-FT)	26620		33350		113100	
10 PERCENT EXCEEDS	57		113		360	
50 PERCENT EXCEEDS	30		30		75	
90 PERCENT EXCEEDS	5.9		14		25	

*--During periods of operation (1908-29, 1931-32, 1935 to current year)
a--Occurred Oct. 2-5.
e--Estimated.

MUSSELSHELL RIVER BASIN

06120500 MUSSELSHELL RIVER AT HARLOWTON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1987 to September 1991.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: May 2001 to current year (seasonal records).

INSTRUMENTATION.--Temperature recorder installed May 10, 2001.

REMARKS.--Missing data for May 22 and 23 due to equipment problems. Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records): Maximum, 30.0°C, July 13, 2002; minimum, 0.0°C, Apr. 1-4, 2002.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum, 30.0°C, July 13; minimum, 0.0°C, Apr. 1-4.

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	3.5	0.0	1.5	12.0	5.5	8.5	18.0	14.0	16.0	23.0	17.0	19.5
2	0.5	0.0	0.0	14.0	6.5	10.5	16.0	13.0	14.5	23.5	16.0	19.5
3	2.5	0.0	1.0	11.5	8.5	10.0	14.5	11.5	13.0	20.5	17.0	18.5
4	6.5	0.0	3.0	10.0	6.0	8.0	15.5	12.0	14.0	24.0	16.5	20.0
5	9.0	2.0	5.5	8.5	7.0	7.5	17.0	13.0	15.0	25.0	18.0	21.5
6	10.0	5.0	7.5	10.5	5.5	8.0	17.0	14.0	15.5	24.0	18.0	21.0
7	8.5	5.5	7.0	9.5	4.5	7.0	18.5	13.5	16.0	25.0	18.5	22.0
8	10.0	4.5	7.0	10.0	4.5	7.0	16.5	13.5	15.0	27.5	19.5	23.0
9	8.5	6.0	7.5	12.5	3.5	8.5	14.5	11.5	12.5	23.5	16.5	20.0
10	10.0	6.0	8.0	12.5	8.5	10.5	11.5	9.0	10.0	26.0	17.0	21.5
11	11.0	5.0	8.0	15.0	7.5	11.0	11.0	7.5	9.0	28.0	19.0	23.5
12	12.0	7.0	9.5	16.5	10.5	13.5	14.0	9.5	11.5	28.5	20.5	24.5
13	13.0	7.0	10.0	18.0	10.5	14.5	17.5	11.5	14.5	30.0	21.5	25.5
14	11.5	8.5	10.0	16.0	12.0	13.5	18.5	14.0	16.0	28.5	22.0	25.0
15	8.5	5.5	6.5	13.5	8.5	11.0	17.5	15.0	16.5	28.5	20.5	24.0
16	9.5	4.5	7.0	13.5	7.5	10.0	20.0	15.5	18.0	27.5	21.5	24.0
17	9.0	5.0	7.0	15.0	9.0	12.0	19.0	17.0	18.0	27.0	20.5	23.5
18	9.0	4.5	7.0	18.5	10.0	14.5	18.0	15.5	17.0	27.0	20.0	23.5
19	10.5	4.5	7.5	21.0	13.5	17.0	16.5	13.0	14.5	24.5	21.0	22.5
20	10.5	5.0	7.5	20.5	14.0	17.0	18.0	12.5	15.5	23.5	18.5	21.0
21	11.0	5.5	8.5	20.0	15.0	17.0	19.5	15.0	17.5	24.5	18.0	21.0
22	13.0	7.0	10.0	---	---	---	19.0	16.0	17.5	24.0	18.0	20.5
23	11.5	7.5	9.0	---	---	---	19.0	15.0	17.0	26.0	18.0	21.5
24	8.5	4.5	6.5	14.5	8.5	11.5	21.5	17.0	19.0	25.0	18.5	22.0
25	8.0	3.5	5.5	14.0	10.5	12.0	24.0	18.0	21.0	24.5	18.5	21.5
26	10.0	3.5	6.5	16.5	11.0	13.5	26.0	19.5	22.5	24.0	17.5	20.5
27	8.0	5.0	6.5	17.5	13.0	15.0	26.5	21.0	23.5	20.0	17.5	18.5
28	11.0	4.5	7.5	18.0	13.5	16.0	24.5	20.0	22.5	22.0	15.5	18.5
29	12.5	5.5	9.0	17.0	14.0	15.5	21.5	18.5	20.0	23.0	16.5	19.5
30	10.0	6.5	8.5	15.5	14.0	15.0	23.5	16.5	19.5	23.5	17.0	20.0
31	---	---	---	18.0	12.5	15.5	---	---	---	23.5	17.0	20.0
MONTH	13.0	0.0	7.0	---	---	---	26.5	7.5	16.5	30.0	15.5	21.5

MUSSELSHELL RIVER BASIN

06120500 MUSSELSHELL RIVER AT HARLOWTON, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER	
1	22.0	14.5	18.5	18.5	15.0	16.0
2	19.0	15.0	17.0	19.5	13.5	16.5
3	21.0	14.0	17.5	21.5	15.0	18.0
4	22.5	16.0	19.0	21.5	16.5	18.5
5	25.0	17.5	21.0	21.5	16.0	18.5
6	25.5	19.0	22.0	18.5	16.0	17.0
7	21.0	18.0	19.5	17.5	15.5	16.0
8	18.0	14.5	16.5	17.5	13.5	15.5
9	18.5	12.0	15.0	17.5	12.0	15.0
10	21.5	14.0	18.0	18.5	12.5	16.0
11	20.0	16.0	18.0	19.5	13.5	17.0
12	20.0	14.0	17.0	19.0	14.5	17.0
13	22.0	14.5	18.0	19.0	14.5	17.0
14	20.0	15.5	17.5	19.5	14.0	17.0
15	21.0	13.0	17.0	19.5	15.0	17.0
16	19.5	14.5	17.0	19.5	15.5	17.5
17	19.0	11.5	15.5	17.5	14.0	15.5
18	20.5	14.5	17.5	14.5	12.0	13.5
19	21.0	13.5	17.5	15.0	10.5	13.0
20	22.0	15.0	18.5	13.5	11.0	12.5
21	20.0	16.0	18.0	13.0	9.5	11.0
22	20.5	15.5	18.0	12.5	8.0	10.5
23	22.0	15.0	18.0	13.5	8.5	11.0
24	19.5	15.5	17.5	13.5	10.0	11.5
25	21.0	15.0	18.0	13.5	10.0	12.0
26	21.0	15.5	18.5	12.0	9.0	11.0
27	19.0	17.0	18.0	11.0	8.5	9.5
28	19.5	15.0	17.5	12.0	8.0	10.0
29	21.0	15.0	18.5	13.0	8.5	11.0
30	21.5	16.0	19.0	12.5	9.5	11.0
31	19.5	16.5	18.0	---	---	---
MONTH	25.5	11.5	18.0	21.5	8.0	14.5

MUSSELSHELL RIVER BASIN

06123030 MUSSELSHELL RIVER ABOVE MUD CREEK, NEAR SHAWMUT, MT

LOCATION.--Lat 46°19'07", long 109°27'35" (NAD 27), in NE$^1/_4$SW$^1/_4$SW$^1/_4$ sec.34, T.7 N., R.18 E., Wheatland County, Hydrologic Unit 10040201, on left bank at private road bridge, 14.1 mi downstream from diversion to Deadmans Basin Reservoir, 3.5 mi southeast of Shawmut, 3.7 mi west of Barber, and at river mile 294.8.

DRAINAGE AREA.--1,513 mi^2.

PERIOD OF RECORD.--June 1998 to current season (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 3,780 ft (NGVD 29).

REMARKS.--Seasonal records good except those for estimated daily discharges, which are fair. Diversions for irrigation of about 27,000 acres upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				2.9	3.7	114	72	2.1	11	27		
2				3.3	3.5	130	70	1.7	9.8	26		
3				2.8	3.3	201	73	1.9	9.7	30		
4				3.0	3.3	299	70	2.0	9.1	29		
5				3.5	3.7	297	58	1.9	8.4	30		
6				3.7	4.1	248	53	1.9	10	35		
7				3.9	5.3	208	57	1.9	12	37		
8				4.1	5.6	166	54	5.7	12	37		
9				4.2	6.3	157	45	9.4	12	35		
10				4.7	6.6	172	38	8.3	11	22		
11				4.5	7.4	196	29	8.8	11	16		
12				4.3	9.5	199	21	8.4	11	24		
13				4.2	7.5	178	15	8.1	10	32		
14				4.2	6.4	164	9.2	6.4	9.9	34		
15				4.3	5.3	151	7.0	6.3	9.7	34		
16				4.5	4.9	167	7.8	6.0	9.4	36		
17				4.1	5.0	162	14	5.3	9.3	35		
18				4.4	4.9	161	15	6.1	10	34		
19				4.3	5.0	154	15	5.7	11	33		
20				4.1	5.0	162	13	5.9	e13	33		
21				4.0	5.0	161	13	5.3	e12	34		
22				3.7	6.0	134	14	6.3	e11	36		
23				3.9	52	137	13	5.6	e11	36		
24				3.8	162	208	11	3.7	e13	39		
25				3.8	169	203	10	17	e15	44		
26				3.7	138	159	9.4	7.4	14	46		
27				4.0	115	110	9.1	12	18	48		
28				3.9	105	80	12	14	19	47		
29				3.9	82	77	9.9	13	22	46		
30				3.7	91	81	9.5	12	26	44		
31				---	91	---	5.1	11	---	36		
TOTAL				117.4	1122.3	5036	852.0	211.1	370.3	1075		
MEAN				3.913	36.20	167.9	27.48	6.810	12.34	34.68		
MAX				4.7	169	299	73	17	26	48		
MIN				2.8	3.3	77	5.1	1.7	8.4	16		
AC-FT				233	2230	9990	1690	419	734	2130		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1998 - 2002

MEAN	17.92	41.34	132.0	63.78	30.91	28.94	30.51
MAX	33.5	109	279	201	97.8	70.8	65.4
(WY)	2000	1999	1998	1998	1998	1998	1999
MIN	3.91	8.96	14.4	9.88	1.68	1.38	3.48
(WY)	2002	2001	2000	2000	2000	2000	2002

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1998 - 2002	
HIGHEST DAILY MEAN	299	Jun 04	661	Jun 22 1998
LOWEST DAILY MEAN	1.7	Aug 02	0.18	Sep 28 2001
MAXIMUM PEAK FLOW	338	Jun 04	672	Jun 22 1998
MAXIMUM PEAK STAGE	3.75	Jun 04	4.57	Jun 22 1998

e--Estimated.

MUSSELSHELL RIVER BASIN

06126050 MUSSELSHELL RIVER NEAR LAVINA, MT

LOCATION.--Lat 46°17'34", long 108°53'31" (NAD 27), in SW$^1/_4$SW$^1/_4$SE$^1/_4$ sec. 6, T.6 N., R.23 E., Golden Valley County, Hydrologic Unit 10040201, on left bank, at private bridge 2.2 mi east of Lavina, 4.4 mi downstream from Big Coulee Creek, and at river mile 245.7.

DRAINAGE AREA.--2,970 mi^2.

PERIOD OF RECORD.--March 1992 to current year (seasonal record only).

GAGE.--Water-stage recorder. Elevation of gage is 3,400 ft (NGVD 29).

REMARKS.--Records good Some regulation by Bair (station number 06116500), Martinsdale (station number 06119000), and Deadman's Basin (station number 06122500) Reservoirs. Diversions for irrigation of about 31,900 acres upstream from station, of which about 29,700 acres is flood irrigated. Several observations of water temperature and specific conductance were made during the year. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				33	1.5	289	61	12	3.9	7.5		
2				28	1.5	305	84	9.8	3.7	12		
3				22	1.3	296	69	7.0	3.8	13		
4				19	0.74	325	59	5.5	5.1	14		
5				22	0.43	364	76	4.5	1.5	16		
6				20	0.73	327	60	3.6	4.0	14		
7				22	4.2	250	54	2.7	4.6	14		
8				23	4.3	218	58	3.4	4.2	15		
9				18	3.3	185	57	3.2	4.5	16		
10				15	2.4	199	54	3.2	5.0	16		
11				13	1.7	184	50	4.7	7.1	16		
12				13	1.4	166	46	3.3	6.8	12		
13				11	1.1	158	40	2.3	6.6	11		
14				7.3	1.6	136	32	1.5	5.2	13		
15				7.0	0.91	119	26	1.2	5.8	16		
16				9.1	0.60	103	23	0.66	3.8	17		
17				5.8	0.46	123	21	0.64	1.0	18		
18				11	0.33	127	20	0.26	1.3	18		
19				14	1.2	128	21	0.24	1.5	17		
20				9.1	1.0	116	19	0.05	3.4	16		
21				4.3	0.86	122	17	0.33	3.1	16		
22				2.8	0.48	139	18	0.47	2.7	17		
23				2.8	1.8	178	18	1.1	2.5	19		
24				2.8	1.4	143	18	2.5	2.1	20		
25				2.9	88	203	16	3.9	2.5	21		
26				2.4	125	188	15	2.8	2.8	23		
27				3.0	99	157	15	5.1	2.4	26		
28				2.8	80	108	17	1.1	6.0	31		
29				2.1	154	87	16	1.1	8.0	31		
30				1.7	266	78	16	2.2	7.4	28		
31				---	292	---	14	2.8	---	40		
TOTAL				349.9	1139.24	5521	1110	93.15	122.3	563.5		
MEAN				11.66	36.75	184.0	35.81	3.005	4.077	18.18		
MAX				33	292	364	84	12	8.0	40		
MIN				1.7	0.33	78	14	0.05	1.0	7.5		
AC-FT				694	2260	10950	2200	185	243	1120		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1992 - 2002

MEAN	115	323	559	325	199	144	92.6
MAX	466	920	2735	1063	507	525	335
(WY)	1996	1997	1997	1997	1993	1993	1994
MIN	1.7	0.33	67.8	14	0.05	1.0	0.87
(WY)	2002	2002	2001	2002	2002	2000	2002

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1992 - 2003	
HIGHEST DAILY MEAN	364	Jun 5	5850	Jun 14 1997
LOWEST DAILY MEAN	0.05	Aug 20	0.00	Sep 26 2001
MAXIMUM PEAK FLOW	372	Jun 5	6220	Jun 14 1997
MAXIMUM PEAK STAGE	3.64	Jun 5	11.13	Jun 14 1997

e--Estimated.

MUSSELSHELL RIVER BASIN

06126500 MUSSELSHELL RIVER NEAR ROUNDUP, MT

LOCATION.--Lat 46°25'41", long 108°34'19" (NAD 27), in NW$^1/_4$SE$^1/_4$SE$^1/_4$ sec. 22, T.8 N., R.25 E., Musselshell County, Hydrologic Unit 10040202, on left bank 20 ft downstream from Halfbreed Creek, 0.1 mi upstream from bridge on U.S. Highway 87, 2.0 mi southwest of Roundup, and at river mile 211.6.

DRAINAGE AREA.--4,023 mi^2.

PERIOD OF RECORD.--May 1946 to current year. Monthly discharge only from October 1947 to September 1949, published in WSP 1309.

REVISED RECORDS.--WSP 1086: 1946. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,188.15 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to Sept. 26, 1949, nonrecording gage at present site and datum.

REMARKS.--Records good except those for Oct. 1 to Nov 24, which are fair, and those for estimated daily discharge, which are poor. Some regulation by Bair (station number 06116500), Martinsdale (station number 06119000) and Deadman's Basin (station number 06122500) Reservoirs. Diversions for irrigation of about 39,100 acres upstream from station, of which about 35,900 acres are flood irrigated. Several observations of water temperature and specific conductance were made during the year. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.31	1.8	e5.0	e3.0	e3.0	e1.0	e4.0	3.1	294	18	9.1	0.07
2	0.21	2.0	e6.0	e4.0	e4.0	e1.0	e3.0	3.4	281	30	7.6	0.04
3	0.15	2.0	e6.0	e5.0	e5.0	e3.0	e3.0	3.4	280	36	6.4	0.02
4	0.21	2.0	e6.0	e5.0	e6.0	e8.0	e4.0	3.7	269	31	5.0	0.00
5	0.39	2.2	e5.0	e6.0	e7.0	e9.0	5.2	3.9	326	32	4.1	0.00
6	0.52	2.3	e6.0	e7.0	e7.0	e7.0	1.7	4.5	297	34	3.2	0.00
7	0.52	2.5	e6.0	e8.0	e8.0	e5.0	0.89	5.3	185	24	2.5	0.04
8	0.68	2.4	e6.0	e8.0	e7.0	e3.0	0.74	4.6	130	21	2.9	0.04
9	0.89	2.1	e6.0	e7.0	e7.0	e3.0	0.52	4.3	137	19	2.5	0.03
10	0.87	2.3	e5.0	e6.0	e7.0	e6.0	0.30	4.3	138	17	2.2	0.02
11	1.0	3.0	e4.0	e6.0	e8.0	e10	0.30	4.1	175	15	1.9	0.00
12	1.3	4.2	e4.0	e5.0	e7.0	e10	0.16	4.0	135	13	1.9	0.00
13	1.5	5.7	e4.0	e5.0	e7.0	e9.0	0.13	4.0	88	11	1.4	0.00
14	1.5	6.2	e5.0	e5.0	e8.0	e9.0	0.26	4.1	78	12	0.90	0.00
15	1.5	4.5	e3.0	e4.0	e8.0	e9.0	0.84	4.1	70	12	0.72	0.00
16	1.4	4.1	e3.0	e4.0	e8.0	e8.0	1.6	4.2	51	11	0.63	0.00
17	1.6	3.8	e3.0	e4.0	e8.0	e7.0	0.98	4.5	50	11	0.59	0.00
18	1.4	4.0	e3.0	e5.0	e8.0	e7.0	1.4	4.4	71	8.3	0.57	0.00
19	1.7	4.9	e3.0	e6.0	e8.0	e8.0	1.0	4.8	74	5.9	0.50	0.00
20	2.1	5.8	e3.0	e6.0	e7.0	e6.0	1.1	4.8	71	4.8	0.41	0.00
21	2.2	6.0	e3.0	e7.0	e8.0	e6.0	1.5	6.1	60	4.7	0.35	0.00
22	2.1	6.2	e2.0	e6.0	e9.0	e7.0	1.8	8.7	76	4.5	0.35	0.00
23	2.2	6.8	e2.0	e5.0	e5.0	e7.0	1.8	7.1	121	5.1	0.91	0.00
24	2.0	e6.0	e2.0	e5.0	e3.0	e8.0	1.9	8.0	102	5.6	5.4	0.00
25	2.2	e5.0	e2.0	e6.0	e0.90	e9.0	2.1	8.7	124	8.0	3.2	0.00
26	2.3	e4.0	e2.0	e7.0	e2.0	e10	2.3	67	155	9.1	1.8	0.00
27	2.3	e4.0	e2.0	e8.0	e2.0	e9.0	2.5	92	123	9.3	1.2	0.00
28	2.3	e4.0	e2.0	e5.0	e2.0	e8.0	2.5	77	78	9.0	0.85	0.00
29	2.2	e5.0	e1.0	e3.0	---	e7.0	2.7	66	44	9.1	0.48	0.00
30	2.4	e5.0	e1.0	e1.0	---	e6.0	3.0	216	21	10	0.22	0.00
31	2.4	---	e2.0	e2.0	---	e5.0	---	291	---	9.5	0.13	---
TOTAL	44.35	119.8	113.0	164.0	169.90	211.0	53.22	931.1	4104	449.9	69.91	0.26
MEAN	1.431	3.993	3.645	5.290	6.068	6.806	1.774	30.04	136.8	14.51	2.255	0.009
MAX	2.4	6.8	6.0	8.0	9.0	10	5.2	291	326	36	9.1	0.07
MIN	0.15	1.8	1.0	1.0	0.90	1.0	0.13	3.1	21	4.5	0.13	0.00
AC-FT	88	238	224	325	337	419	106	1850	8140	892	139	0.5

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2002, BY WATER YEAR (WY)

MEAN	78.91	74.83	68.07	65.40	96.60	197.6	183.7	420.7	672.9	298.6	191.4	128.1
MAX	335	242	283	222	414	1281	788	1811	4315	1308	563	504
(WY)	1994	1994	1976	1976	1971	1978	1975	1976	1967	1975	1993	1993
MIN	1.43	3.99	3.65	5.29	5.82	6.81	1.77	30.0	36.6	14.5	2.11	0.009
(WY)	2002	2002	2002	2002	1985	2002	2002	2002	2001	2002	2001	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1947 - 2002	
ANNUAL TOTAL	7216.14		6430.44			
ANNUAL MEAN	19.77		17.62		b206.6	
HIGHEST ANNUAL MEAN					608	1975
LOWEST ANNUAL MEAN					17.6	2002
HIGHEST DAILY MEAN	269	Jun 28	326	Jun 5	8180	Jun 8 1967
LOWEST DAILY MEAN	0.15	Aug 27	a0.00	Sep 4	0.00	Sep 4 2002
ANNUAL SEVEN-DAY MINIMUM	0.23	Sep 12	0.00	Sep 11	0.00	Sep 11 2002
MAXIMUM PEAK FLOW			342	Jun 5	c9610	Jun 18 1967
MAXIMUM PEAK STAGE			2.48	Jun 5	d13.73	Mar 9 1979
ANNUAL RUNOFF (AC-FT)	14310		12750		149700	
10 PERCENT EXCEEDS	61		35		438	
50 PERCENT EXCEEDS	6.0		4.1		100	
90 PERCENT EXCEEDS	0.69		0.22		20	

a--Many days in September of no flow.
b--Median of yearly mean discharges, 187 ft^3/s, 135,500 ac-ft.
c--Gage height, 12.45 ft.
d--Ice jam.
e--Estimated.

MUSSELSHELL RIVER BASIN

06127020 WILLOW CREEK ABOVE LMGA RESERVOIR, NEAR ROUNDUP, MT

LOCATION.--Lat 46°36'52", long 108°41'40" (NAD 27), in NW$^1/_4$NW$^1/_4$SW$^1/_4$ sec. 27, T.10 N., R.24 E., Musselshell County, Hydrologic Unit 10040202, on right bank, 0.8 mi upstream from Lake Mason Grazing Association Reservoir, and 12 miles northwest of Roundup.

DRAINAGE AREA.--124 mi^2.

PERIOD OF RECORD.--September 1995 to current year (seasonal records only).

GAGE.--Water-stage recorder. Datum of gage is 3,660 ft (NGVD 29).

REMARKS.--Seasonal records good. Numerous diversions upstream for irrigation. U. S. Geological Survey satellite telemeter at station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
4				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
5				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
6				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
7				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
8				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
9				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
10				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
11				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
12				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
13				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
14				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
15				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
16				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
17				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
18				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
19				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
20				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
21				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
22				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
23				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
24				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
25				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
26				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
27				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
28				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
29				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
30				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
31				---	0.00	---	0.00	0.00	---	0.00		
TOTAL				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
MEAN				0.000	0.000	0.000	0.000	0.000	0.000	0.000		
MAX				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
MIN				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT				0.00	0.00	0.00	0.00	0.00	0.00	0.00		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1995 - 2002

MEAN	1.021	0.938	2.723	1.420	0.197	0.051	0.480
MAX	3.33	4.25	13.1	6.04	1.36	0.20	1.82
(WY)	1996	1996	1997	1997	1997	1996	1998
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	2000	2000	2000	1999	1998	1998	1999

SUMMARY STATISTICS	FOR 2002 SEASON			SEASONS 1995 - 2002		
HIGHEST DAILY MEAN	a0.00	Apr	1	150	Jun	6 1997
LOWEST DAILY MEAN	0.00	Apr	1	b0.00	Aug	7 1996
ANNUAL SEVEN-DAY MINIMUM				0.00	Aug	7 1996
MAXIMUM PEAK FLOW				c607	Jun	6 1997
MAXIMUM PEAK STAGE				5.84	Jun	6 1997

a--No flow observed.
b--No flow many days most years.
c--From rating curve extended above 3.0 ft based on slope-area measurement of peak flow.

MUSSELSHELL RIVER BASIN

06127060 WILLOW CREEK AT U.S. CANAL, NEAR ROUNDUP, MT

LOCATION.--Lat 46°33'17", long 108°40'42" (NAD 27), in SW$^1/_4$SE$^1/_4$NE$^1/_4$ sec. 10, T.9 N., R.24 E., Musselshell County, Hydrologic Unit 10040202, on right bank, 12 miles northwest of Roundup.

DRAINAGE AREA.--141 mi^2.

PERIOD OF RECORD.--September 1995 to current year (seasonal records only).

GAGE.--Water-stage recorder. Datum of gage is 3,610 ft (NGVD 29).

REMARKS.--Seasonal records good. Regulation by Lake Mason Grazing Association Reservoir upstream from the gage. Numerous diversions upstream from station for irrigation. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
4				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
5				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
6				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
7				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
8				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
9				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
10				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
11				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
12				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
13				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
14				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
15				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
16				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
17				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
18				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
19				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
20				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
21				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
22				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
23				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
24				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
25				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
26				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
27				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
28				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
29				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
30				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
31				---	0.00	---	0.00	0.00	---	0.00		
TOTAL				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
MEAN				0.000	0.000	0.000	0.000	0.000	0.000	0.000		
MAX				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
MIN				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT				0.00	0.00	0.00	0.00	0.00	0.00	0.00		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1995 - 2002

MEAN	0.590	0.510	1.910	0.360	0.070	0.000	0.080
MAX	2.03	2.95	9.55	1.44	0.48	0.00	0.64
(WY)	1996	1996	1997	1997	1997	1995	1998
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	1999	1998	1998	1998	1996	1995	1996

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1995 - 2002	
HIGHEST DAILY MEAN	a0.00	Apr 1	33	Jun 7 1997
LOWEST DAILY MEAN	0.00	Apr 1	0.00	Aug 26 1995
MAXIMUM PEAK FLOW	0.00	Apr 1	39	Jun 7 1997
MAXIMUM PEAK STAGE	0.00	Apr 1	2.78	Jun 7 1997

a--No flow on all days.

MUSSELSHELL RIVER BASIN

06127500 MUSSELSHELL RIVER AT MUSSELSHELL, MT

LOCATION.--Lat 46°31'23", long 108°06'30" (NAD 27), in SE$^1/_4$SW$^1/_4$SW$^1/_4$ sec.20, T.9 N., R.29 E., Musselshell County, Hydrologic Unit 10040202, on left bank 0.9 mi upstream from Hawk Creek, 1 mi west of Musselshell, and at river mile 164.5.

DRAINAGE AREA.--4,568 mi^2.

PERIOD OF RECORD.--August 1928 to September 1932 (no records December to February for the water years 1930-31), August 1945 to September 1979, October 1982 to September 1983, October 1983 to current season (seasonal record only). Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,984.72 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to Oct. 8, 1949, nonrecording gage at site 1 mi downstream at different datums.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some regulation by Bair (station number 06116500), Martinsdale (station number 06119000), and Deadman's Basin (station number 06122500) Reservoirs. Diversions for irrigation of about 44,600 acres upstream from station, of which about 39,400 acres is flood irrigated. U. S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				15	0.48	143	19	0.17	0.00	0.00		
2				20	0.43	145	8.0	1.4	0.00	0.00		
3				20	0.44	137	8.3	3.2	0.00	0.00		
4				20	0.40	140	28	3.7	0.00	0.00		
5				20	0.61	139	27	3.5	0.00	0.00		
6				15	1.1	169	25	2.6	0.00	0.00		
7				2.8	1.6	145	27	2.1	0.00	0.00		
8				0.81	1.3	90	24	2.2	0.00	0.00		
9				0.82	0.85	60	18	3.3	0.00	0.00		
10				0.75	0.81	74	17	2.8	0.00	0.00		
11				0.58	0.87	93	14	1.5	0.00	0.00		
12				0.52	0.80	130	10	0.85	0.00	0.00		
13				0.60	0.67	88	5.5	0.39	0.00	0.00		
14				0.56	0.63	44	3.1	0.15	0.00	8.8		
15				0.65	0.57	35	2.3	0.00	0.00	12		
16				1.3	0.46	22	2.5	0.00	0.00	11		
17				0.82	0.42	18	4.9	0.00	0.00	9.0		
18				1.1	0.30	15	3.7	0.00	0.00	14		
19				0.80	0.29	32	2.5	0.00	0.00	19		
20				0.68	0.22	31	1.9	0.00	0.00	20		
21				0.61	0.22	31	1.6	0.00	0.00	20		
22				0.56	0.88	22	1.7	0.00	0.00	20		
23				0.56	0.72	14	1.7	0.00	0.00	22		
24				0.57	0.33	49	1.4	0.00	0.00	25		
25				0.59	0.30	49	1.5	0.00	0.00	25		
26				0.57	0.27	67	1.4	0.00	0.00	26		
27				0.61	0.30	105	2.2	0.00	0.00	26		
28				0.65	35	86	2.9	0.00	0.00	26		
29				0.54	37	54	1.5	0.00	0.00	31		
30				0.46	31	44	0.81	0.00	0.00	e24		
31				---	72	---	0.48	0.00	---	e22		
TOTAL				128.51	191.27	2271	268.89	27.86	0.00	360.80		
MEAN				4.284	6.170	75.70	8.674	0.899	0.000	11.64		
MAX				20	72	169	28	3.7	0.00	31		
MIN				0.46	0.22	14	0.48	0.00	0.00	0.00		
AC-FT				255	379	4500	533	55	0.00	716		

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1983 AND SEASONS 1984 - 2002*

MEAN	70.97	107.8	273.4	191.5	356.3	578.6	237.9	140.4	107.4	75.64	76.49	77.48
MAX	222	460	1356	859	1670	4223	1376	534	477	328	236	269
(WY)	1976	1971	1979	1975	1976	1967	1975	1993	1993	1994	1976	1976
MIN	0.000	0.000	0.000	0.000	0.041	12.7	1.22	0.36	0.49	0.000	0.000	0.000
(WY)	1932	1932	1932	2001	1931	1931	1930	1931	1931	1932	1932	1932

SUMMARY STATISTICS	FOR 2002 SEASON		WATER YEARS 1929 - 1983**		SEASONS 1984 - 2002***	
ANNUAL MEAN			215.0			
HIGHEST ANNUAL MEAN			609	1975		
LOWEST ANNUAL MEAN			34.1	1961		
HIGHEST DAILY MEAN	169	Jun 6	8600	Jun 19 1967	6270	Jun 16 1997
LOWEST DAILY MEAN	.00	Many days	.00	Sep 1 1929	0.00	Aug 14 2001
ANNUAL SEVEN-DAY MINIMUM			.00	Sep 8 1929	0.00	Aug 14 2001
MAXIMUM PEAK FLOW	186	Jun 6	a9850	Jun 19 1967	6420	Jun 16 1997
MAXIMUM PEAK STAGE	3.45	Jun 6	b12.96	Mar 19 1979	11.25	Jun 16 1997
ANNUAL RUNOFF (AC-FT)			155800			
10 PERCENT EXCEEDS			450			
50 PERCENT EXCEEDS			100			
90 PERCENT EXCEEDS			17			

*--During period of operation.
**--During period of continuous operation 1928-29, 1931-32, 1945-79, 1982-83).
***--Seasonal records October 1983 to current season.
a--Gage height, 11.57 ft.
b--Ice jam.
e--Estimated.

MUSSELSHELL RIVER BASIN

06130500 MUSSELSHELL RIVER AT MOSBY, MT

LOCATION.--Lat 46°59'41", long 107°53'18" (NAD 27), in SW$^1/_4$NW$^1/_4$NW$^1/_4$ sec.11, T.14 N., R.30 E., Petroleum County, Hydrologic Unit 10040205, on right bank, downstream side of bridge on State Highway 20, 0.3 mi west of Mosby, 10.9 mi downstream from Flatwillow Creek, and at river mile 60.0.

DRAINAGE AREA.--7,846 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May to November 1929, March 1930 to September 1932, February 1934 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1559: 1935-36. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,493.23 ft (NGVD 29). Dec. 6, 1962 to Mar. 14, 1966, water-stage recorder at site 900 ft downstream at different datum. Mar. 15, 1966 to Dec. 11, 1973, water-stage recorder and nonrecording gages at site 400 ft downstream at same datum. Dec. 12, 1973 to Oct. 1, 1981, nonrecording gage at site 400 ft downstream at same datum. Oct. 1, 1981 to July 25, 1995, water-stage recorder at site 400 ft upstream from bridge at datum 2.67 ft higher. See WSP 2116 for history of changes prior to 1962.

REMARKS.--Water-discharge records fair except those for estimated daily discharges, which are poor. Some regulation by Bair (station number 06116500), Martinsdale (station number 06119000) and Deadman's Basin (station number 06122500) Reservoirs. Diversions for irrigation of about 47,000 acres upstream from station. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.61	e0.50	e0.00	e0.00	e0.00	e5.0	2.9	0.08	4.9	0.00	0.00
2	0.00	0.72	e0.60	e0.05	e0.00	e0.00	e5.0	2.3	0.95	3.5	0.00	0.00
3	0.00	1.3	e0.70	e0.10	e0.00	e0.10	e5.0	2.4	0.48	3.1	0.00	0.00
4	0.00	1.3	e0.40	e0.10	e0.00	e0.50	e10	1.7	5.0	3.2	0.00	0.00
5	0.00	1.3	e0.20	e0.05	e0.00	e2.0	e20	1.6	13	4.8	0.00	0.00
6	0.00	1.3	e0.10	e0.05	e0.00	e1.0	e40	2.7	3.2	2.2	0.00	5.4
7	0.00	1.3	e0.10	e0.00	e0.05	e0.50	27	4.3	0.96	1.8	0.00	9.6
8	0.00	1.3	e0.20	e0.00	e0.00	e0.50	13	7.6	1.5	1.4	0.15	0.26
9	0.00	1.3	e0.20	e0.00	e0.00	e0.50	5.4	9.9	4.2	2.1	0.20	0.00
10	0.00	1.1	e0.10	e0.00	e0.00	e20	3.1	12	25	1.0	0.00	0.00
11	0.00	0.00	e0.05	e0.00	e0.00	e15	0.17	9.2	13	0.44	0.00	0.00
12	0.00	0.00	e0.05	e0.00	e0.05	e10	0.00	5.0	8.3	0.07	0.00	0.00
13	0.00	0.00	e0.05	e0.00	e0.00	e9.0	0.00	3.2	4.7	0.00	0.00	0.00
14	0.00	0.00	e0.10	e0.00	e0.00	e8.0	0.25	1.9	4.2	0.00	0.00	0.00
15	0.00	0.00	e0.05	e0.05	e0.00	e7.0	2.1	1.2	2.3	0.00	0.00	0.00
16	0.00	0.00	e0.05	e0.05	e0.00	e6.0	4.4	1.4	4.3	0.25	0.05	0.00
17	0.05	0.09	e0.10	e0.10	e0.00	e5.0	2.5	1.3	3.0	0.48	0.01	0.00
18	0.00	0.02	e0.05	e0.10	e0.00	e4.0	2.6	0.56	3.8	0.11	0.00	0.00
19	0.00	0.00	e0.05	e0.10	e0.00	e3.0	6.5	0.13	6.1	0.00	0.00	0.00
20	0.00	0.00	0.00	e0.05	e0.00	e2.0	25	0.02	1.8	0.00	0.00	0.00
21	0.00	0.15	0.00	e0.05	e0.05	e1.0	13	0.01	0.86	0.63	0.00	0.00
22	0.00	0.64	e0.05	e0.05	e0.10	e5.0	7.7	0.25	286	0.46	0.00	0.00
23	0.05	1.1	e0.05	e0.05	e0.05	e30	6.6	0.46	1080	0.01	0.00	0.00
24	0.14	1.3	e0.05	e0.10	e0.00	e25	5.2	0.03	451	0.00	0.00	0.00
25	0.00	1.3	0.00	e0.20	e0.00	e20	4.9	0.28	165	0.00	0.00	0.00
26	0.00	e1.0	0.00	e0.10	e0.00	e15	4.0	0.22	100	0.00	0.00	0.00
27	0.00	e0.50	0.00	e0.05	e0.00	e10	4.0	0.10	46	0.00	50	0.00
28	0.18	e0.20	e0.00	e0.00	e0.00	e9.0	3.5	0.15	25	0.00	27	0.00
29	0.62	e0.30	e0.05	e0.00	---	e8.0	3.3	0.34	9.7	0.00	2.0	0.00
30	0.63	e0.40	e0.05	e0.00	---	e7.0	3.0	0.19	5.1	0.00	0.00	e0.60
31	0.63	---	e0.05	e0.00	---	e6.0	---	0.06	---	0.00	0.00	---
TOTAL	2.30	18.53	3.95	1.40	0.30	230.10	232.22	73.40	2274.53	30.45	79.41	15.86
MEAN	0.074	0.618	0.127	0.045	0.011	7.423	7.741	2.368	75.82	0.982	2.562	0.529
MAX	0.63	1.3	0.70	0.20	0.10	30	40	12	1080	4.9	50	9.6
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.08	0.00	0.00	0.00
AC-FT	4.6	37	7.8	2.8	0.6	456	461	146	4510	60	158	31

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2002, BY WATER YEAR (WY)*

MEAN	80.83	80.21	72.02	77.55	174.7	459.4	286.9	527.6	881.6	323.0	114.2	114.2
MAX	478	337	278	376	1858	4658	1917	3772	4967	2153	870	787
(WY)	1994	1994	1979	1997	1971	1978	1979	1975	1967	1975	1993	1986
MIN	0.000	0.000	0.000	0.000	0.000	0.000	3.14	0.000	1.91	0.000	0.000	0.000
(WY)	1932	1932	1931	1932	1932	1932	1931	1931	1935	1961	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1931 - 2002*	
ANNUAL TOTAL	5377.20		2962.45			
ANNUAL MEAN	14.73		8.116		b268.1	
HIGHEST ANNUAL MEAN					1089	1978
LOWEST ANNUAL MEAN					8.12	2002
HIGHEST DAILY MEAN	1330	Jun 14	1080	Jun 23	15700	Jun 18 1944
LOWEST DAILY MEAN	0.00	May 13	a0.00	Oct 1	0.00	Oct 1 1930
ANNUAL SEVEN-DAY MINIMUM	0.00	May 21	0.00	Oct 1	0.00	Oct 1 1930
MAXIMUM PEAK FLOW			2240	Jun 22	c18000	Jun 18 1944
MAXIMUM PEAK STAGE			6.29	Jun 22	d15.10	Mar 12 1979
ANNUAL RUNOFF (AC-FT)	10670		5880		194200	
10 PERCENT EXCEEDS	21		8.0		588	
50 PERCENT EXCEEDS	1.3		0.10		84	
90 PERCENT EXCEEDS	0.00		0.00		0.30	

*--During period of operation (1931-1932, 1935 to current year).
a--No flow occurred on part or all of many days.
b--Median of yearly mean discharge, 200 ft^3/s, 144,900 acre-ft/year.
c--Gage height, 14.43 ft, from rating extension above 10,000 ft^3/s.
d--From floodmark, backwater from ice jam.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.
PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1974 to September 1981.
WATER TEMPERATURE: October 1974 to September 1979, May 2000 to current year (seasonal records only).
SUSPENDED-SEDIMENT DISCHARGE: October 1982 to September 1991, October 1991 to 1995 (seasonal records only).
INSTRUMENTATION.--Temperature recorder installed March 20, 2000.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1975-81): Maximum daily, 4,900 microsiemens per centimeter (µS/cm) at 25°C, Aug. 14, 1977; minimum daily, 678 µS/cm at 25°C, Mar. 23, 1978.
WATER TEMPERATURE [water years 1975-79, 2000 to current year (seasonal records only)]: Maximum daily, 33.0°C, July 13, 2000, July 3 and Aug. 6, 2001; minimum daily, 0.0°C on many days during winters.
SEDIMENT CONCENTRATION: Maximum daily mean, 25,800 mg/L, Aug. 3, 1985; minimum daily mean, 7 mg/L Oct. 30, 1989.
SEDIMENT LOAD: Maximum daily, 242,000 tons, Sep. 26, 1986; minimum daily, no load, 1985, 1988 during periods of no flow.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum daily, 31.0°C, June 27, 28; minimum daily, 0.0°C, Apr. 1-5

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)
OCT 2001											
26...	0915	.03	8.2	6940	0.5	0.5	.30	.183	<.002	<.007	.018
MAY											
08...	1205	6.9	8.5	3600	2.0	7.0	.72	<.013	<.002	E.006	.046
JUN											
11...	0910	14	8.6	3560	13.5	11.5	.81	<.013	<.002	<.007	.076
AUG											
08...	0950	.04	8.2	6250	20.0	16.5	1.4	.006	.002	<.007	.149

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT 2001											
26...	0915	2500	397	375	10.3	9	1000	407	79.1	.3	4.32
JUN 2002											
11...	0910	860	129	129	8.23	8	525	283	44.6	.3	2.16

E--Estimated.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
OCT 2001											
26...	4090	8.43	.50	6200	E2	<.4	<3.0	16.2	<3	12	14
JUN 2002											
11...	1730	3.72	103	2730	2	<.2	<3.0	9.9	<2	9	8

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)
OCT 2001											
26...	0915	.03	6940	0.5	0.5	47	87	.01	--	<1	1
NOV											
15...	0900	.03	6330	8.5	2.5	66	104	.01	2	5	8
APR											
17...	1030	2.6	3460	5.5	10.0	99	109	.77	<1	<1	1
MAY 2002											
08...	1205	6.9	3600	2.0	7.0	69	78	1.5	1	2	6
JUN											
11...	0910	14	3560	13.5	11.5	98	75	2.8	<1	2	7
25...	1005	124	1190	30.0	22.5	99	2750	921	<1	2	4
AUG											
08...	0950	.04	6250	20.0	16.5	66	419	.05	<1	<1	<1
29...	0940	1.3	4050	23.0	22.0	99	94	.33	1	2	4

DATE	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)	BED MAT. SIEVE DIAM. % FINER THAN 64.0 MM (80174)
OCT 2001								
26...	2	2	3	4	7	23	100	--
NOV								
15...	11	16	22	32	38	62	100	--
MAY 2002								
08...	9	11	15	23	34	64	100	--
JUN								
11...	11	14	19	25	37	53	100	--
25...	6	8	12	19	32	53	100	--
AUG								
08...	<1	<1	<1	1	2	10	63	100
29...	5	7	10	16	24	50	100	--

E--Estimated.

MUSSELSHELL RIVER BASIN

06130500 MUSSELSHELL RIVER AT MOSBY, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	0.0	0.0	0.0	13.0	6.5	9.5	20.5	16.0	17.5	28.5	19.0	22.0
2	0.0	0.0	0.0	13.0	7.0	9.5	17.5	15.0	16.5	23.5	17.0	19.0
3	0.5	0.0	0.0	13.0	7.0	10.5	18.5	14.5	16.0	23.0	18.5	19.5
4	0.5	0.0	0.0	14.0	4.5	8.5	25.5	12.5	17.0	23.5	19.0	20.5
5	1.0	0.0	0.5	12.5	9.5	10.5	25.0	16.5	21.0	27.0	17.0	21.0
6	9.0	0.5	4.5	13.5	8.0	10.5	21.5	16.5	18.5	23.5	19.5	20.5
7	8.5	4.5	6.5	10.5	4.0	6.5	18.0	14.5	16.0	24.0	21.0	22.0
8	11.5	3.0	6.5	8.0	2.5	5.0	18.0	14.0	15.5	26.5	21.0	22.5
9	10.0	5.0	8.0	15.5	3.5	9.0	16.5	13.5	15.0	24.0	17.5	19.5
10	15.5	6.5	10.5	15.0	8.5	11.5	18.0	12.0	15.0	20.5	17.5	19.0
11	12.0	6.5	8.5	20.0	9.0	14.5	15.5	9.5	12.5	20.5	19.0	19.5
12	11.5	8.0	9.5	21.0	11.0	16.0	20.0	11.0	15.5	23.5	20.0	21.0
13	16.0	7.5	11.0	17.5	11.5	14.0	26.0	12.0	16.5	24.5	22.0	23.0
14	11.5	9.0	10.0	20.5	13.0	16.0	23.0	16.0	17.5	27.0	22.5	23.5
15	9.5	6.0	8.0	15.0	10.0	12.5	22.5	17.0	18.0	26.0	22.5	24.0
16	13.0	5.0	8.0	12.0	8.5	10.0	27.0	18.0	20.0	27.5	24.0	24.5
17	12.5	6.0	8.0	13.0	8.5	10.5	23.0	19.5	20.5	24.0	22.0	23.0
18	10.5	5.5	8.0	14.0	10.5	11.5	26.0	18.5	20.5	26.5	23.5	24.5
19	12.5	4.5	8.5	16.0	10.5	13.0	20.5	16.5	18.5	26.5	24.0	25.0
20	11.5	5.5	8.5	17.5	11.0	13.5	17.0	13.5	15.0	27.0	23.0	25.5
21	16.5	5.0	10.5	19.5	14.0	15.5	19.5	16.0	18.0	25.5	21.0	23.0
22	18.5	9.0	13.5	17.0	6.0	11.0	23.0	16.0	19.0	22.5	18.5	19.5
23	13.0	5.5	10.0	11.5	4.0	7.5	19.5	17.0	18.0	23.5	19.5	20.5
24	7.5	3.0	5.5	15.0	8.5	11.0	24.5	19.0	21.5	24.0	20.5	22.0
25	9.5	2.0	5.5	15.5	9.5	12.0	27.5	21.0	24.0	23.5	21.0	22.0
26	10.5	3.0	6.5	16.5	12.5	14.0	30.5	22.5	26.0	23.0	21.0	21.5
27	7.0	4.5	5.0	18.5	13.5	15.5	31.0	23.5	27.0	23.0	20.5	22.0
28	13.0	2.5	7.5	18.0	13.5	15.5	31.0	23.5	27.5	22.0	19.0	20.5
29	12.5	5.5	9.0	20.5	14.5	17.0	27.0	20.0	23.5	24.0	19.5	21.0
30	12.5	6.0	9.5	19.5	17.0	17.5	26.0	17.0	19.5	23.5	19.0	21.0
31	---	---	---	20.5	15.5	17.5	---	---	---	25.0	20.0	22.0
MONTH	18.5	0.0	7.0	21.0	2.5	12.0	31.0	9.5	19.0	28.5	17.0	21.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER	
1	19.5	16.5	18.5	20.5	16.5	18.5
2	19.5	17.0	18.0	17.5	14.0	15.5
3	21.5	16.0	19.0	18.0	15.5	16.5
4	22.0	18.0	19.0	19.0	17.5	18.5
5	21.5	19.0	20.0	24.0	18.5	20.5
6	25.0	20.0	21.0	21.5	17.0	19.0
7	23.5	21.0	22.5	23.0	16.5	18.5
8	22.0	18.0	19.0	19.0	16.5	17.5
9	18.0	16.0	17.0	17.0	14.5	15.5
10	17.5	16.5	17.0	16.0	13.0	14.0
11	21.5	17.5	19.0	15.5	14.0	14.5
12	18.5	15.0	17.0	16.0	14.5	15.5
13	18.5	16.5	17.0	21.5	14.5	17.0
14	23.5	17.5	19.0	18.0	13.5	14.5
15	18.5	16.0	17.5	15.5	14.0	14.5
16	19.0	15.5	17.5	18.5	15.0	15.5
17	15.5	13.0	14.0	18.0	15.0	16.5
18	20.0	14.5	17.0	17.5	14.0	16.0
19	18.5	15.5	16.5	15.0	11.5	13.5
20	21.0	16.0	18.5	15.5	11.5	13.5
21	19.5	17.0	18.5	14.0	11.5	12.5
22	19.0	18.0	18.5	14.0	7.5	10.5
23	20.5	18.5	19.5	11.5	9.0	10.0
24	20.5	19.0	19.5	12.5	10.0	11.5
25	19.5	18.0	18.5	11.0	8.0	10.0
26	21.0	18.5	19.0	13.0	9.0	10.5
27	21.0	17.0	19.0	13.0	10.5	11.5
28	27.5	16.0	21.0	13.5	9.0	11.5
29	22.5	18.5	19.5	12.5	8.5	10.0
30	20.0	17.5	18.5	12.0	10.5	11.5
31	20.5	18.5	19.5	---	---	---
MONTH	27.5	13.0	18.5	24.0	7.5	14.5

HELL CREEK BASIN

06130650 HELL CREEK NEAR JORDAN, MT

LOCATION.--Lat 47°34'44", long 106°55'37" (NAD 27), in NW$^1/_4$ NE$^1/_4$ SE$^1/_4$ sec.14, T.21 N., R.37 E., Garfield County, Hydrologic Unit 10040104, on left bank 1.5 mi upstream from Fort Peck Lake, and 19 mi north of Jordan.
DRAINAGE AREA.--70.6 mi^2.
PERIOD OF RECORD.--February 2000 to current year.
GAGE (REVISED).--Water-stage recorder. Elevation of gage is 2,270 ft (NGVD 29). Prior to Oct. 1, 2000, at datum 1.0 ft higher.
REMARKS.--Records fair except those for estimated daily discharges, which are poor. U. S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	e0.00	e0.00	e0.00	e0.00	e0.00	e0.10	e0.00	0.00	0.00	0.00
2	0.00	0.00	e0.00	e0.00	0.00	e0.00	e0.00	0.09	10	0.00	0.00	0.00
3	0.00	0.00	e0.05	e0.00	0.00	e0.00	e0.00	0.08	2.1	0.00	0.00	0.00
4	0.00	0.00	e0.05	e0.00	0.00	e0.00	e0.00	0.04	1.0	4.4	0.00	0.00
5	0.00	0.00	e0.00	e0.00	e0.00	e0.00	e0.00	0.05	e0.20	35	0.00	0.00
6	0.00	0.00	e0.00	e0.00	e0.00	e0.00	e0.50	0.09	e0.20	0.34	0.00	0.00
7	0.00	0.00	e0.00	e0.00	e0.00	e0.00	e1.5	0.15	e0.20	0.03	0.00	0.00
8	0.00	0.00	e0.00	e0.00	e0.00	e0.00	1.1	0.97	6.2	2.1	4.0	0.00
9	0.00	0.00	e0.00	e0.00	e0.00	e0.00	0.78	15	9.3	11	39	0.00
10	0.00	0.00	0.00	e0.00	e0.00	e0.00	1.1	7.9	71	0.48	5.2	0.00
11	0.00	0.00	0.00	e0.00	e0.00	e7.0	5.2	1.9	5.2	e0.00	0.44	0.00
12	0.00	0.00	0.00	e0.00	e0.00	e14	1.4	1.4	1.6	e0.00	0.05	0.00
13	0.00	0.00	0.00	e0.00	e0.00	e10	0.80	1.2	0.40	e0.00	0.03	0.00
14	0.00	0.00	e0.00	e0.00	e0.00	e6.0	e0.20	0.90	0.08	e0.00	0.00	0.00
15	0.00	0.00	e0.00	e0.00	e0.00	e3.0	e0.10	e0.50	0.04	e0.00	0.00	0.00
16	0.00	0.00	e0.00	e0.00	e0.00	e2.0	7.2	e0.40	0.02	e0.00	0.00	0.00
17	0.00	0.00	e0.00	e0.00	e0.00	e1.0	4.2	e0.25	0.00	41	0.00	0.00
18	0.00	0.00	e0.00	e0.00	e0.00	e0.50	1.1	e0.10	0.15	1.4	0.00	0.00
19	0.00	0.00	e0.00	e0.00	e0.00	e0.40	0.58	e0.10	3.4	e0.30	0.00	0.00
20	0.00	0.00	e0.00	e0.00	e0.00	e0.30	e0.30	e0.10	2.0	e0.20	0.00	0.00
21	0.00	0.00	e0.00	e0.00	e0.00	e0.20	e0.20	e0.10	3.9	e0.10	0.00	0.00
22	0.00	0.00	e0.00	e0.00	e0.00	e0.10	e0.20	e0.10	24	e0.05	0.00	0.00
23	0.00	0.00	e0.00	e0.00	e0.00	e0.10	e0.10	0.95	27	e0.00	0.00	0.00
24	0.00	0.00	e0.00	e0.00	e0.00	e0.00	e0.10	1.4	2.9	e0.00	0.00	0.00
25	0.00	0.00	e0.00	e0.00	e0.00	e0.00	e0.10	e0.50	0.85	e0.00	0.00	0.00
26	0.00	0.00	e0.00	e0.00	e0.00	e0.00	e0.10	e0.25	0.18	e0.00	0.00	0.00
27	0.00	e0.00	e0.00	0.00	e0.00	e0.00	e0.10	e0.10	0.06	e0.00	0.00	0.00
28	0.00	e0.00	e0.00	0.00	e0.00	e0.00	e0.10	e0.10	0.04	e0.00	0.00	0.00
29	0.00	e0.00	e0.00	0.00	---	e0.00	e0.10	e0.10	0.02	e0.00	0.00	0.00
30	0.00	e0.00	e0.00	0.00	---	e0.00	e0.10	e0.00	0.01	e0.00	0.00	0.00
31	0.00	---	e0.00	e0.00	---	e0.00	---	e0.00	---	0.00	0.00	---
TOTAL	0.00	0.00	0.10	0.00	0.00	44.60	27.26	34.92	172.05	96.40	48.72	0.00
MEAN	0.000	0.000	0.003	0.000	0.000	1.439	0.909	1.126	5.735	3.110	1.572	0.000
MAX	0.00	0.00	0.05	0.00	0.00	14	7.2	15	71	41	39	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MED	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.10	0.63	0.00	0.00	0.00
AC-FT	0.00	0.00	0.2	0.00	0.00	88	54	69	341	191	97	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2002, BY WATER YEAR (WY)

MEAN	0.177	0.047	0.002	0.290	0.700	1.380	0.380	0.610	11.85	10.50	0.589	0.817
MAX	0.35	0.095	0.003	0.58	2.00	1.80	0.91	1.13	24.2	18.6	1.57	2.44
(WY)	2001	2001	2002	2001	2000	2001	2002	2002	2001	2000	2002	2000
MIN	0.000	0.000	0.000	0.000	0.000	0.90	0.012	0.000	5.62	3.11	0.000	0.000
(WY)	2002	2002	2001	2002	2002	2000	2001	2001	2000	2002	2000	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 2000 - 2002		
ANNUAL TOTAL	1110.61		424.05				
ANNUAL MEAN	3.043		1.162		2.121		
HIGHEST ANNUAL MEAN					3.08		2001
LOWEST ANNUAL MEAN					1.16		2002
HIGHEST DAILY MEAN	581	Jun 13	71	Jun 10	581	Jun 13	2001
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	0.00	Feb 1	2000
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 12	0.00	Oct 1	0.00	Feb 1	2000
MAXIMUM PEAK FLOW			207	Jun 10	a1700	Jul 13	2001
MAXIMUM PEAK STAGE			5.55	Jun 10	7.64	Jul 13	2001
ANNUAL RUNOFF (AC-FT)	2200		841		1540		
10 PERCENT EXCEEDS	2.0		1.4		1.9		
50 PERCENT EXCEEDS	0.00		0.00		0.00		
90 PERCENT EXCEEDS	0.00		0.00		0.00		

a--From slope-area measurement of peak flow.
e--Estimated.

06131000 BIG DRY CREEK NEAR VAN NORMAN, MT

LOCATION.--Lat 47°20'58", long 106°21'26" (NAD 27), in NE$^1/_4$SW$^1/_4$NW$^1/_4$ sec.3, T.18 N., R.42 E., Garfield County, Hydrologic Unit 10040105, on left bank 900 ft downstream from Little Dry Creek, 3.2 mi northeast of Van Norman Post Office, 26 mi east of Jordan, and at river mile 55.1.

DRAINAGE AREA.--2,554 mi^2.

PERIOD OF RECORD.--October 1939 to July 1969, July 1970 to current year (discharge measurements only, October 1947 to March 1949). Prior to July 1970, published as "Dry Creek near Van Norman."

REVISED RECORDS.--WSP 1309: 1947(M). WSP 1559: 1944(M), 1947. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,330 ft (NGVD 29). Prior to July 24, 1978, at site 400 ft upstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Few small diversions for irrigation of hay meadows upstream from station. U.S. Army Corps of Engineers satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	1.4	e1.3	e0.80	e0.60	e0.50	e10	2.5	1.2	23	5.4	3.0
2	1.2	1.4	e1.5	e1.0	e0.80	e0.50	e7.0	2.5	1.4	18	5.0	2.6
3	1.1	1.4	e1.5	e1.2	e1.0	e0.70	e7.0	2.1	1.4	14	4.5	2.3
4	0.95	1.4	e1.7	e1.4	e1.2	e1.0	e8.0	2.0	1.3	12	4.4	2.2
5	0.99	1.4	e1.4	e1.6	e1.4	e0.80	e9.0	1.9	1.3	14	7.6	2.1
6	1.0	1.4	e1.4	e1.4	e1.5	e0.70	e10	3.0	1.1	9.0	5.1	2.1
7	1.0	1.4	e1.4	e1.4	e1.5	e0.60	15	3.1	0.90	8.8	76	2.5
8	1.0	1.5	e1.6	e1.6	e1.5	e0.50	9.3	6.3	40	9.0	68	2.8
9	0.98	1.4	e1.8	e2.0	e1.3	e0.70	7.5	8.2	23	31	88	2.9
10	0.97	1.5	e1.8	e1.7	e1.0	e1.0	7.1	6.7	117	56	38	2.7
11	1.6	1.5	e2.0	e1.4	e1.2	e1.5	7.0	5.1	34	65	25	2.5
12	2.5	1.5	e1.8	e1.4	e1.2	e2.0	6.0	4.5	14	38	27	3.1
13	1.9	1.6	e1.6	e1.4	e1.2	e1.8	5.3	3.9	15	28	20	2.8
14	1.7	1.6	e1.6	e1.2	e1.2	e1.5	4.8	3.6	25	20	15	2.4
15	1.4	1.6	e1.6	e1.2	e1.2	e1.5	4.6	5.6	28	15	12	2.2
16	1.4	1.6	e1.4	e1.0	e1.0	e1.5	6.3	4.8	22	21	10	2.1
17	1.3	1.6	e1.6	e0.80	e1.2	e1.3	5.1	4.3	15	301	9.2	1.8
18	1.3	1.5	e1.6	e0.70	e1.5	e1.2	7.9	3.5	11	354	8.2	2.0
19	1.3	1.5	e1.6	e0.70	e1.5	e1.2	8.3	2.9	7.9	236	7.3	3.1
20	1.2	e1.5	e1.6	e0.80	e1.5	e1.0	6.5	2.4	6.1	177	6.1	3.0
21	1.3	e1.5	e1.6	e1.0	e1.5	e1.0	5.7	2.0	4.9	97	5.3	2.6
22	1.3	e1.5	e1.6	e1.0	e1.7	e1.2	4.9	1.7	297	53	5.0	2.4
23	1.3	e1.5	e1.4	e0.80	e2.0	e1.4	4.5	2.1	6330	37	4.4	2.5
24	1.4	e1.3	e1.4	e0.80	e1.0	e1.6	4.2	1.9	835	30	4.0	2.3
25	1.4	e1.3	e1.4	e1.0	e0.70	e1.6	3.6	1.7	295	26	4.0	2.4
26	1.4	e1.3	e1.4	e0.80	e0.50	e1.6	3.4	1.6	217	19	4.1	2.4
27	1.4	e1.1	e1.6	e0.60	e0.50	e3.0	3.2	1.5	157	15	3.6	2.4
28	1.5	e1.1	e1.3	e0.50	e0.70	e50	3.2	1.6	98	11	3.3	2.3
29	1.5	e1.3	e1.0	e0.50	---	e40	2.9	1.8	52	9.1	3.1	2.2
30	1.5	e1.3	e0.80	e0.50	---	e20	2.7	1.5	32	7.6	4.0	2.1
31	1.5	---	e0.80	e0.50	---	e15	---	1.3	---	6.4	3.3	---
TOTAL	41.59	42.9	46.10	32.70	33.10	157.90	190.0	97.6	8684.50	1760.9	485.9	73.8
MEAN	1.342	1.430	1.487	1.055	1.182	5.094	6.333	3.148	289.5	56.80	15.67	2.460
MAX	2.5	1.6	2.0	2.0	2.0	50	15	8.2	6330	354	88	3.1
MIN	0.95	1.1	0.80	0.50	0.50	0.50	2.7	1.3	0.90	6.4	3.1	1.8
AC-FT	82	85	91	65	66	313	377	194	17230	3490	964	146

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

MEAN	6.368	3.002	2.664	6.538	73.99	256.2	85.13	29.20	59.10	44.13	16.37	16.71
MAX	97.5	14.2	33.7	192	1004	1760	2043	300	552	458	367	391
(WY)	1987	1987	1976	1997	1997	1959	1952	1975	1944	1993	1954	1986
MIN	0.000	0.000	0.000	0.000	0.000	1.24	1.05	0.21	0.072	0.000	0.000	0.000
(WY)	1940	1961	1961	1940	1940	2002	1961	1958	1988	1961	1959	1940

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002*	
ANNUAL TOTAL	4560.09		11646.99			
ANNUAL MEAN	12.49		31.91		50.08**	
HIGHEST ANNUAL MEAN					243	1978
LOWEST ANNUAL MEAN					1.18	1985
HIGHEST DAILY MEAN	358	Jul 28	6330	Jun 23	21300	Mar 22 1947
LOWEST DAILY MEAN	0.00	Jan 19	0.50	Jan 28	0.00	Oct 1 1939
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 19	0.57	Jan 26	0.00	Oct 1 1939
MAXIMUM PEAK FLOW			9600	Jun 23	a24600	Mar 21 1947
MAXIMUM PEAK STAGE			8.78	Jun 23	b15.26	Mar 21 1947
INSTANTANEOUS LOW FLOW					c0.00	Oct 1 1940
ANNUAL RUNOFF (AC-FT)	9040		23100		36280	
10 PERCENT EXCEEDS	16		24		42	
50 PERCENT EXCEEDS	1.8		1.8		2.5	
90 PERCENT EXCEEDS	0.00		1.0		0.00	

*--During periods of operation (1940-47, 1950-68, 1971 to current year).
**--Median of yearly mean discharges, 27.6 ft^3/s.
a--Gage height, 13.39 ft, previous site and datum.
b--Backwater from ice.
c--No flow at times most years.
e--Estimated.

MISSOURI RIVER MAIN STEM

06131200 NELSON CREEK NEAR VAN NORMAN, MT

LOCATION.--Lat 47°32'08", long 106°09'11" (NAD 27), in SW$^1/_4$ NW$^1/_4$ sec.36, T.21 N., R.43 E., McCone County, Hydrologic Unit 10040104, on left bank at upstream side of bridge on State Highway 24, 1.5 mi upstream from Fort Peck Lake, and 19 mi northeast of Van Norman.

DRAINAGE AREA.--100 mi^2.

PERIOD OF RECORD.--October 1975 to September 1985, February 2000 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,300 ft (NGVD 29).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Diversions for irrigation of about 163 acres upstream from station of which about 158 acres are flood irrigated. Some storage in stock ponds upstream. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	0.00	e0.00	e0.00	0.20	0.00	0.04	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	e0.00	0.54	0.27	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	e0.00	0.39	0.21	0.02	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	e0.00	0.53	0.23	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	e0.00	0.89	0.21	0.00	2.1	0.68	0.00
6	0.00	0.00	0.00	0.00	0.00	e0.00	1.2	0.42	0.00	0.97	0.02	0.00
7	0.00	0.00	0.00	0.00	0.00	e0.00	1.2	0.47	0.00	0.22	113	0.00
8	0.00	0.00	0.00	0.00	0.00	e0.00	1.4	0.66	0.00	0.09	21	0.00
9	0.00	0.00	0.00	0.00	0.00	e0.00	1.0	1.2	0.07	0.11	14	0.00
10	0.00	0.00	0.00	0.00	0.00	e0.00	1.3	1.5	2.6	0.07	4.3	0.00
11	0.00	0.00	0.00	0.00	0.00	e0.00	1.3	1.0	1.7	0.15	1.5	0.00
12	0.00	0.00	0.00	0.00	0.00	e0.00	1.1	0.82	0.98	0.06	0.53	0.00
13	0.00	0.00	0.00	0.00	0.00	e0.00	0.81	0.54	0.55	0.00	0.33	0.00
14	0.00	0.00	0.00	0.00	0.00	e0.00	0.76	0.41	0.45	0.00	0.19	0.00
15	0.00	0.00	0.00	0.00	0.00	e0.00	0.75	0.41	0.35	0.00	0.12	0.00
16	0.00	0.00	0.00	0.00	0.00	e0.00	1.0	0.41	0.25	0.00	0.12	0.00
17	0.00	0.00	0.00	0.00	0.00	e0.00	1.1	0.46	0.21	12	0.17	0.00
18	0.00	0.00	0.00	0.00	0.00	e0.00	0.97	0.35	0.16	2.8	0.12	0.00
19	0.00	0.00	0.00	0.00	0.00	e0.00	0.73	0.44	0.14	0.39	0.12	0.00
20	0.00	0.00	0.00	0.00	0.00	e0.00	0.60	0.39	0.09	0.17	0.07	0.00
21	0.00	0.00	0.00	0.00	0.00	e0.00	0.46	0.11	0.04	0.12	0.02	0.00
22	0.00	0.00	0.00	0.00	0.00	e0.00	0.41	0.07	0.00	0.07	0.03	0.00
23	0.00	0.00	0.00	0.00	0.30	e0.00	0.34	0.20	1.5	0.03	0.00	0.00
24	0.00	0.00	0.00	0.00	0.48	e0.00	0.34	0.20	1.8	0.08	0.00	0.00
25	0.00	0.00	0.00	0.00	e0.00	e0.00	0.31	0.13	0.88	0.08	0.00	0.00
26	0.00	0.00	0.00	0.00	e0.00	e0.00	0.29	0.12	0.36	0.03	0.00	0.00
27	0.00	0.00	0.00	0.00	e0.00	e0.00	0.26	0.10	0.19	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	e0.00	e0.00	0.32	0.09	0.12	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	---	e0.00	0.34	0.10	0.13	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	---	e0.00	0.24	0.12	0.09	0.00	0.00	0.00
31	0.00	---	0.00	0.00	---	e0.00	---	0.01	---	0.00	0.00	---
TOTAL	0.00	0.00	0.00	0.00	0.78	0.00	20.88	11.85	12.68	19.58	156.32	0.00
MEAN	0.000	0.000	0.000	0.000	0.028	0.000	0.696	0.382	0.423	0.632	5.043	0.000
MAX	0.00	0.00	0.00	0.00	0.48	0.00	1.4	1.5	2.6	12	113	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
AC-FT	0.00	0.00	0.00	0.00	1.5	0.00	41	24	25	39	310	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 2002, BY WATER YEAR (WY)*

MEAN	0.192	0.019	0.023	0.406	2.433	4.542	3.527	1.553	1.792	2.772	1.393	1.251
MAX	1.47	0.14	0.15	2.90	19.0	37.4	39.9	13.1	5.64	16.0	9.37	15.4
(WY)	1982	1979	1976	1983	1982	1978	1979	1978	1977	1978	1981	1978
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.072	0.001	0.000	0.000	0.000	0.000
(WY)	1977	1977	1977	1977	1978	2002	2000	2001	1981	1980	1977	1976

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1976 - 2002*	
ANNUAL TOTAL	380.11		222.09			
ANNUAL MEAN	1.04		0.608		1.73	
HIGHEST ANNUAL MEAN					7.57	1978
LOWEST ANNUAL MEAN					0.14	1980
HIGHEST DAILY MEAN	93	Jul 25	113	Aug 7	445	Jul 4 1978
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	a0.00	Oct 1 1975
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 13	0.00	Oct 1	0.00	Oct 1 1975
MAXIMUM PEAK FLOW			608	Aug 7	1750	Jul 4 1978
MAXIMUM PEAK STAGE			6.95	Aug 7	9.30	Jul 4 1978
ANNUAL RUNOFF (AC-FT)	754		441		1250	
10 PERCENT EXCEEDS	1.2		0.62		1.2	
50 PERCENT EXCEEDS	0.00		0.00		0.00	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

*--During period of operation (1975-1985, February 2000 to current year).
a--No flow at times most years.
e--Estimated.

06131500 FORT PECK LAKE AT FORT PECK, MT

LOCATION.--Lat 48°00'26", long 106°23'49" (NAD 27), in sec. 14, T.26 N., R.41 E., McCone County, Hydrologic Unit 10040104, in No. 4 emergency gate shaft of Fort Peck Dam on Missouri River at Fort Peck, 2 mi downstream from Bear Creek, 9.5 mi southwest of Nashua, 9.5 mi upstream from Milk River, and at river mile 1,771.6.

DRAINAGE AREA.--57,500 mi^2.

PERIOD OF RECORD.--October 1937 to current year. (Monthend contents only, except October 1938 to September 1940, when elevations were included.) Monthend contents for October 1937 to August 1938, published only in WSP 1309. Daily elevations and contents for May to June 1964, published in WSP 1840-B. Prior to October 1970, published as "Fort Peck Reservoir." Daily elevations on file in Helena district office.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Prior to May 1, 1941, nonrecording gage at same site and datum. Elevation of gage is 2095.00 (NGVD 29).

REMARKS.--Reservoir is formed by earthfill dam completed in 1939; storage began in 1937. The following capacity figures are from capacity table effective July 1, 1973; see previous reports for superseded figures. All elevations are referenced to the National Geodetic Vertical Datum of 1929. Total capacity, 18,910,000 acre-ft between elevation 2,095.00 ft, invert of lower ring gates, and 2,250.00 ft, top of 25 ft gates. Elevation of spillway crest, 2,225.00 ft. Normal operating level, 17,930,000 acre-ft, elevation, 2,246.00 ft. Dead storage, 542,800 acre-ft below elevation 2,095.00 ft. Minimum operating level, 4,283,000 acre-ft, elevation, 2,160.00 ft, for on-site power generation. Figures given herein represent total contents; usable contents published in previous water-supply papers for October 1950 to September 1955. Water is used for navigation, recreation, flood control, and power generation. Elevations materially affected by wind.

COOPERATION.--Elevations and capacity table furnished by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 19,310,000 acre-ft, July 15-17, 1975, elevation, 2,251.6 ft; minimum since first filling, 5,061,000 acre-ft, Jan. 25, 26, 1956, elevation, 2,167.67 ft, by capacity table used Mar. 1, 1940, to Dec. 31, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 12,410,000 acre-ft, Oct. 1, elevation, 2,220.70 ft; minimum, 11,860,000 acre-ft, Sept. 26, elevation, 2,217.60 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, SEPTEMBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in Contents (acre-feet)
Sept. 30	2,220.71	12,410,000	--
Oct. 31	2,220.43	12,360,000	-50,000
Nov. 30	2,220.01	12,290,000	-70,000
Dec. 31	2,219.25	12,150,000	-140,000
CAL YR 2001			-1,050,000
Jan. 31	2,218.80	12,070,000	-80,000
Feb. 28	2,218.61	12,030,000	-40,000
Mar. 31	2,218.53	12,020,000	-10,000
Apr. 30	2,218.75	12,060,000	+40,000
May 31	2,218.07	11,940,000	-120,000
June 30	2,219.94	12,280,000	+340,000
July 31	2,219.01	12,110,000	-170,000
Aug. 31	2,218.54	12,030,000	-80,000
Sept. 30	2,217.62	11,860,000	-170,000
WTR YR 2002			-550,000

MISSOURI RIVER MAIN STEM

06132000 MISSOURI RIVER BELOW FORT PECK DAM, MT

LOCATION.--Lat 48°02'39" (NAD 27), long 106°21'21", in NW$^1/_4$ sec.6, T.26 N., R.42 E., McCone County, Hydrologic Unit 10060001, on right bank 2 mi upstream from Milk River, 6 mi south of Nashua, 8 mi downstream from Fort Peck Dam, and at river mile 1,763.5.

DRAINAGE AREA.--57,556 mi^2.

PERIOD OF RECORD.--March 1934 to current year.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,018 ft (NGVD 29) (U.S. Army Corps of Engineers bench mark). Prior to Apr. 14, 1938, at site 0.7 mi upstream at different datum; Apr. 14, 1938, to Sept. 30, 1963, at present site at datum 2.00 ft higher, all water-stage recorders. Since Oct. 1, 1969, published discharge is determined by flowmeters and spillway discharge at Fort Peck Dam.

REMARKS.--Flow completely regulated by Fort Peck Lake. Diversions for irrigation of about 880,400 acres upstream from station. Operational level in Fort Peck Lake was reached beginning 1944 water year.

COOPERATION.--Records since Oct. 1, 1969, furnished by U.S. Army Corps of Engineers; 2 to 4 discharge measurements are made each year and the records are reviewed by Geological Survey. Records for March 1934 to September 1969 collected and computed by Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,000 ft^3/s including 32,000 ft^3/s inflow from spillway 1 mi downstream from station, Aug. 8, 1946; maximum gage height observed, 12.30 ft, Mar. 10, 1936 (ice jam), site and datum then in use; maximum daily reverse flow, 400 ft^3/s, Mar. 29, 1943, backwater from Milk River.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3900	4000	5500	5000	5400	5400	3900	4200	9000	7000	8600	8600
2	3900	4000	5600	4900	5400	5500	4000	4200	9000	7800	8600	8700
3	3900	4000	5600	4700	5400	5200	3900	4600	9100	8000	8600	8500
4	3900	3900	5400	4800	5300	5200	3900	4200	8900	8500	8700	9100
5	3800	3900	5400	4900	5300	5300	3900	4000	9000	8200	8700	9300
6	3700	4000	5300	4900	4800	5300	4000	4100	8900	8200	8700	8900
7	3800	3700	5300	4800	5000	5200	4030	4100	8800	8400	9200	9000
8	3800	3600	5400	5100	5100	5500	4000	5000	9000	8900	8500	8900
9	3800	3900	5400	4800	5100	5300	3900	4500	9200	9100	8700	8800
10	3900	3800	5500	4700	5100	5300	3900	5100	9400	8800	8410	9100
11	3900	3700	5300	4700	5100	5400	4000	7600	9200	8700	8800	9000
12	3800	3900	5300	4900	4900	5300	4300	8900	9100	8600	8500	9300
13	3800	3900	5200	4600	5000	5300	4100	9900	8800	8400	8500	9200
14	3900	4000	5200	4700	5000	5200	4300	7700	8200	8800	8800	8000
15	3800	4000	5100	4900	4900	4500	4300	6000	7800	8700	8900	5800
16	3700	4100	5100	4800	4900	4600	4200	6000	7700	8700	8800	5500
17	3800	3900	5300	4800	5000	4400	4200	9000	7800	9200	8800	4500
18	4000	4000	5400	5100	4900	4400	4200	9100	8400	8900	8800	4700
19	3900	4000	5300	5400	4900	4500	4200	8800	8700	8800	9000	5700
20	3900	4000	5300	5200	4800	4100	4100	9400	8900	8700	9000	5400
21	3900	3900	5200	4900	5000	3900	4100	9400	8900	8800	9300	5500
22	3800	3800	5300	5000	5000	3900	4200	9000	8900	9000	9200	4800
23	3800	3800	5200	4900	5000	3900	4100	8900	8800	9100	9300	4800
24	3800	3800	5200	4800	5000	3900	4200	8600	8800	8400	9100	5400
25	3800	4200	5300	5200	5300	3900	4200	8900	8500	8700	9300	4900
26	4000	5100	5200	5300	5400	4000	4200	9000	8600	9000	8700	4600
27	3900	4800	5200	5300	5300	3900	4200	9000	8100	9000	8800	4700
28	3900	4300	5400	5600	5400	4000	4200	9000	7000	9000	8800	4600
29	3900	5200	5200	5700	---	3900	4200	9000	7100	8800	9000	4600
30	4100	5300	5500	5400	---	3900	4200	9300	6900	8700	8800	5500
31	3800	---	4700	5400	---	4000	---	9200	---	8600	8800	---
TOTAL	119600	122500	164300	155200	142700	144100	123130	225700	256500	267500	273710	205400
MEAN	3858	4083	5300	5006	5096	4648	4104	7281	8550	8629	8829	6847
MAX	4100	5300	5600	5700	5400	5500	4300	9900	9400	9200	9300	9300
MIN	3700	3600	4700	4600	4800	3900	3900	4000	6900	7000	8410	4500
AC-FT	237200	243000	325900	307800	283000	285800	244200	447700	508800	530600	542900	407400

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2002, BY WATER YEAR (WY)*

MEAN	11240	9059	9173	9851	9761	7409	7190	8442	8663	9923	11860	11470
MAX	28800	21150	13330	14010	15240	13390	17230	18830	26190	35030	26180	27120
(WY)	1956	1998	1944	1971	1979	1982	1979	1979	1975	1975	1955	1948
MIN	3016	2085	1490	1390	1180	1050	856	950	832	1163	3449	2997
(WY)	1994	1947	1946	1946	1945	1944	1945	1944	1944	1945	1963	1992

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1944 - 2002*	
ANNUAL TOTAL	2167010		2200340			
ANNUAL MEAN	5937		6028		9506	
HIGHEST ANNUAL MEAN					14950	1975
LOWEST ANNUAL MEAN					5313	1963
HIGHEST DAILY MEAN	11800	Jan 15	9900	May 13	35400	Jul 7 1975
LOWEST DAILY MEAN	3000	Sep 22	3600	Nov 8	16	Apr 6 1978
ANNUAL SEVEN-DAY MINIMUM	3610	Sep 21	3790	Nov 7	161	Mar 26 1944
INSTANTANEOUS LOW FLOW					161	Mar 26 1944
ANNUAL RUNOFF (AC-FT)	4298000		4364000		6886000	
10 PERCENT EXCEEDS	10300		9000		14700	
50 PERCENT EXCEEDS	5800		5200		8400	
90 PERCENT EXCEEDS	3800		3900		4050	

*--Period of record after operational level in Fort Peck Lake was reached.

06132000 MISSOURI RIVER BELOW FORT PECK DAM, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964, 1975 to 1987, May to September 2002.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Water years 1974 to 1981.
WATER TEMPERATURE: Water years, 1974 to 1979, July 2002 to September 2002.

INSTRUMENTATION.--Temperature recorder installed July 31, 2002.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1975-81): Maximum daily, 1,080 microsiemens per centimeter (µS/cm), Nov. 30, 1976; minimum daily, 520 µS/cm, June 29, 1978.
WATER TEMPERATURE: Maximum, 18.5°C, Aug. 10 and Sept. 4 and 19, 2002; minimum, 0.0°C, on several days from December 1977 to January 1978.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of operation, maximum, 18.5°C, Aug 10, Sept. 4, 19; minimum, 11.0°C, Aug. 2, 4.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
MAY 2002											
03...	0900	4600	707	12.2	109	8.5	544	9.0	7.0	200	49.0
JUN											
20...	1100	8900	720	9.2	96	8.5	545	25.0	14.5	210	52.2
AUG											
28...	0945	8800	720	8.8	93	8.4	545	26.0	15.0	200	51.1
SEP											
04...	0845	9100	715	9.0	98	8.4	548	22.0	16.5	210	50.8

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)
MAY 2002											
03...	18.7	3.55	1	37.2	159	7.57	.8	6.7	117	4180	337
JUN											
20...	19.4	3.43	1	38.8	160	8.70	.7	6.7	115	8180	341
AUG											
28...	18.6	3.49	1	36.1	158	8.65	.8	6.8	112	7910	333
SEP											
04...	19.0	3.60	1	36.4	158	8.72	.9	7.0	112	8180	333

DATE	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)
MAY 2002											
03...	<.015	.16	<.013	<.002	<.007	.009	4.4	4	34	35	<.04
JUN											
20...	<.015	.12	<.013	<.002	<.007	.010	3.9	3	33	34	<.04
AUG											
28...	<.015	.13	<.013	<.002	E.004	.011	4.1	4	34	35	<.04
SEP											
04...	<.015	.16	<.013	<.002	<.007	.012	1.4	3	36	36	<.04

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
MAY 2002											
03...	E.02	<.8	<.8	1.4	1.7	<10	50	<.08	<1	1.8	5
JUN											
20...	<.04	<.8	<.8	1.4	1.6	<10	<10	<.08	<1	1.8	7
AUG											
28...	<.04	<.8	<.8	1.5	1.4	E8	80	<.08	<1	1.3	6
SEP											
04...	E.02	<.8	<.8	2.0	2.1	73	120	<.08	<1	1.5	8

DATE	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAY 2002											
03...	E.01	<.01	1.49	2	.7	.6	<1	<1	85	5	62.1
JUN											
20...	E.01	.01	1.78	2	.6	.6	<1	<1	89	5	120
AUG											
28...	<.01	<.01	1.23	2	.7	.7	3	3	75	5	119
SEP											
04...	<.01	<.01	2.68	3	.9	.9	1	1	83	5	123

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, AUGUST 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER	
1	14.5	13.0	14.0	15.0	13.0	14.0
2	15.0	11.0	12.5	16.5	12.5	14.5
3	16.0	12.0	13.5	18.0	14.0	16.0
4	16.0	11.0	12.5	18.5	15.5	16.5
5	14.0	11.5	12.5	17.5	14.5	16.0
6	17.5	13.0	14.5	16.0	14.5	15.0
7	17.5	13.5	14.5	15.5	14.0	15.0
8	14.0	12.5	13.0	15.5	14.0	14.5
9	15.5	12.0	13.0	17.5	13.5	15.0
10	18.5	14.0	15.0	17.5	14.0	15.5
11	18.0	14.0	15.5	18.0	14.0	16.0
12	16.0	13.0	14.5	17.0	14.5	15.5
13	16.5	13.0	14.5	17.5	14.0	15.5
14	16.5	14.0	14.5	17.5	14.0	15.5
15	16.0	12.5	13.5	18.0	13.5	15.5
16	15.5	12.0	13.5	18.0	13.5	16.5
17	15.5	11.5	13.0	17.0	14.0	15.5
18	16.0	12.0	13.5	16.5	13.5	15.0
19	16.5	13.5	15.0	18.5	13.0	15.5
20	16.5	13.0	14.5	16.0	13.0	14.5
21	15.5	13.0	14.0	14.0	12.0	13.0
22	17.0	12.5	14.5	15.5	12.0	13.0
23	16.5	13.0	14.5	16.5	12.5	14.0
24	16.5	12.5	14.0	15.5	13.5	14.5
25	15.5	13.0	14.0	15.5	12.5	14.0
26	16.5	13.0	14.5	16.0	13.0	14.0
27	16.5	13.0	14.5	15.0	13.5	14.0
28	16.5	13.0	14.5	15.5	12.0	13.5
29	16.5	13.5	14.5	18.0	13.0	15.0
30	18.0	14.0	15.5	16.5	12.5	15.0
31	16.0	13.5	15.0	---	---	---
MONTH	18.5	11.0	14.0	18.5	12.0	15.0

06132200 SOUTH FORK MILK RIVER NEAR BABB, MT

LOCATION.--Lat 48°45'14", long 113°10'00" (NAD 27), in NE$^1/_4$NW$^1/_4$NW$^1/_4$ sec.34, T.35 N., R.12 W., Glacier County, Hydrologic Unit 10050001, Blackfeet Indian Reservation, on right bank 0.4 mi upstream from bridge on FAS 464 ("Duck Lake Road"), 14.4 mi southeast of Babb, 15.2 mi northwest of Browning, and at river mile 17.3.

DRAINAGE AREA.--70.4 mi^2.

PERIOD OF RECORD.--May 1961 to current season (seasonal records only).

REVISED RECORDS.--W 1983: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,731.6 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Many small diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e19	e10	68	177	125	43	27	23		
2			e20	e8.0	69	179	116	43	28	25		
3			e22	e10	107	164	110	40	26	23		
4			e24	e13	87	155	105	42	24	22		
5			e18	e15	68	137	96	48	27	23		
6			e16	e18	63	137	92	50	37	23		
7			e12	e16	59	134	93	49	46	23		
8			e8.0	e14	52	212	138	43	39	23		
9			e9.0	e16	60	312	115	40	29	23		
10			e9.0	e18	64	397	96	36	25	22		
11			e10	e20	74	398	85	35	23	21		
12			e10	e30	93	486	77	37	22	21		
13			e9.0	e60	109	599	71	34	21	23		
14			e8.0	e100	117	573	67	32	21	23		
15			e8.0	e150	108	578	64	35	21	23		
16			e7.0	e120	87	588	61	36	19	22		
17			e7.0	e100	76	534	61	41	19	22		
18			e6.5	82	81	410	57	37	21	22		
19			e7.0	72	89	352	57	33	20	21		
20			e6.0	70	119	276	56	31	19	21		
21			e6.0	77	142	233	53	31	21	21		
22			e7.0	93	171	214	53	31	21	21		
23			e7.0	89	161	204	51	29	20	21		
24			e7.0	62	212	192	48	27	20	e20		
25			e7.0	52	269	180	45	26	22	e19		
26			e7.0	51	312	166	42	27	21	20		
27			e8.0	46	334	155	48	29	26	e19		
28			e9.0	45	247	148	49	37	35	20		
29			e10	50	188	142	42	33	26	e19		
30			e10	69	218	135	40	36	23	e19		
31			e12	---	201	---	41	29	---	e19		
TOTAL			325.5	1576.0	4105	8567	2254	1120	749	667		
MEAN			10.50	52.53	132.4	285.6	72.71	36.13	24.97	21.52		
MAX			24	150	334	599	138	50	46	25		
MIN			6.0	8.0	52	134	40	26	19	19		
AC-FT			646	3130	8140	16990	4470	2220	1490	1320		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1961 - 2002

MEAN	46.04	31.32	66.54	87.85	92.36	37.89	17.69	15.21	16.80
MAX	46.0	136	153	239	465	96.6	42.6	43.8	37.0
(WY)	1963	1972	1969	1967	1975	1975	1993	1993	1986
MIN	46.0	5.76	20.7	10.2	0.89	0.000	0.38	0.22	5.07
(WY)	1963	2001	1984	1977	1977	1977	2001	2001	1964

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1961 - 2002	
HIGHEST DAILY MEAN	599	Jun 13	5590	Jun 20 1975
LOWEST DAILY MEAN	6.0	Mar 20	0.00	Aug 23 1973
MAXIMUM PEAK FLOW	a710	Jun 16	c12000	Jun 8 1964
MAXIMUM PEAK STAGE	b6.74	Apr 14	b7.17	Feb 24 1986
INSTANTANEOUS LOW FLOW			0.00	Aug 23 1973

a--Gage height, 5.57 ft.
b--Backwater from ice.
c--Gage height, 6.61 ft, from rating curve extended above 400 ft^3/s, on basis of slope-area measurement of peak flow.
e--Estimated.

MILK RIVER BASIN

06133000 MILK RIVER AT WESTERN CROSSING OF INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'27", long 112°32'42" (NAD 27), in NE$^{1}/_{4}$ sec.1, T.1, R.20 W., fourth meridian, in Alberta, Hydrologic Unit 10050001, on left bank 0.8 mi north of international boundary, 22 mi upstream from North Milk River, 23 mi southwest of Milk River, Alberta, and at river mile 656.4.

DRAINAGE AREA.--401 mi^2.

PERIOD OF RECORD.--March 1931 to current season (seasonal records only). Prior to October 1961, published as South Fork Milk River near international boundary.

REVISED RECORDS.--WSP 1389: 1934(M), 1935, 1936(M), 1937, 1942(M), 1947-48(M). W 1983: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,820 ft (NGVD 29). Prior to Aug. 9, 1948, and Aug. 9, 1948, to Oct. 31, 1958, water-stage recorders at sites 0.4 mi and 0.5 mi downstream, respectively, at different datums.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Several diversions for irrigation upstream from station. Environment Canada satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e12	133	396	244	54	58	44		
2			e0.00	e11	142	371	226	58	48	42		
3			e0.00	e9.9	129	388	215	59	43	42		
4			e0.00	e9.7	181	345	206	60	42	42		
5			e0.00	e9.9	180	311	192	66	41	41		
6			e0.00	e11	147	270	176	81	41	41		
7			e0.00	e12	137	250	169	85	63	40		
8			e0.00	e15	134	364	174	85	85	40		
9			e0.00	e20	112	1800	230	76	83	39		
10			e0.00	e35	131	3280	221	64	61	40		
11			e0.00	e85	153	3160	183	57	48	40		
12			e0.00	e177	186	1970	156	51	40	38		
13			e0.00	e424	210	1780	137	49	35	37		
14			e0.00	e812	216	1850	123	49	31	38		
15			e0.00	e727	223	1650	113	46	30	40		
16			e0.00	939	219	1490	103	50	28	40		
17			e0.00	473	185	1310	97	58	27	39		
18			e0.00	268	158	1080	96	69	26	42		
19			e0.00	191	160	833	89	70	25	39		
20			e0.00	149	173	685	85	61	26	37		
21			e0.00	135	230	547	85	54	27	37		
22			e0.00	140	e283	470	80	48	26	36		
23			e0.00	176	e253	427	76	45	27	e35		
24			e0.21	173	e431	399	74	41	29	e33		
25			e0.71	139	632	357	69	37	30	e33		
26			e2.5	128	1100	327	62	36	31	e32		
27			e7.9	119	1980	302	61	38	33	e31		
28			e11	106	1360	279	64	37	36	e30		
29			e12	98	770	266	67	44	45	e29		
30			e13	105	516	256	62	61	50	e25		
31			e13	---	456	---	57	59	---	e22		
TOTAL			60.32	5709.5	11320	27213	3992	1748	1215	1144		
MEAN			1.946	190.3	365.2	907.1	128.8	56.39	40.50	36.90		
MAX			13	939	1980	3280	244	85	85	44		
MIN			0.00	9.7	112	250	57	36	25	22		
AC-FT			120	11320	22450	53980	7920	3470	2410	2270		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1931 - 2002

MEAN	103.8	208.4	209.3	182.2	58.87	20.79	20.92	25.36
MAX	717	615	679	907	348	142	168	133
(WY)	1972	1969	1967	2002	1951	1951	1951	1952
MIN	1.95	41.5	13.3	3.07	0.008	0.000	0.000	0.000
(WY)	2002	1941	1941	1977	1977	1939	1939	1964

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1931 - 2002	
HIGHEST DAILY MEAN	3280	Jun 10	5410	Jun 9 1964
LOWEST DAILY MEAN	0.00	Mar 1	0.00	Jul 31 1931
MAXIMUM PEAK FLOW	3570	Jun 10	a7930	Jun 9 1964
MAXIMUM PEAK STAGE	7.58	Jun 10	b12.55	Mar 18 1976

a--Gage height, 9.77 ft.
b--Backwater from ice.
e--Estimated.

MILK RIVER BASIN

06133500 NORTH FORK MILK RIVER ABOVE ST. MARY CANAL, NEAR BROWNING, MT

(International gaging station)

LOCATION.--Lat 48°57'48", long 113°03'43" (NAD 27), in NE$^1/_4$NE$^1/_4$SW$^1/_4$ sec.16, T.37 N., R.11 W., Glacier County, Hydrologic Unit 10050001, Blackfeet Indian Reservation, on left bank 2.3 mi upstream from outlet of canal, 2.3 mi south of international boundary, 29 mi north of Browning, and at river mile 58.3.

DRAINAGE AREA.--59.0 mi^2.

PERIOD OF RECORD.--May 1911 to July 1912 and June to July 1918 (published as "near Browning"), May 1919 to current season (seasonal records only). Monthly discharge only for some periods published in WSP 1309.

REVISED RECORDS.--W 1983: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,240 ft (NGVD 29). Prior to June 20, 1921, nonrecording gages at several sites within 1 mi of present site at different datums. June 20, 1921 to Mar. 19, 1997 water-stage recorder at site 0.5 mile downstream from current site at datum 15 ft lower.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Many small diversions for irrigation upstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

COOPERATION.--This is one of a number of stations which are maintained jointly by the United States and Canada.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e8.0	e11	9.3	17	50	30	29	38		
2			e8.0	e10	8.1	30	48	29	33	33		
3			e8.6	e11	11	25	48	30	27	30		
4			e9.0	e12	8.7	14	47	34	28	31		
5			e8.4	e13	8.6	11	44	39	44	31		
6			e8.0	e14	6.7	8.6	44	39	40	31		
7			e7.6	e13	7.6	7.7	43	34	43	30		
8			e7.0	e12	7.4	74	52	32	32	32		
9			e7.6	e13	7.1	230	51	30	27	31		
10			e8.4	e14	9.8	401	43	29	24	30		
11			e9.6	e15	19	229	40	34	23	32		
12			e10	e16	26	204	38	34	23	32		
13			e9.0	e18	23	171	36	31	25	33		
14			e8.6	e14	16	147	36	31	28	33		
15			e8.0	e11	12	141	34	36	28	32		
16			e8.8	8.1	8.8	139	34	48	34	32		
17			e8.6	5.6	6.8	147	34	42	36	32		
18			e8.4	3.8	6.4	119	32	34	38	32		
19			e8.8	4.1	6.9	105	35	32	34	32		
20			e8.2	4.2	13	81	34	32	35	32		
21			e8.6	4.8	e18	73	32	33	36	33		
22			e9.6	6.5	e30	69	32	32	35	33		
23			e9.4	8.2	e35	67	31	30	34	33		
24			e9.4	4.6	e50	65	30	30	37	33		
25			e10	3.7	100	64	30	30	36	34		
26			e11	4.7	136	63	31	38	34	34		
27			e12	4.4	160	59	36	42	40	34		
28			e12	4.3	116	58	31	42	38	34		
29			e12	7.2	77	57	29	34	32	e36		
30			e11	13	44	53	28	55	33	e36		
31			e12	---	24	---	29	32	---	e34		
TOTAL			285.6	284.2	1012.2	2929.3	1162	1078	986	1013		
MEAN			9.213	9.473	32.65	97.64	37.48	34.77	32.87	32.68		
MAX			12	18	160	401	52	55	44	38		
MIN			7.0	3.7	6.4	7.7	28	29	23	30		
AC-FT			566	564	2010	5810	2300	2140	1960	2010		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1911 - 2002*

MEAN	23.43	38.01	34.32	30.40	19.77	16.55	18.36	17.89
MAX	72.1	167	164	147	101	65.5	86.8	55.0
(WY)	1997	1948	1967	1995	1995	1951	1911	1996
MIN	8.14	9.47	7.14	6.95	4.12	3.30	3.90	4.95
(WY)	2001	2002	1941	1988	1985	1940	1940	1941

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1911 - 2002	
HIGHEST DAILY MEAN	401	Jun 10	1320	Apr 22 1953
LOWEST DAILY MEAN	3.7	Apr 25	1.7	Sep 17 1940
MAXIMUM PEAK FLOW	518	Jun 10	a3090	May 8 1967
MAXIMUM PEAK STAGE	8.12	Jun 10	b9.07	Mar 19 1997

*--During periods of operation (May 1911 to July 1912, June to July 1918, May 1919 to current season).
a--Gage height, 7.95 ft, from rating curve extended above 130 ft^3/s, on basis of slope-area measurements at gage heights 7.55 ft and 7.95 ft, at previous site and datum.
b--From floodmarks at previous site, which was destroyed; 10.50 ft at current site, backwater from ice.
e--Estimated.

MILK RIVER BASIN

06134000 NORTH MILK RIVER NEAR INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°01'19", long 112°58'16" (NAD 27), in SW$^1/_4$NE$^1/_4$ sec.11, T.1, R.23 W., fourth meridian, in Alberta, Hydrologic Unit 10050001, on right bank 0.4 mi upstream from highway bridge, 1.6 mi north of international boundary, 2.8 mi east of Whiskey Gap, Alberta, 11 mi southeast of Kimball, Alberta, and at river mile 49.9.

DRAINAGE AREA.--91.8 mi^2. Area at site used Apr. 12, 1930, to Aug. 15, 1962, 97.4 mi^2.

PERIOD OF RECORD.--July 1909 to October 1912 (seasonal records only), January 1913 to October 1922, March 1923 to current season (seasonal records only). Records for November and December 1912, published in WSP 1309, have been found to be unreliable and should not be used. Published as "near Kimball, Alberta" 1913-16. Prior to February 1962, published as North Fork Milk River near international boundary.

REVISED RECORDS.--WSP 1309: 1909-13, 1915(M), 1920(M), 1937(M). WSP 1559: 1948(M). WSP 1729: 1944(M). W 1983: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 4,112.16 ft, Canadian Geodetic Vertical Datum 1928. Prior to May 1913, nonrecording gage at site 2 mi downstream at different datum. May 1, 1913, to Apr. 11, 1930, water-stage recorder 700 ft downstream at different datum. Apr. 12, 1930, to Aug. 15, 1962, water-stage recorder 1,500 ft downstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Since 1917, flow increased during irrigation season by water from St. Mary Canal (station number 05018500). Several small diversions for irrigation upstream from station. Bureau of Reclamation satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e12	e12	809	742	60	484	770	558		
2			e13	e35	812	809	58	526	777	558		
3			e14	e83	805	798	59	540	766	526		
4			e14	e81	819	756	58	544	770	463		
5			e12	e85	823	759	53	551	795	381		
6			e11	e147	823	742	53	572	791	331		
7			e9.4	e188	826	731	53	597	788	319		
8			e7.4	e197	826	915	60	632	770	274		
9			e8.5	e247	812	1420	66	657	756	190		
10			e9.2	e320	809	1730	55	671	752	133		
11			e9.9	e388	795	1030	52	682	752	85		
12			e9.5	e438	749	600	48	689	752	64		
13			e9.0	e480	713	519	46	699	745	60		
14			e8.5	e618	685	466	45	727	745	58		
15			e7.8	e689	e622	427	44	749	742	54		
16			e7.4	717	e590	406	43	784	745	48		
17			e7.1	731	e558	385	44	777	742	46		
18			e6.9	735	e530	327	42	766	749	45		
19			e6.7	738	e498	292	43	763	713	44		
20			e6.8	742	e470	188	44	756	667	45		
21			e7.1	752	438	126	42	749	660	e46		
22			e7.6	763	466	108	41	749	650	e49		
23			e8.1	780	501	104	40	749	639	e44		
24			e8.8	777	505	94	39	749	625	e46		
25			e10	780	533	85	38	752	611	e45		
26			e10	795	833	77	40	763	572	e44		
27			e10	795	904	70	94	773	561	e43		
28			e11	791	763	67	234	759	565	e42		
29			e12	795	682	66	277	742	551	e39		
30			e12	809	643	62	325	759	554	e39		
31			e13	---	685	---	417	759	---	e39		
TOTAL			299.7	15508	21327	14901	2613	21469	21075	4758		
MEAN			9.668	516.9	688.0	496.7	84.29	692.5	702.5	153.5		
MAX			14	809	904	1730	417	784	795	558		
MIN			6.7	12	438	62	38	484	551	39		
AC-FT			594	30760	42300	29560	5180	42580	41800	9440		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1917 - 2002

MEAN	66.46	192.9	421.5	519.4	558.2	528.5	309.6	59.57
MAX	402	633	732	745	727	721	702	524
(WY)	1981	1991	2001	1976	1936	1969	2002	1951
MIN	10.4	23.6	38.6	43.5	84.3	16.0	5.57	6.06
(WY)	2002	1940	1918	1952	2002	1982	1988	1942

	FOR 2002 SEASON		SEASONS 1917 - 2002	
HIGHEST DAILY MEAN	1730	Jun 10	2170	Jun 7 1995
LOWEST DAILY MEAN	6.7	Mar 19	0.00	Mar 1 1940
MAXIMUM PEAK FLOW	2030	Jun 10	a3670	Jun 6 1995
MAXIMUM PEAK STAGE	5.30	Jun 10	6.89	Jun 6 1995

a--From rating curve extended above 1,500 ft^3/s.
e--Estimated.

MILK RIVER BASIN

06134500 MILK RIVER AT MILK RIVER, ALBERTA

(International gaging station)

LOCATION.--Lat 49°08'37", long 112°04'44" (NAD 27), in NE$^{1}/_{4}$ sec.21, T.2, R.16 W., fourth meridian, in Alberta, Hydrologic Unit 10050002, on right bank 5 ft downstream from highway bridge at Milk River, Alberta, 22 mi downstream from North Milk River, and at river mile 613.4.

DRAINAGE AREA.--1,050 mi^2.

PERIOD OF RECORD.--June 1909 to October 1910 (no winter records), April 1911 to current year. Monthly discharge only for June 1909, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1912. WSP 1599: 1916, 1927(M), 1947(M). W 1983: Drainage area. W 1984: 1983 (M).

GAGE.--Water-stage recorder. Datum of gage is 3,402.78 ft, Canadian Geodetic Vertical Datum 1928. Prior to June 17, 1919, nonrecording gages, and June 17, 1919, to Nov. 2, 1921, water-stage recorder at several sites 300 ft upstream at datum 0.61 ft higher. Nov. 3, 1921, to Aug. 28, 1947, water-stage recorder at site 60 ft upstream at present datum. Aug. 29, 1947, to Nov. 10, 1976, water-stage recorder located 700 ft downstream on left bank at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Since 1917, flow increased during irrigation season by water from St. Mary Canal (station number 05018500). Several diversions for irrigation upstream from station. Environment Canada satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e3.6	13	e2.0	e0.92	e3.2	e6.6	16	812	1020	e335	434	749
2	e4.0	12	e2.1	e1.4	e3.5	e8.8	15	855	1020	e318	494	759
3	4.6	11	e1.8	e3.7	e3.8	e10	14	837	1060	e297	530	749
4	5.5	10	e1.9	e3.8	e4.0	e9.9	15	844	996	261	554	742
5	6.3	10	e2.0	e4.2	e4.2	e9.2	15	865	922	250	576	756
6	6.7	9.9	e2.6	e4.6	e4.2	e8.3	16	858	865	236	593	784
7	6.8	9.2	e2.3	e5.7	e4.3	e7.2	17	837	791	221	611	784
8	7.2	9.3	e2.4	e6.2	e4.2	e6.7	117	858	915	230	629	784
9	7.6	9.4	e2.5	e5.8	e4.0	e6.4	208	840	2570	231	646	784
10	8.0	8.0	e2.3	e5.6	e3.8	e7.0	233	844	6250	291	650	766
11	8.3	7.7	e2.4	e5.5	e3.8	e10	237	865	7840	257	646	742
12	8.6	8.0	e2.5	e5.4	e3.8	e11	230	855	4340	212	646	731
13	8.1	12	e2.6	e5.3	e4.0	e11	233	862	2350	190	639	717
14	7.9	9.8	e2.5	e5.2	e4.2	e10	639	805	2210	165	643	710
15	7.6	9.9	e2.8	e5.1	e4.6	9.5	869	784	1880	147	664	706
16	8.3	9.5	e2.9	e4.9	e4.9	8.8	1350	784	1780	138	689	699
17	7.9	10	e2.8	e4.8	e5.3	8.1	1140	678	1620	131	727	692
18	6.9	9.2	e2.7	e4.4	e5.9	7.2	946	614	1440	126	731	692
19	6.9	8.8	e2.6	e4.2	e6.7	7.1	869	597	1300	129	731	692
20	7.1	9.3	e2.5	e4.0	e7.8	7.1	826	590	1130	121	731	667
21	7.9	8.5	e2.7	e3.9	e8.8	7.4	798	614	904	113	731	646
22	9.1	9.0	e2.8	e3.4	e9.5	8.5	798	840	738	115	720	650
23	9.1	9.7	e2.8	e3.1	e9.2	9.9	823	830	646	106	713	646
24	9.7	e9.6	e2.9	e3.2	e8.1	11	858	805	618	97	717	657
25	9.1	e8.5	e2.5	e3.2	e7.6	13	823	989	562	97	717	657
26	10	e6.3	e1.9	e3.4	e6.5	15	812	1180	523	92	724	653
27	12	e5.5	e1.6	e3.3	e6.7	16	805	e2150	e480	89	749	632
28	11	e4.2	e1.1	e3.2	e7.1	17	809	e2330	e431	94	749	625
29	12	e3.0	e1.0	e3.0	---	17	812	e1640	e396	219	727	629
30	12	e1.9	e0.95	e3.0	---	16	805	1270	e364	300	727	636
31	13	---	e0.88	e3.1	---	16	---	1070	---	343	756	---
TOTAL	252.8	262.2	69.33	126.52	153.7	316.7	16148	29602	47961	5951	20594	21136
MEAN	8.155	8.740	2.236	4.081	5.489	10.22	538.3	954.9	1599	192.0	664.3	704.5
MAX	13	13	2.9	6.2	9.5	17	1350	2330	7840	343	756	784
MIN	3.6	1.9	0.88	0.92	3.2	6.4	14	590	364	89	434	625
AC-FT	501	520	138	251	305	628	32030	58720	95130	11800	40850	41920

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1917 - 2002, BY WATER YEAR (WY)*

MEAN	101.5	56.40	33.76	30.29	61.65	228.1	496.0	659.6	720.2	616.3	551.6	352.9
MAX	555	216	133	268	616	1025	1384	1179	1633	965	795	713
(WY)	1951	1952	1952	1928	1986	1972	1917	1967	1953	1951	1976	1959
MIN	7.83	8.74	2.06	0.000	0.000	3.44	94.5	236	162	192	29.2	3.65
(WY)	1989	2002	1923	1923	1922	1922	1945	1918	1952	2002	1982	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1917 - 2002*	
ANNUAL TOTAL	70009.43		142573.25			
ANNUAL MEAN	191.8		390.6		326.8	
HIGHEST ANNUAL MEAN					489	1953
LOWEST ANNUAL MEAN					157	1921
HIGHEST DAILY MEAN	946	Apr 26	7840	Jun 11	7840	Jun 11 2002
LOWEST DAILY MEAN	0.88	Dec 31	0.88	Dec 31	0.00	Jan 19 1922
ANNUAL SEVEN-DAY MINIMUM	1.4	Dec 25	1.1	Dec 27	0.00	Jan 19 1922
MAXIMUM PEAK FLOW			8860	Jun 10	9850	Feb 25 1986
MAXIMUM PEAK STAGE			11.41	Jun 10	a12.46	Feb 25 1986
ANNUAL RUNOFF (AC-FT)	138900		282800		236700	
10 PERCENT EXCEEDS	627		858		742	
50 PERCENT EXCEEDS	11		16		157	
90 PERCENT EXCEEDS	2.8		3.0		13	

*--Flow increased during irrigation season by water from St. Mary Canal since 1917.
a--From floodmarks, backwater from ice.
e--Estimated.

MILK RIVER BASIN

06134700 VERDIGRIS COULEE NEAR THE MOUTH, NEAR MILK RIVER, ALBERTA

(International gaging station)

LOCATION.--Lat 49°06'39", long 111°45'31" (NAD 27), in NW$^1/_4$ sec.12, T.2, R.14 W., fourth meridian, in Alberta, Hydrologic Unit 10050002, on left bank, 0.6 mi upstream from mouth, 5 mi downstream from culvert on provincial highway 501, and 15 mi east of Milk River, Alberta.

DRAINAGE AREA.--137 mi^2, of which 130 mi^2 is probably noncontributing.

PERIOD OF RECORD.--May 1985 to current season (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 3,040 ft (NGVD 29).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Nearly all flow is the result of interbasin diversion from St. Mary River into Weston Lake 25 miles upstream. Environment Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by the United States and Canada.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e0.00	0.00	0.07	0.00	0.00	0.00	0.00		
2			e0.00	e0.00	0.00	1.1	0.00	0.00	0.00	0.00		
3			e0.00	e0.00	0.00	2.0	0.00	0.00	0.00	0.00		
4			e0.00	e0.00	0.00	1.0	0.00	0.00	0.00	0.00		
5			e0.00	e0.00	0.00	0.35	0.00	0.00	0.00	0.00		
6			e0.00	e0.00	0.00	0.07	0.00	0.00	0.00	0.00		
7			e0.00	e0.00	0.00	0.07	0.00	0.00	0.00	0.00		
8			e0.00	e0.00	0.78	26	0.00	0.00	0.00	0.00		
9			e0.00	e0.00	2.7	69	0.00	0.00	0.00	0.00		
10			e0.00	e0.21	0.25	75	0.00	0.00	0.00	0.00		
11			e0.00	e0.18	0.04	67	0.00	0.00	0.00	0.00		
12			e0.00	e0.14	0.00	14	0.00	0.00	0.00	0.00		
13			e0.00	e0.11	0.00	2.9	0.00	0.00	0.00	0.00		
14			e0.00	0.07	0.00	1.6	3.0	0.00	0.00	0.00		
15			e0.00	0.00	0.00	1.1	4.7	0.00	0.00	0.00		
16			e0.00	0.00	0.00	0.85	5.0	0.00	0.00	0.00		
17			e0.00	0.00	0.00	0.57	4.9	0.00	0.00	0.00		
18			e0.00	0.00	0.00	0.32	4.8	0.00	0.00	0.00		
19			e0.00	0.00	0.00	1.2	4.7	0.00	0.00	0.00		
20			e0.00	0.00	0.00	1.2	4.1	0.00	0.00	0.00		
21			e0.00	0.00	0.00	0.88	2.1	0.00	0.00	0.00		
22			e0.00	0.00	0.00	0.49	1.1	0.00	0.00	0.00		
23			e0.00	0.00	0.00	0.21	0.63	0.00	0.00	0.00		
24			e0.00	0.00	32	0.07	0.21	0.00	0.00	0.00		
25			e0.00	0.00	32	0.00	0.00	0.00	0.00	0.00		
26			e0.00	0.39	19	0.00	0.00	0.00	0.00	0.00		
27			e0.00	0.28	9.8	0.00	0.00	0.00	0.00	0.00		
28			e0.00	0.07	2.8	0.00	0.00	0.00	0.00	0.00		
29			e0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00		
30			e0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00		
31			e0.00	---	0.07	---	0.00	0.00	---	0.00		
TOTAL			0.00	1.45	100.00	267.05	35.24	0.00	0.00	0.00		
MEAN			0.000	0.048	3.226	8.902	1.137	0.000	0.000	0.000		
MAX			0.00	0.39	32	75	5.0	0.00	0.00	0.00		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	2.9	198	530	70	0.00	0.00	0.00		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1985 - 2002

MEAN	6.171	6.395	6.906	7.640	5.232	6.252	7.257	6.601
MAX	43.9	29.6	20.8	18.1	16.4	24.1	25.5	26.2
(WY)	1996	1996	1994	1989	1991	1993	1985	1986
MIN	0.000	0.048	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	2001	2002	1998	2000	1999	1998	1999	2000

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1985 - 2002	
HIGHEST DAILY MEAN	75	Jun 10	264	Mar 11 1996
LOWEST DAILY MEAN	0	Many days	0.00	Nov 19 1985
MAXIMUM PEAK FLOW	113	Jun 10	a280	Mar 11 1996
MAXIMUM PEAK STAGE	6.49	Jun 10	b6.51	Mar 2 1994

a--About, gage height not determined (backwater from ice).
b--Maximum observed gage height.
e--Estimated.

MILK RIVER BASIN

06135000 MILK RIVER AT EASTERN CROSSING OF INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 48°58'30", long 110°25'19" (NAD 27), in NW$^1/_4$SW$^1/_4$SE$^1/_4$ sec.9, T.37 N., R.9 E., Hill County, Hydrologic Unit 10050002, on left bank 1.6 mi south of international boundary, 1.7 mi upstream from Lost River, 10 mi northwest of Simpson, 35.5 mi north of Rudyard, and at river mile 479.6.

DRAINAGE AREA.--2,506 mi^2, revised.

PERIOD OF RECORD.--August 1909 to current season (seasonal records only). A few winter records were collected and are on file in the Helena District office. Monthly discharge only for April 1912, published in WSP 1309.

REVISED RECORDS.--WSP 1086: 1927, 1935. WSP 1559: 1920(M), 1922(M), 1926, 1928(M), 1929, 1930(M), 1932(M). WSP 1729: 1912-13, 1921-22, 1929(M). WRD MT-94-1(M). W 1983: Drainage area. WRD MT-98-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,660 ft (NGVD 29). Prior to Mar. 1, 1998, water-stage recorder or nonrecording gages at several sites within 15 mi upstream at different datum.

REMARKS.--Records good except those for discharges over 2,000 ft^3/s, which are fair and estimated daily discharges, which are poor. Since 1917, flow increased during irrigation season by water from St. Mary Canal (station number 05018500). Many diversions for irrigation upstream from station. Bureau of Reclamation satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by the United States and Canada.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e45	689	1280	609	119	724	686		
2			e0.00	e35	637	1150	568	207	752	656		
3			e0.00	e42	642	1160	515	289	762	628		
4			e0.00	e50	663	1130	485	390	765	620		
5			e0.00	e70	688	1140	451	503	868	616		
6			e0.00	e100	714	1080	397	757	871	625		
7			e0.00	e150	849	1020	355	613	1070	e600		
8			e0.00	e250	883	1100	364	636	830	568		
9			e0.00	e300	938	2030	531	635	716	500		
10			e0.00	e350	797	5300	415	651	699	435		
11			e0.00	e400	712	9060	355	672	711	409		
12			e0.00	e450	659	12400	369	676	726	377		
13			e0.00	e420	672	10800	370	670	703	316		
14			e0.00	410	710	4710	342	649	699	279		
15			e0.00	635	667	3480	289	652	681	243		
16			e0.00	616	670	2770	234	656	686	210		
17			e0.00	740	625	e2450	207	711	654	189		
18			e0.00	1120	615	e2150	184	694	e660	173		
19			e0.00	955	626	e1850	164	718	653	162		
20			e0.00	896	612	e1570	153	753	646	155		
21			e0.00	723	570	e1320	147	751	655	155		
22			e0.00	662	796	e1150	148	765	664	148		
23			e0.20	631	976	e1060	137	768	641	149		
24			e1.0	648	1550	e980	132	748	634	e145		
25			e5.0	680	1650	920	126	720	631	e140		
26			e20	730	924	845	123	708	640	e135		
27			e50	748	1050	786	119	747	647	126		
28			e65	709	1680	747	118	721	650	123		
29			e60	733	3200	719	120	731	639	e115		
30			e55	725	2150	667	119	755	629	e110		
31			e50		1540		118	750		e105		
TOTAL			306.20	15023	30154	76824	8764	19815	21306	9898		
MEAN			9.877	500.8	972.7	2561	282.7	639.2	710.2	319.3		
MAX			65	1120	3200	12400	609	768	1070	686		
MIN			0.00	35	570	667	118	119	629	105		
AC-FT			607	29800	59810	152400	17380	39300	42260	19630		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1917 - 2002*

MEAN	372.3	565.9	713.1	781.9	618.5	543.5	382.8	128.3
MAX	1522	1691	1943	2561	1046	886	740	566
(WY)	1978	1965	1927	2002	1951	1927	1972	1990
MIN	9.88	80.1	257	200	262	77.4	2.21	0.16
(WY)	2002	1945	1918	1952	1977	1982	2001	2002

SUMMARY STATISTICS	FOR THE 2002 SEASON		SEASONS 1917 - 2002*	
HIGHEST DAILY MEAN	12400	Jun 12	12400	Jun 12 2002
LOWEST DAILY MEAN	0.00	Mar 1	0.00	Feb 1 1922
MAXIMUM PEAK FLOW	14400	Jun 12	a14400	Jun 12 2002
MAXIMUM PEAK STAGE	10.78	Jun 12	b15.03	Mar 13 1996

*--Flow increased during irrigation season by water from St. Mary Canal since 1917.
a--Gage height, 10.78 ft, from floodmarks.
b--Backwater from ice.
e--Estimated.

06137400 BIG SANDY CREEK AT RESERVATION BOUNDARY, NEAR ROCKY BOY, MT

LOCATION (REVISED).--Lat 48°10'27", long 109°49'23" (NAD 27), in SW$^1/_4$NW$^1/_4$NE$^1/_4$ sec. 20, T.28 N., R.15 E., Chouteau County, Hydrologic Unit 10050005, on left bank 0.9 mi downstream from Muddy Creek, 6.0 mi south of Rocky Boy Agency, and at river mile 90.6.

DRAINAGE AREA.--24.7 mi^2.

PERIOD OF RECORD.--May 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,830 ft (NGVD 29). Prior to Sept. 6, 2001, water-stage recorder at site 0.1 mi downstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No known regulation or diversions upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperatures and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.60	0.75	0.95	e0.66	e0.60	e0.94	e0.90	2.6	2.3	11	3.8	2.4
2	0.57	0.77	0.90	e0.60	e0.64	e0.92	e0.94	2.6	3.0	10	3.6	2.8
3	0.60	0.80	0.93	e0.66	e0.66	e0.92	e1.0	2.9	3.3	9.7	3.5	2.6
4	0.62	0.82	e1.0	e0.74	e0.64	e0.88	1.1	2.5	2.8	10	3.5	2.3
5	0.61	0.84	e0.95	e0.80	e0.68	e0.92	1.3	2.3	2.4	8.7	3.7	2.4
6	0.61	0.85	0.90	e0.80	e0.70	e0.90	1.8	2.8	2.2	7.9	5.3	4.0
7	0.61	0.85	0.87	e0.80	e0.70	e0.90	2.7	2.9	2.1	7.4	4.8	6.2
8	0.61	0.87	0.98	e0.80	e0.70	e0.90	2.5	2.6	4.3	15	10	4.3
9	0.61	0.93	e0.88	e0.80	e0.70	e0.86	2.7	2.8	8.8	14	15	3.4
10	0.60	0.93	e0.90	e0.76	e0.70	e0.90	4.0	3.3	19	10	8.1	2.8
11	0.65	0.93	e0.86	e0.76	e0.70	e0.92	6.0	3.4	31	8.9	6.8	2.6
12	0.64	0.93	e0.80	e0.72	e0.70	e0.92	6.6	3.6	29	7.6	5.9	2.4
13	0.72	0.94	e0.86	e0.72	e0.70	e0.92	9.7	3.6	25	6.7	5.0	2.3
14	0.67	0.93	e0.86	e0.72	e0.77	e0.92	13	3.9	22	6.6	4.6	2.2
15	0.67	0.97	e0.86	e0.72	e0.78	e0.90	10	4.7	19	11	4.7	2.2
16	0.66	0.99	e0.84	e0.72	e0.80	e0.88	5.6	4.0	17	7.5	4.6	2.1
17	0.64	0.97	e0.86	e0.72	e0.80	e0.86	4.3	4.0	15	7.5	5.1	2.1
18	0.61	0.95	e0.80	e0.72	e0.80	e0.86	3.3	3.6	14	6.7	5.0	2.5
19	0.68	0.94	e0.84	e0.72	e0.80	e0.82	2.9	3.7	26	6.2	4.4	2.4
20	0.69	0.95	e0.80	e0.72	e0.80	e0.84	2.7	3.7	21	5.8	3.8	2.4
21	0.67	0.98	e0.82	e0.72	e0.80	e0.84	2.8	3.4	18	5.4	3.5	2.4
22	0.64	1.00	e0.70	e0.72	e0.76	e0.86	3.2	5.2	18	5.3	3.5	2.4
23	0.65	1.0	e0.60	e0.72	e0.80	e0.88	4.0	5.3	19	5.1	3.2	2.4
24	0.71	1.0	e0.56	e0.72	e0.80	e0.88	2.6	5.6	17	4.7	2.9	2.4
25	0.70	1.0	e0.64	e0.70	e0.90	e0.88	2.4	4.9	15	4.3	2.8	2.4
26	0.73	1.0	e0.68	e0.68	e0.94	e0.90	2.4	4.7	14	4.7	2.9	2.4
27	0.71	e0.90	e0.72	e0.66	e0.96	e0.92	2.3	3.9	13	6.2	3.1	2.5
28	0.77	e0.85	e0.76	e0.62	e0.96	e0.94	2.2	3.3	12	6.0	3.1	2.4
29	0.77	0.92	e0.68	e0.62	---	e0.94	2.2	3.2	13	4.8	2.6	2.3
30	0.78	0.91	e0.74	e0.60	---	e0.94	2.9	2.8	12	4.2	2.6	5.9
31	0.77	---	e0.70	e0.58	---	e0.90	---	2.5	---	4.1	2.6	---
TOTAL	20.57	27.47	25.24	22.00	21.29	27.76	110.04	110.3	420.2	233.0	144.0	83.9
MEAN	0.664	0.916	0.814	0.710	0.760	0.895	3.668	3.558	14.01	7.516	4.645	2.797
MAX	0.78	1.0	1.0	0.80	0.96	0.94	13	5.6	31	15	15	6.2
MIN	0.57	0.75	0.56	0.58	0.60	0.82	0.90	2.3	2.1	4.1	2.6	2.1
AC-FT	41	54	50	44	42	55	218	219	833	462	286	166

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 2002, BY WATER YEAR (WY)

MEAN	5.458	4.770	4.292	3.638	4.454	6.358	10.75	13.99	16.97	13.24	6.614	5.473
MAX	14.0	11.1	11.8	9.44	21.7	28.0	32.6	68.3	50.0	53.7	29.3	18.8
(WY)	1986	1994	1996	1996	1996	1996	1994	1986	1982	1993	1993	1993
MIN	0.67	0.92	0.81	0.71	0.76	0.90	3.67	1.84	1.42	1.01	0.50	0.65
(WY)	2002	2002	2002	2002	2002	2002	2002	1988	1988	2001	1988	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1982 - 2002	
ANNUAL TOTAL	560.08		1245.77			
ANNUAL MEAN	1.535		3.413		7.860	
HIGHEST ANNUAL MEAN					18.1	1986
LOWEST ANNUAL MEAN					1.79	2001
HIGHEST DAILY MEAN	5.9	Apr 25	31	Jun 11	298	Jun 27 1998
LOWEST DAILY MEAN	0.45	Jul 4	0.56	Dec 24	0.42	Aug 10 1988
ANNUAL SEVEN-DAY MINIMUM	0.50	Sep 13	0.60	Oct 2	0.45	Aug 9 1988
MAXIMUM PEAK FLOW			40	Jun 19	a510	Jun 27 1998
MAXIMUM PEAK STAGE			2.16	Jun 19	6.07	Jun 27 1998
INSTANTANEOUS LOW FLOW					b0.03	Jun 26 1992
ANNUAL RUNOFF (AC-FT)	1110		2470		5690	
10 PERCENT EXCEEDS	2.9		8.7		16	
50 PERCENT EXCEEDS	1.3		1.0		4.5	
90 PERCENT EXCEEDS	0.60		0.68		1.5	

a--On basis of slope-area measurement of peak flow.
b--Gage height, 2.32 ft, site and datum then in use.
e--Estimated.

MILK RIVER BASIN

06139500 BIG SANDY CREEK NEAR HAVRE, MT

LOCATION.--Lat 48°31'36", long 109°50'27" (NAD 27), in SW$^1/_4$SW$^1/_4$SW$^1/_4$ sec.18, T.32 N., R.15 E., Hill County, Hydrologic Unit 10050005, on right bank, 6 mi upstream from mouth, 7.7 mi west southwest of Havre post office, and 22 mi downstream from Sage Creek.

DRAINAGE AREA.--1,805 mi^2.

PERIOD OF RECORD.--February 1946 to November 1953 (monthly discharge only for February 1946, published in WSP 1309 as "Big Sandy Creek near Assinniboine"), annual maximum, water years 1955-67 (published as "Big Sandy Creek near Assinniboine"), and May 1984 to current year (seasonal records only).

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,510 ft (NGVD 29).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Diversions for irrigation of about 1,000 acres upstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 30, 1978, reached a stage of 15.15 ft, from floodmarks, discharge, about 6,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				e0.00	0.44	0.32	0.02	0.00	0.00			
2				e0.00	0.41	0.35	0.00	0.00	0.00			
3				e0.00	0.31	0.38	0.00	0.00	0.00			
4				e0.00	0.25	0.30	0.00	0.00	0.00			
5				e0.00	0.22	0.31	0.00	0.00	0.00			
6				e0.00	0.38	0.17	0.00	0.00	0.00			
7				e0.00	0.45	0.09	0.00	0.00	0.00			
8				e0.00	0.75	1.1	0.43	0.00	0.00			
9				e0.00	0.67	4.8	0.25	0.60	0.00			
10				e0.00	0.67	6.7	0.10	0.17	0.00			
11				e0.00	0.50	7.3	0.05	0.00	0.00			
12				e0.00	0.30	54	0.01	0.00	0.00			
13				e0.00	0.22	22	0.00	0.00	0.00			
14				e0.00	0.18	12	0.00	0.00	0.00			
15				e0.00	0.13	9.5	0.00	0.00	0.00			
16				e0.00	0.13	7.2	0.00	0.00	0.00			
17				e0.00	0.09	5.6	0.00	0.00	0.00			
18				e0.00	0.08	4.6	0.00	0.00	0.00			
19				e0.00	0.05	3.8	0.00	0.00	0.00			
20				e0.00	0.03	2.5	0.00	0.00	0.00			
21				e0.05	0.03	1.6	0.00	0.00	0.00			
22				e0.20	0.17	1.0	0.00	0.00	0.00			
23				e0.70	0.32	0.59	0.00	0.00	0.00			
24				e0.60	0.46	0.32	0.00	0.00	0.00			
25				e0.55	0.49	0.18	0.00	0.00	0.00			
26				e0.55	2.0	0.16	0.00	0.00	0.00			
27				e0.50	6.6	0.11	0.00	0.00	0.00			
28				e0.50	5.1	0.08	0.00	0.00	0.00			
29				e0.50	3.0	0.06	0.00	0.00	0.00			
30				e0.50	1.4	0.04	0.00	0.00	e0.00			
31				---	0.57	---	0.00	0.00	---			
TOTAL				4.65	26.40	147.16	0.86	0.77	0.00			
MEAN				0.155	0.852	4.905	0.028	0.025	0.000			
MAX				0.70	6.6	54	0.43	0.60	0.00			
MIN				0.00	0.03	0.04	0.00	0.00	0.00			
AC-FT				9.2	52	292	1.7	1.5	0.00			

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1946 - 2002*

MEAN	0.484	6.681	61.25	64.76	14.67	27.07	18.70	5.805	4.426	7.962	0.045	0.020
MAX	3.39	19.5	343	1218	108	222	137	85.9	54.4	54.5	0.31	0.14
(WY)	1947	1947	1947	1952	1986	1953	1993	1993	1993	1987	1953	1953
MIN	0.000	0.000	0.63	0.47	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	1948	1948	1949	2002	1949	1949	1946	1946	1946	1947	1947	1947

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1946 - 2002*	
HIGHEST DAILY MEAN	54	Jun 12	5100	Apr 3 1952
LOWEST DAILY MEAN	0.00	Many days	0.00	Many days
MAXIMUM PEAK FLOW	155	Jun 12	5570	Apr 3 1952
MAXIMUM PEAK STAGE	3.79	Jun 12	a14.70	Apr 3 1952

*--During period of operation (see PERIOD OF RECORD).
a--From floodmarks.
e--Estimated.

MILK RIVER BASIN

06139800 WEST FORK BEAVER CREEK NEAR ROCKY BOY, MT

LOCATION.--Lat 48°09'59", long 109°39'23" (NAD 27), in SW$^1/_4$NE$^1/_4$SW$^1/_4$ sec.22, T.28 N., R.16 E., Hill County, Hydrologic Unit 10050005, in Rocky Boy's Indian Reservation, on left bank, 1.1 mi upstream from East Fork Beaver Creek, 8.5 mi southeast of Rocky Boy Agency, 30 mi south of Havre, and at river mile 44.5.

DRAINAGE AREA.--2.92 mi^2.

PERIOD OF RECORD.--September 2001 to current year (seasonal records).

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 4,790 ft (NGVD 29).

REMARKS.--Records good Apr. 1 to June 6, excellent June 28 to Oct. 16, and estimated daily discharges are poor. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				1.5	0.84	2.0	3.1	1.1	0.96	1.1		
2				1.4	1.3	3.0	2.9	1.1	1.1	0.98		
3				1.4	0.95	2.8	2.7	1.1	0.89	0.95		
4				1.4	0.83	2.7	2.8	1.1	0.90	1.1		
5				1.9	0.85	2.5	2.4	1.5	0.89	1.3		
6				4.3	0.89	2.4	2.2	2.2	1.4	1.2		
7				2.5	0.85	e2.4	2.1	1.9	1.5	1.4		
8				1.6	1.4	e3.6	8.7	6.3	1.1	2.1		
9				1.4	1.9	e5.8	4.1	6.8	0.95	1.2		
10				2.9	0.92	e7.4	2.8	2.1	0.85	1.1		
11				3.0	1.2	e9.2	2.4	1.9	0.81	1.1		
12				3.7	1.8	e11	2.1	1.6	0.75	1.1		
13				6.1	2.4	e9.2	1.9	1.4	0.72	1.2		
14				6.2	2.5	e8.2	1.9	1.4	0.71	1.2		
15				2.0	1.7	e6.2	2.4	1.4	0.69	1.0		
16				0.90	1.5	e5.6	1.8	1.7	0.65	1.0		
17				0.77	1.6	e5.2	1.7	1.6	0.64	e1.0		
18				0.67	2.4	e7.8	1.7	1.6	0.81	e0.90		
19				0.70	2.6	e10	1.7	1.3	0.70	e0.85		
20				0.70	2.4	e9.2	1.7	1.2	0.71	e0.85		
21				0.88	2.2	e6.8	1.6	1.2	0.74	e0.80		
22				1.7	2.3	e6.4	1.4	1.1	0.72	e0.75		
23				1.1	2.0	e8.4	1.4	1.1	0.69	e0.70		
24				1.4	2.2	e6.0	1.3	1.0	0.74	e0.70		
25				0.87	2.0	e5.4	1.2	0.97	0.73	e0.70		
26				0.71	2.4	e5.0	1.6	0.96	0.75	e0.70		
27				0.63	2.0	e4.6	1.8	1.00	0.71	e0.78		
28				0.68	2.0	4.1	1.6	0.94	0.72	e0.78		
29				0.80	2.0	4.1	1.3	0.90	0.71	e0.89		
30				0.81	1.9	3.6	1.1	0.82	1.7	e0.93		
31				---	1.9	---	1.1	0.84	---	e0.81		
TOTAL				54.62	53.73	170.6	68.5	51.13	25.94	31.17		
MEAN				1.821	1.733	5.687	2.210	1.649	0.865	1.005		
MAX				6.2	2.6	11	8.7	6.8	1.7	2.1		
MIN				0.63	0.83	2.0	1.1	0.82	0.64	0.70		
AC-FT				108	107	338	136	101	51	62		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 2001 - 2002

MEAN	1.821	1.733	5.687	2.210	1.649	0.606	2.675
MAX	1.82	1.73	5.69	2.21	1.65	0.86	4.35
(WY)	2002	2002	2002	2002	2002	2002	2002
MIN	1.82	1.73	5.69	2.21	1.65	0.35	1.01
(WY)	2002	2002	2002	2002	2002	2001	2003

SUMMARY STATISTICS	FOR 2002 SEASON		WATER YEARS 2001 - 2002	
HIGHEST DAILY MEAN	11	Jun 12	11	Jun 12 2002
LOWEST DAILY MEAN	0.63	Apr 27	0.13	Sep 4 2001
MAXIMUM PEAK FLOW	28	Jul 8	28	Jul 8 2002
MAXIMUM PEAK STAGE	2.89	Jul 8	2.89	Jul 8 2002

e--Estimated.

06139850 BEAVER CREEK ABOVE ELK CREEK, NEAR ROCKY BOY, MT

LOCATION.--Lat 48°10'45", long 109°38'35" (NAD 27), in NE$^1/_4$SE$^1/_4$SE$^1/_4$ sec. 15, T.28 N., R.16 E., Hill County, Hydrologic Unit 10050005, in Rocky Boy's Indian Reservation, on left bank, 0.2 mi downstream from West Fork Beaver Creek, 0.6 mi upstream from Elk Creek, 28 mi south of Havre, and at river mile 43.2.

DRAINAGE AREA.--7.63 mi^2.

PERIOD OF RECORD.--July 2001 to current year. Miscellaneous measurements and water-quality samples were obtained at this site between 1982 and 1991.

GAGE.--Water-stage recorder. Elevation of gage is 4,610 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some regulation by East Fork Reservoir. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				e0.60	2.3	2.3	6.0	1.9	1.5	1.7		
2				e0.80	3.0	4.4	5.5	1.5	1.8	3.4		
3				e0.70	3.0	4.3	5.2	1.6	1.5	5.3		
4				e0.60	2.1	3.3	5.3	1.6	1.4	3.1		
5				e0.70	2.3	2.8	4.6	2.2	1.5	1.3		
6				e1.2	2.6	2.4	4.1	3.9	2.3	1.2		
7				e2.0	2.4	2.2	4.0	3.3	2.9	1.4		
8				e1.5	2.2	8.6	13	8.0	2.1	2.1		
9				e1.4	2.6	12	9.2	11	1.7	1.2		
10				e2.0	2.5	33	5.4	4.5	1.5	3.8		
11				e3.0	3.2	44	4.4	3.5	1.4	11		
12				5.0	4.4	46	3.8	2.9	1.3	10		
13				14	5.5	33	3.3	2.5	1.3	9.6		
14				16	5.9	23	3.3	2.3	1.2	5.0		
15				7.8	4.8	18	4.1	2.3	1.3	1.3		
16				4.7	3.8	14	3.2	2.9	1.2	1.3		
17				3.5	3.8	12	2.9	2.7	1.1	1.2		
18				3.1	4.5	11	2.7	2.7	1.3	1.1		
19				2.6	5.0	31	2.5	2.2	1.2	1.1		
20				2.7	4.7	19	2.4	2.0	1.3	1.0		
21				3.4	4.3	14	2.2	2.2	1.2	1.0		
22				4.9	5.1	15	2.2	1.8	1.3	1.0		
23				3.8	4.4	16	2.2	1.7	1.2	0.87		
24				2.4	4.7	13	2.0	1.6	1.3	0.89		
25				2.0	4.2	11	1.8	1.5	1.2	0.92		
26				2.0	4.5	9.3	2.4	1.5	1.3	0.90		
27				1.9	3.7	8.3	3.6	1.8	1.3	0.95		
28				2.0	3.3	7.7	3.0	1.6	1.3	0.95		
29				2.3	3.0	7.6	2.2	1.4	1.3	e0.70		
30				2.4	2.7	6.8	1.8	1.3	2.4	e0.80		
31				---	2.5	---	1.7	1.3	---	e0.80		
TOTAL				101.00	113.0	435.0	120.0	83.2	44.6	76.88		
MEAN				3.367	3.645	14.50	3.871	2.684	1.487	2.480		
MAX				16	5.9	46	13	11	2.9	11		
MIN				0.60	2.1	2.2	1.7	1.3	1.1	0.70		
AC-FT				199	224	863	238	165	88	152		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 2001 - 2002

MEAN	3.367	3.577	14.59	2.369	1.484	0.831	1.484
MAX	3.37	3.58	14.6	3.99	2.55	1.40	2.40
(WY)	2002	2002	2002	2002	2002	2002	2003
MIN	3.37	3.58	14.6	0.75	0.42	0.27	0.56
(WY)	2002	2002	2002	2001	2001	2001	2002

SUMMARY STATISTICS	FOR 2002 SEASON		FOR SEASONS 2001 - 2002	
HIGHEST DAILY MEAN	46	Jun 12	46	Jun 12 2002
LOWEST DAILY MEAN	0.60	Apr 1	0.08	Sep 4 2001
MAXIMUM PEAK FLOW	71	Jun 11	71	Jun 11 2002
MAXIMUM PEAK STAGE	2.77	Jun 11	2.77	Jun 11 2002
INSTANTANEOUS LOW FLOW			a0.04	Aug 31 2001

a--Gage height, 1.11 ft.
e--Estimated.

06139900 BEAVER CREEK AT RESERVATION BOUNDARY, NEAR ROCKY BOY, MT

LOCATION.--Lat 48°13'17", long 109°39'01" (NAD 27), in NW$^1/_4$NW$^1/_4$NE$^1/_4$ sec. 3, T.28 N., R.16 E., Hill County, Hydrologic Unit 10050005, in Rocky Boy's Indian Reservation, on left bank, 20 ft upstream from reservation boundary, 0.4 mi upstream from Blackie Coulee, 6.7 mi southeast of Rocky Boy, 25 mi south of Havre, and at river mile 39.9.

DRAINAGE AREA.--16.1 mi^2.

PERIOD OF RECORD.--July 2001 to current year. Miscellaneous measurements and water-quality samples were obtained at this site between 1982 and 1991.

GAGE.--Water-stage recorder. Elevation of gage is 4,200 ft (NGVD 29).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.28	0.90	0.42	0.17	e0.30	e0.30	0.90	3.3	4.1	10	3.4	2.3
2	0.12	0.84	0.42	0.09	0.31	e0.40	e1.1	3.4	5.2	9.5	3.0	2.7
3	0.05	0.78	0.44	0.06	0.34	e0.60	e1.0	4.3	5.6	9.1	3.1	2.4
4	0.16	0.73	0.44	0.03	0.33	e0.55	0.87	3.3	4.6	9.0	3.0	2.3
5	0.24	0.68	0.42	0.02	0.34	e0.55	1.0	3.2	3.9	8.1	3.4	2.3
6	0.28	0.67	0.42	0.02	0.35	e0.55	2.5	3.8	3.5	7.3	6.0	3.1
7	0.33	0.65	0.41	0.02	0.35	e0.50	3.9	3.7	3.2	7.0	5.2	4.3
8	0.35	0.63	0.40	0.04	0.36	e0.40	3.0	3.1	8.7	17	11	3.4
9	0.38	0.59	0.39	0.05	0.40	e0.50	2.9	3.8	18	15	18	2.9
10	0.38	0.58	0.39	0.05	0.40	e0.50	3.6	3.7	42	10	9.4	2.5
11	0.40	0.58	0.38	0.03	0.42	0.52	5.3	4.4	70	7.9	7.0	2.3
12	0.44	0.58	0.35	0.04	0.43	0.61	6.1	5.5	101	7.0	5.8	2.2
13	0.54	0.60	0.33	0.04	0.42	0.58	9.9	6.5	99	6.2	4.8	2.1
14	0.68	0.60	0.30	0.03	0.43	0.57	18	7.6	74	5.9	4.3	2.0
15	0.72	0.60	0.29	0.03	0.45	0.53	11	7.1	53	6.9	4.2	1.9
16	0.65	0.60	0.28	0.02	0.48	e0.50	7.0	6.0	37	5.7	4.6	1.9
17	0.63	0.59	0.27	e0.07	0.51	e0.50	5.3	5.6	30	5.2	4.9	1.8
18	0.65	0.62	0.28	0.10	0.50	e0.45	4.5	5.9	24	4.8	4.6	2.0
19	0.63	0.63	0.28	0.24	0.50	e0.45	4.1	6.7	e26	4.5	3.9	1.9
20	0.63	0.60	0.30	0.28	0.49	e0.40	3.7	6.7	e45	4.3	3.4	2.0
21	0.65	0.63	0.34	0.30	0.51	e0.45	4.0	6.2	e35	4.1	3.4	2.1
22	0.64	0.65	0.35	0.30	0.87	0.44	5.2	7.2	e30	4.0	3.2	2.0
23	0.68	0.66	0.33	0.29	e1.5	0.46	5.8	6.5	e20	3.8	2.9	2.0
24	0.79	0.69	0.30	0.30	e1.2	0.45	3.9	7.0	e15	3.6	e2.9	2.0
25	0.84	0.69	0.26	0.33	e1.1	0.45	3.4	6.6	16	3.3	e2.8	2.0
26	0.87	0.63	0.26	e0.35	e0.90	0.47	3.0	6.6	15	4.5	e2.7	2.0
27	0.93	0.52	0.23	e0.35	0.79	0.63	3.0	6.0	13	6.7	e2.7	2.1
28	1.0	0.49	0.22	e0.33	e0.35	0.61	2.8	5.5	12	5.4	2.6	2.0
29	1.0	0.45	e0.23	e0.30	---	0.57	3.0	4.9	12	4.1	2.2	2.0
30	0.97	0.42	e0.23	e0.30	---	0.53	3.4	4.5	11	3.5	2.2	3.1
31	0.94	---	e0.23	e0.30	---	0.60	---	4.0	---	3.3	2.2	---
TOTAL	17.85	18.88	10.19	4.88	15.33	15.62	133.17	162.6	836.8	206.7	142.8	69.6
MEAN	0.576	0.629	0.329	0.157	0.547	0.504	4.439	5.245	27.89	6.668	4.606	2.320
MAX	1.0	0.90	0.44	0.35	1.5	0.63	18	7.6	101	17	18	4.3
MIN	0.05	0.42	0.22	0.02	0.30	0.30	0.87	3.1	3.2	3.3	2.2	1.8
AC-FT	35	37	20	9.7	30	31	264	323	1660	410	283	138

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

MEAN	0.576	0.629	0.329	0.157	0.548	0.504	4.439	5.245	27.89	3.631	2.558	1.258
MAX	0.58	0.63	0.33	0.16	0.55	0.50	4.44	5.25	27.9	6.67	4.61	2.32
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
MIN	0.58	0.63	0.33	0.16	0.55	0.50	4.44	5.25	27.9	0.59	0.51	0.20
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2001	2001	2001

SUMMARY STATISTICS	FOR 2002 WATER YEAR		WATER YEARS 2001 - 2002	
ANNUAL TOTAL	1634.42			
ANNUAL MEAN	4.478		4.478	
HIGHEST ANNUAL MEAN			4.48	2002
LOWEST ANNUAL MEAN			4.48	2002
HIGHEST DAILY MEAN	101	Jun 12	101	Jun 12 2002
LOWEST DAILY MEAN	0.02	Jan 5	0.00	Sep 6 2001
ANNUAL SEVEN-DAY MINIMUM	0.03	Jan 4	0.03	Sep 1 2001
MAXIMUM PEAK FLOW	134	Jun 12	134	Jun 12 2002
MAXIMUM PEAK STAGE	3.64	Jun 12	3.64	Jun 12 2002
INSTANTANEOUS LOW FLOW			0.00	Sep 5 2001
ANNUAL RUNOFF (AC-FT)	3240		3240	
10 PERCENT EXCEEDS	8.3		8.3	
50 PERCENT EXCEEDS	1.0		1.0	
90 PERCENT EXCEEDS	0.28		0.28	

e--Estimated.

MILK RIVER BASIN

06140500 MILK RIVER AT HAVRE, MT

LOCATION.--Lat 48°33'50", long 109°41'42" (NAD 27), in SE$^1/_4$NE$^1/_4$NE$^1/_4$ sec.6, T.32 N., R.16 E., Hill County, Hydrologic Unit 10050004, on left bank, 1.25 mi upstream from Bullhook Creek and 7th Avenue East highway bridge in Havre, 8.2 mi downstream from Big Sandy Creek, 15.8 mi downstream from Fresno Dam, and at river mile 419.2.

DRAINAGE AREA.--5,785 mi^2, of which 670 mi^2 is probably noncontributing.

PERIOD OF RECORD.--May to November 1898, April 1899 to November 1922, March, April 1923, March, April 1952 (gage heights only, in WSP 1260-B), June 1953 (in WSP 1320-B), September 1954 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1899-1900, 1902-4, 1907-8, 1909(M), 1912, 1917(M), 1920(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,465.24 ft (NGVD 29). Prior to Nov. 4, 1902, nonrecording gage at site 0.75 mi downstream at different datum. Nov. 4, 1902, to Aug. 6, 1980, nonrecording gages 1.25 mi downstream on 7th Avenue East highway bridges, all at datums then in use.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Diversions for irrigation of about 6,000 acres upstream from station. Since 1917, flow increased during irrigation season by water from St. Mary Canal (station number 05018500). Since 1939, flow regulated by Fresno Reservoir (station number 06136500). U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	34	28	e29	e25	e24	e22	454	1240	859	1240	484
2	55	36	33	e28	e25	e24	e22	456	1240	728	1230	486
3	55	37	33	e28	e25	e24	e22	513	1230	691	1210	491
4	55	37	30	e28	e25	e23	e22	527	1240	633	1180	490
5	55	37	27	e28	e25	e23	e30	525	1250	609	1180	504
6	98	37	27	e28	e25	e23	e34	528	1150	592	1220	543
7	110	39	29	e28	e25	e23	e36	501	1130	578	1190	548
8	109	37	30	e28	e25	e23	34	519	1210	686	802	540
9	107	37	32	e28	e25	e23	34	478	1260	785	503	543
10	173	37	31	e28	e25	e23	33	476	1240	758	306	542
11	189	37	29	e28	e25	e23	28	497	791	746	299	542
12	185	38	28	e28	e25	e23	25	502	731	725	338	543
13	176	38	29	e28	e25	e23	30	512	785	683	623	541
14	167	38	32	e28	e25	e23	31	591	1070	675	698	541
15	157	37	33	e20	e25	e23	23	756	1430	667	695	544
16	60	38	30	e28	e25	e23	25	886	1750	685	686	560
17	37	37	35	e28	e25	e23	27	896	1970	661	601	545
18	41	37	39	e28	e24	e22	31	897	2050	684	595	456
19	38	35	28	e24	e24	e22	144	883	2200	903	587	439
20	38	40	30	e26	e24	e22	310	796	2160	991	524	430
21	38	37	29	e26	e24	e22	322	881	2060	986	435	434
22	39	37	27	e26	e24	e22	345	908	1930	971	426	438
23	40	38	30	e26	e24	e22	439	903	1810	979	436	441
24	39	36	30	e26	e24	e23	457	897	1590	1040	492	442
25	39	32	32	e26	e32	e23	454	938	1440	1210	496	443
26	38	31	32	e26	e36	e23	449	939	1510	1210	495	446
27	38	32	e30	e26	e30	e22	446	937	1640	1260	497	426
28	38	32	e31	e25	e24	e22	449	939	1510	1260	494	409
29	37	35	e30	e25	---	e22	448	981	1270	1240	495	410
30	37	28	e30	e25	---	e22	455	1180	1060	1220	488	414
31	39	---	e30	e25	---	e22	---	1220	---	1230	488	---
TOTAL	2382	1081	944	829	715	705	5227	22916	42947	26945	20949	14615
MEAN	76.84	36.03	30.45	26.74	25.54	22.74	174.2	739.2	1432	869.2	675.8	487.2
MAX	189	40	39	29	36	24	457	1220	2200	1260	1240	560
MIN	37	28	27	20	24	22	22	454	731	578	299	409
AC-FT	4720	2140	1870	1640	1420	1400	10370	45450	85190	53450	41550	28990

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1898 - 2002, BY WATER YEAR (WY)*

MEAN	145.2	76.46	53.30	57.16	91.23	320.3	523.3	811.4	825.6	770.9	562.7	325.6
MAX	628	325	160	780	1400	2106	2700	2191	2188	2045	1303	956
(WY)	1994	1976	1900	1918	1916	1918	1899	1967	1908	1902	1978	1993
MIN	0.000	0.000	0.000	0.000	0.000	5.00	25.0	61.4	35.2	15.3	0.000	0.000
(WY)	1906	1906	1906	1906	1922	1919	1983	1905	1905	1910	1910	1905

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1898 - 2002*	
ANNUAL TOTAL	68249		140255			
ANNUAL MEAN	187.0		384.3		381.2	
HIGHEST ANNUAL MEAN					727	1965
LOWEST ANNUAL MEAN					39.2	1905
HIGHEST DAILY MEAN	1220	May 30	2200	Jun 19	a16000	Apr 12 1899
LOWEST DAILY MEAN	27	Dec 5	20	Jan 15	b0.00	Jul 11 1898
ANNUAL SEVEN-DAY MINIMUM	29	Dec 5	22	Mar 27	0.00	Aug 15 1905
MAXIMUM PEAK FLOW			2290	Jun 19	c20000	Apr 12 1899
MAXIMUM PEAK STAGE			6.59	Jun 19	d19.30	Apr 12 1899
ANNUAL RUNOFF (AC-FT)	135400		278200		276100	
10 PERCENT EXCEEDS	650		1180		1050	
50 PERCENT EXCEEDS	55		40		135	
90 PERCENT EXCEEDS	33		24		27	

06140500 MILK RIVER AT HAVRE, MT--Continued

	WATER YEARS 1900 - 1916**			WATER YEARS 1917 - 2002***		
ANNUAL MEAN	274			415		
HIGHEST ANNUAL MEAN	571		1916	727		1965
LOWEST ANNUAL MEAN	39.2		1905	160		1919
HIGHEST DAILY MEAN	9600	Jun 9	1908	9150	Mar 20	1918
LOWEST DAILY MEAN	a.00	Aug 16	1904	.00	Jan 1	1922
ANNUAL SEVEN-DAY MINIMUM	.00	Aug 15	1904	.00	Jan 1	1922
MAXIMUM PEAK FLOW	11000	Jun 9	1908	f11400	Apr 3	1952
MAXIMUM PEAK STAGE	16.5	Jun 9	1908	18.60	Apr 3	1952
ANNUAL RUNOFF (AC-FT)	198300			300600		
10 PERCENT EXCEEDS	640			1090		
50 PERCENT EXCEEDS	110			165		
90 PERCENT EXCEEDS	5.0			30		

*--During periods of operation (May 1898 to November 1898, April 1899 to November 1922, March 1923 to April 1923, September 1954 to current year).
**--Prior to operation of St. Mary Canal.
***--Post operation of St. Mary Canal.
a--Observed.
b--Observed, no flow at times in several years.
c--Observed, from rating curve extended above 5,200 ft^3/s.
d--Site and datum then in use, from floodmarks.
e--Estimated.
f--Observed, about.

06142400 CLEAR CREEK NEAR CHINOOK, MT

LOCATION.--Lat 48°34'44", long 109°23'26" (NAD 27), in SE$^1/_4$NW$^1/_4$NW$^1/_4$ sec.33, T.33 N., R.18 E., Blaine County, Hydrologic Unit 10050004, on right bank, 7 mi west of Chinook, and at river mile 2.5.

DRAINAGE AREA.--135 mi^2.

PERIOD OF RECORD.--June 1984 to current year (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 2,470 ft (NGVD 29).

REMARKS.--Records good except those for periods of flow over 5 ft^3/s, which are poor. Diversions for irrigation of about 2,000 acres upstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperatures and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				0.00	0.00	0.00	2.9	0.00	0.67			
2				0.00	0.00	0.00	2.5	0.01	0.52			
3				0.00	0.00	0.00	1.9	0.00	0.43			
4				0.00	0.00	0.00	1.5	0.03	0.34			
5				0.00	0.00	0.00	1.0	0.04	0.19			
6				0.00	0.00	0.00	0.84	0.02	0.27			
7				0.00	0.00	0.00	0.66	0.05	0.34			
8				0.00	0.00	0.00	70	1.3	0.26			
9				0.00	0.00	0.00	16	1.3	0.16			
10				0.00	0.00	0.00	7.6	4.2	0.09			
11				0.00	0.00	0.00	6.5	5.7	0.06			
12				0.00	0.00	30	3.9	3.9	0.03			
13				0.00	0.00	38	2.4	2.8	0.01			
14				0.00	0.00	30	1.6	2.5	0.00			
15				0.00	0.00	23	1.3	2.8	0.00			
16				0.00	0.00	16	1.4	4.5	0.00			
17				0.00	0.00	10	1.1	7.2	0.00			
18				0.00	0.00	6.9	0.99	10	0.00			
19				0.00	0.00	6.4	0.81	11	0.00			
20				0.00	0.00	11	0.65	11	0.00			
21				0.00	0.00	11	0.34	7.8	0.00			
22				0.00	0.00	12	0.27	5.9	0.00			
23				0.00	0.00	33	0.16	4.4	0.00			
24				0.00	0.00	26	0.09	4.1	0.00			
25				0.00	0.00	11	0.05	3.2	0.00			
26				0.00	0.00	6.7	0.06	2.4	0.00			
27				0.00	0.00	5.8	0.13	2.0	0.00			
28				0.00	0.00	4.6	0.10	1.7	0.00			
29				0.00	0.00	5.7	0.06	1.5	0.00			
30				0.00	0.00	4.1	0.03	1.1	0.00			
31				0.00	---	0.02	0.88	---	---			
TOTAL				0.00	0.00	291.20	126.86	103.33	3.37			
MEAN				0.00	0.00	9.707	4.092	3.333	0.112			
MAX				0.00	0.00	38	70	11	0.67			
MIN				0.00	0.00	0.00	0.02	0.00	0.00			
AC-FT				0.00	0.00	578	252	205	6.7			

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1984 - 2002

MEAN	11.42	19.95	16.28	9.297	2.930	4.262
MAX	46.0	137	74.0	51.4	34.9	47.4
(WY)	1994	1986	1986	1993	1993	1986
MIN	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	2002	2001	2001	1985	1984	1984

SUMMARY STATISTICS	FOR 2002 SEASON			SEAESONS 1984 - 2002		
HIGHEST DAILY MEAN	70	Jul	8	360	Sep	25 1986
LOWEST DAILY MEAN	0.00	Apr	1	a.0.00	Jul	5 1984
MAXIMUM PEAK FLOW	252	Jul	8	571	Sep	25 1986
MAXIMUM PEAK STAGE	5.69	Jul	8	8.23	Sep	25 1986

a--No flow at times most years.

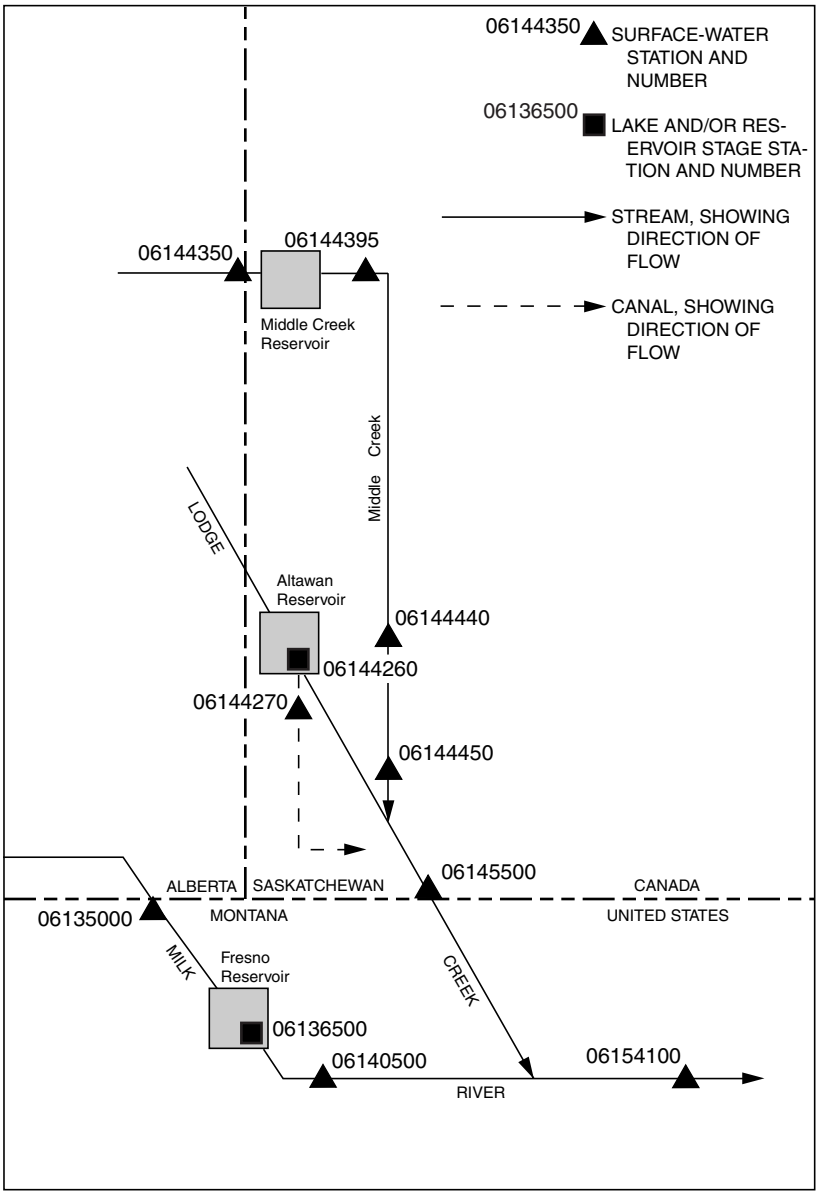

Figure 11. Schematic diagram showing diversions and storage in Lodge Creek Basin.

06144260 ALTAWAN RESERVOIR NEAR GOVENLOCK, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°10'00", long 109°55'00" (NAD 27), in SW$^{1}/_{4}$ sec.35, T.2, R.30 W., third meridian, Hydrologic Unit 10050007, at dam on Lodge Creek, 6.3 mi southwest of Govenlock, and at river mile 113.5.

DRAINAGE AREA.-- 373 mi^{2}.

PERIOD OF RECORD.--February 1966 to current season (seasonal records only). February 1960 to current season in reports of Department of the Environment, Canada. Water-stage recorder. Datum of gage is 2,918.0 (Geodetic Survey of Canada datum). Prior to July 7, 1967, nonrecording gage in gate read every ten days during irrigation season.

REMARKS.--Reservoir is formed by earthfill dam with concrete spillway and control works as well as an emergency earthen spillway, completed in 1959. The following capacity figures are from revised capacity table effective Jan. 1, 1983. All elevations are referenced to the Geodetic Survey of Canada datum. Usable capacity is 5,440 acre-ft between elevation 2,918.0 ft, bottom of outlet works, and 2,952.0 ft, maximum design level. No dead storage. Water is used for irrigation. Water Survey of Canada satellite telemeter at station. This is one of a number of stations which are maintained jointly by Canada and the United States.

REVISED RECORDS.--W 1983, drainage area.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 8,300 acre-ft, Sept. 26, 1986, elevation, 2,958.10 ft; no contents Mar. 1, 1960, Oct. 6-31, 1984, Mar. 1-18, and Oct. 3-31, 1985.

EXTREMES FOR CURRENT SEASON.--Maximum contents, 5,710 acre-ft, June 18, elevation, 2,952.61 ft; minimum, 2 acre-ft, Feb. 28, elevation, 2,920.07 ft.

Seasonal monthend contents, in acre-ft, February 2002 to October 2002

Date		Contents
Feb.	28	2
Mar.	31	2
Apr.	30	319
May	31	284
June	30	2,570
July	31	2,520
Aug.	31	879
Sept.	30	960
Oct.	31	941

MILK RIVER BASIN

06144270 SPANGLER DITCH NEAR GOVENLOCK, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°09'16", long 109°54'58" (NAD 27), in NW$^1/_4$ sec.26, T.2, R.30 W., third meridian, Hydrologic Unit 10050007, on right bank 0.9 mi south of Altawan Dam, and 6.8 mi southwest of Govenlock.

PERIOD OF RECORD.--March 1966 to current season (seasonal records only). March 1950 to current season, in reports of Department of the Environment, Canada. Some estimates of monthly diversion in several years prior to 1932.

GAGE.--Water-stage recorder. Elevation of gage is 2,920 ft (NGVD 29). Prior to March 1950, nonrecording gages at several sites within 2 mi of present site at different datums. March 1950 to July 8, 1960, water-stage recorder at site 350 ft downstream at different datum.

REMARKS.--Records good. Canal diverts water from right bank of Lodge Creek in SW$^1/_4$ sec.35, T.2, R.30 W., third meridian, for irrigation of 1,320 acres in Spangler irrigation project. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 65 ft^3/s, Apr. 22, 1950, July 9, 1985; no flow most of each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.00	0.00	0.00	0.00	0.11	0.04	0.00	0.00		
2			0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00		
3			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
4			0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00		
5			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
6			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
7			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
8			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
9			0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00		
10			0.00	0.00	0.00	2.5	0.00	0.00	0.00	0.00		
11			0.00	0.00	0.00	1.2	0.00	0.00	0.00	0.00		
12			0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00		
13			0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00		
14			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
15			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
16			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
17			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
18			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
19			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
20			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
21			0.00	0.00	0.00	1.2	0.04	0.00	0.00	0.00		
22			0.00	0.00	0.00	2.8	0.04	0.00	0.00	0.00		
23			0.00	0.00	0.00	2.7	0.04	0.00	0.00	0.00		
24			0.00	0.00	0.00	2.6	0.04	0.00	0.00	0.00		
25			0.00	0.00	0.00	2.5	0.04	0.00	0.00	0.00		
26			0.00	0.00	0.00	2.4	0.04	0.00	0.00	0.00		
27			0.00	0.00	0.00	2.3	0.07	0.00	0.00	0.00		
28			0.00	0.00	0.00	2.2	0.04	0.00	0.00	0.00		
29			0.00	0.00	0.00	2.1	0.04	0.00	0.00	0.00		
30			0.00	0.00	0.00	1.4	0.04	0.00	0.00	0.00		
31			0.00	---	0.00	---	0.04	0.00	---	0.00		
TOTAL			0.00	0.00	0.00	26.15	0.70	0.04	0.00	0.00		
MEAN			0.000	0.000	0.000	0.872	0.023	0.001	0.000	0.000		
MAX			0.00	0.00	0.00	2.8	0.11	0.04	0.00	0.00		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	0.00	0.00	52	1.4	0.08	0.00	0.00		

MILK RIVER BASIN

06144350 MIDDLE CREEK NEAR SASKATCHEWAN BOUNDARY

(International gaging station)

LOCATION.--Lat 49°25'30", long 110°03'08" (NAD 27), in SW$^1/_4$ sec.34, T.5, R.1 W., fourth meridian, in Alberta, Hydrologic Unit 10050007, on left bank 2 mi upstream from Middle Creek Reservoir, 2 mi west of Saskatchewan boundary, 18 mi northwest of Govenlock, Saskatchewan, and at river mile 65.7.

DRAINAGE AREA.--118 mi^2.

PERIOD OF RECORD.--March 1963 to current season (seasonal records only). Prior to March 1982, published as "Middle Creek near Alberta boundary". June 1910 to April 1915, published as "at McKinnon's Ranch" and September 1949 to current season in reports of Department of the Environment, Canada.

REVISED RECORDS.--W 1983: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,381.13 ft (Geodetic Survey of Canada datum). Prior to Mar. 1, 1951, nonrecording gages, and Mar. 1, 1951, to July 5, 1961, water-stage recorder, at site 0.3 mi downstream at different datums. Water Survey of Canada satellite telemeter at station.

REMARKS.--Records fair. Minor diversions for irrigation upstream from station. Water Survey of Canada telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.04	e0.04	0.07	0.11	0.07	0.11	0.04	0.07		
2			e0.04	e0.04	0.07	0.11	0.07	0.07	0.04	0.07		
3			e0.04	e0.04	0.07	0.11	0.07	0.07	0.04	0.04		
4			e0.04	e0.04	0.07	0.11	0.07	0.07	0.04	0.04		
5			e0.04	e0.04	0.07	0.11	0.07	0.07	0.04	0.07		
6			e0.04	e0.04	0.07	0.07	0.07	0.07	0.04	0.07		
7			e0.00	e0.04	0.07	0.07	0.07	0.07	0.04	0.07		
8			e0.00	e0.04	0.07	0.32	0.18	0.07	0.04	0.04		
9			e0.00	e0.07	0.07	0.95	0.11	0.07	0.07	0.07		
10			e0.00	e0.07	0.07	13	0.07	0.07	0.07	e0.07		
11			e0.00	e0.99	0.07	367	0.07	0.07	0.04	e0.07		
12			e0.00	e0.49	0.07	245	0.07	0.11	0.04	e0.07		
13			e0.00	e2.0	0.07	92	0.07	0.07	0.04	e0.07		
14			e0.00	e38	0.07	39	0.04	0.04	0.04	e0.07		
15			e0.00	89	0.11	14	0.04	0.04	0.04	e0.07		
16			e0.00	44	0.07	4.8	0.07	0.04	0.04	e0.07		
17			e0.00	17	0.07	1.6	0.04	0.04	0.07	e0.07		
18			e0.00	2.8	0.07	0.78	0.04	0.04	0.04	e0.07		
19			e0.00	0.85	0.07	0.64	0.04	0.04	0.04	e0.07		
20			e0.00	0.39	0.07	0.35	0.04	0.04	0.04	e0.07		
21			e0.00	0.21	0.07	0.21	0.04	0.04	0.04	e0.04		
22			e0.00	0.11	0.11	0.14	0.04	0.04	0.04	e0.04		
23			e0.04	0.07	0.11	0.14	0.04	0.04	0.04	e0.04		
24			e0.04	0.07	0.11	0.11	0.04	0.04	0.04	e0.04		
25			e0.04	0.07	0.11	0.11	0.07	0.04	0.07	e0.04		
26			e0.04	0.07	0.11	0.11	0.04	0.04	0.07	e0.04		
27			e0.04	0.07	0.11	0.11	0.07	0.04	0.07	e0.04		
28			e0.04	0.07	0.11	0.11	0.07	0.04	0.07	e0.04		
29			e0.04	0.07	0.11	0.11	0.07	0.04	0.07	e0.04		
30			e0.04	0.07	0.11	0.11	0.07	0.04	0.07	e0.04		
31			e0.04	---	0.11	---	0.07	0.04	---	e0.04		
TOTAL			0.60	196.86	2.61	781.39	1.99	1.71	1.47	1.75		
MEAN			0.019	6.562	0.084	26.05	0.064	0.055	0.049	0.056		
MAX			0.04	89	0.11	367	0.18	0.11	0.07	0.07		
MIN			0.00	0.04	0.07	0.07	0.04	0.04	0.04	0.04		
AC-FT			1.2	390	5.2	1550	3.9	3.4	2.9	3.5		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1910 - 2002*

MEAN	14.04	37.85	11.49	3.966	1.862	0.743	1.007	0.458
MAX	74.2	330	136	45.1	20.0	6.99	24.8	2.38
(WY)	1960	1952	1967	1953	1963	1993	1986	1966
MIN	0.000	0.043	0.079	0.078	0.023	0.003	0.000	0.048
(WY)	1950	2001	2001	2000	2001	2001	1962	1999

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS YEARS 1910 - 2002*	
HIGHEST DAILY MEAN	367	Jun 11	2560	Apr 15 1952
LOWEST DAILY MEAN	0.00	Mar 7	0.00	Mar 1 1950
MAXIMUM PEAK FLOW	509	Jun 11	a4980	Apr 15 1952
MAXIMUM PEAK STAGE	7.77	Jun 11	b10.27	Apr 15 1952

*--For periods of operation.
a--From rating curve extended above 600 ft^3/s on basis of slope-area measurement of peak flow.
b--Previous site and datum.
e--Estimated.

MILK RIVER BASIN

06144395 MIDDLE CREEK BELOW MIDDLE CREEK RESERVOIR, NEAR GOVENLOCK, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°24'44", long 109°55'06" (NAD 27), in SW$^1/_4$ sec.25, T.5, R.30 W., third meridian, Hydrologic Unit 10050007, on right bank 9.1 mi downstream from Middle Creek Reservoir, 14 mi northwest of Govenlock, and at river mile 57.6.

DRAINAGE AREA.--149 mi^2.

PERIOD OF RECORD.--April 1972 to current season (seasonal records only). July 1909 to May 1931, September 1935 to October 1936, and April 1972 to current season in reports of Department of the Environment, Canada. Published as "at Ross Ranch" 1909-20, "at Downes and Robert's Ranch" 1920-23, and "at Wright's Ranch" 1920-31, 1935-36. Discharge measurements only during 1928 season.

REVISED RECORDS.--W 1983: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,300 ft (NGVD 29). Prior to April 1972, non recording gages at two sites within 2 mi of present site, at different datums.

REMARKS.--Records good. Flow completely regulated by Middle Creek Reservoir (station number 06144360). Many diversions for irrigation upstream from station. At high reservoir levels flow may be diverted to Lodge Creek through Middle Creek Reservoir. Diversions for irrigation of 920 acres between Middle Creek Reservoir and station. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 77 ft^3/s, May 3, 1985; no flow at times most seasons.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
4			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
5			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
6			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
7			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
8			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
9			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
10			0.00	0.00	0.00	4.7	0.00	0.00	0.00	0.00		
11			0.00	0.00	0.00	11	0.00	0.00	0.00	0.00		
12			0.00	0.00	0.00	13	0.00	0.00	0.00	0.00		
13			0.00	0.00	0.00	0.74	0.00	0.00	0.00	0.00		
14			0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.00		
15			0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00		
16			0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00		
17			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
18			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
19			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
20			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
21			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
22			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
23			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
24			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
25			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
26			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
27			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
28			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
29			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
30			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
31			0.00	---	0.00	---	0.00	0.00	---	0.00		
TOTAL			0.00	0.00	0.00	29.73	0.00	0.00	0.00	0.00		
MEAN			0.000	0.000	0.000	0.991	0.000	0.000	0.000	0.000		
MAX			0.00	0.00	0.00	13	0.00	0.00	0.00	0.00		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	0.00	0.00	59	0.00	0.00	0.00	0.00		

MILK RIVER BASIN

06144440 MIDDLE CREEK NEAR GOVENLOCK, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°13'42", long 109°48'57" (NAD 27), in NW$^1/_4$ sec.23, T.3, R.29 W., third meridian, Hydrologic Unit 10050007, on left bank 43.9 mi downstream from Middle Creek Reservoir, 0.3 mi northwest of Govenlock, and at river mile 22.8.

DRAINAGE AREA.--253 mi^2.

PERIOD OF RECORD.--February 1986 to current season (seasonal records only). March 1968 to current season in reports of Department of the Environment, Canada.

GAGE.--Water-stage recorder. Elevation of gage is 3,010 ft (NGVD 29).

REMARKS.--Records fair. Natural flow of stream is affected by Middle Creek Reservoir (station 06144360), several smaller reservoirs, diversions for irrigation, and return flow from irrigated areas. At high reservoir levels flow may be diverted to Lodge Creek through Middle Creek Reservoir. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	0.00	0.39	0.07	0.49	0.00	0.00	0.00		
2			e0.00	0.00	2.5	0.14	0.35	0.00	0.00	0.04		
3			e0.00	0.00	1.3	0.14	0.25	0.00	0.00	0.14		
4			e0.00	2.6	0.42	0.14	0.25	0.00	0.00	0.25		
5			e0.00	4.1	0.18	0.11	0.18	0.00	0.00	0.35		
6			e0.00	0.78	0.18	0.11	0.11	0.00	0.00	0.32		
7			e0.00	1.7	0.21	0.04	0.07	0.00	0.00	0.32		
8			e0.00	1.7	0.28	0.11	0.18	0.00	0.00	0.32		
9			e0.00	1.4	0.25	0.35	0.21	0.00	0.00	0.32		
10			e0.00	1.6	0.25	6.1	2.4	0.00	0.00	0.35		
11			e0.00	2.0	0.18	43	3.6	0.00	0.00	0.32		
12			e0.00	4.5	0.11	42	1.7	0.00	0.00	0.71		
13			e0.00	5.4	2.8	17	0.88	0.00	0.00	0.57		
14			e0.00	9.2	4.5	17	0.53	0.00	0.00	0.32		
15			e0.00	11	1.5	9.7	0.39	0.00	0.00	0.18		
16			e0.00	12	1.2	6.6	0.28	0.00	0.00	0.04		
17			e0.00	4.9	1.2	5.0	0.18	0.00	0.00	0.04		
18			e0.00	2.1	1.1	4.1	0.11	0.00	0.00	0.04		
19			e0.00	0.88	0.95	3.6	0.04	0.00	0.00	0.07		
20			e0.00	2.5	0.81	3.0	0.04	0.00	0.00	0.39		
21			e0.00	1.6	0.78	2.5	0.04	0.00	0.00	0.42		
22			e0.00	1.0	1.1	2.0	0.04	0.00	0.00	0.53		
23			e0.00	0.71	1.6	1.8	0.04	0.00	0.00	0.57		
24			e0.00	0.64	2.2	1.6	0.00	0.00	0.00	0.53		
25			e0.00	0.49	1.3	1.2	0.00	0.00	0.00	0.57		
26			e0.00	0.46	0.99	1.0	0.00	0.00	0.00	0.60		
27			e0.00	0.53	0.78	0.92	0.00	0.00	0.00	0.57		
28			0.00	0.71	0.60	0.78	0.00	0.00	0.00	0.67		
29			0.00	1.1	0.39	0.71	0.00	0.00	0.00	0.60		
30			0.00	0.46	0.25	0.57	0.00	0.00	0.00	0.49		
31			0.00	---	0.14	---	0.00	0.00	---	0.42		
TOTAL			0.00	76.06	30.44	171.39	12.36	0.00	0.00	11.06		
MEAN			0.000	2.535	0.982	5.713	0.399	0.000	0.000	0.357		
MAX			0.00	12	4.5	43	3.6	0.00	0.00	0.71		
MIN			0.00	0.00	0.11	0.04	0.00	0.00	0.00	0.00		
AC-FT			0.00	151	60	340	25	0.00	0.00	22		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1986 - 2002

MEAN	11.41	5.253	2.643	3.596	0.693	0.153	3.434	0.626
MAX	53.2	36.4	6.79	14.3	5.45	2.20	56.9	4.04
(WY)	1997	1996	1997	1988	1993	1993	1986	1987
MIN	0.000	0.83	0.27	0.001	0.000	0.000	0.000	0.000
(WY)	2002	1992	1992	1992	1990	1986	1987	1991

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1986 - 2002	
HIGHEST DAILY MEAN	43	Jun 11	724	Sep 26 1986
LOWEST DAILY MEAN	0.00	Many days	0.00	Feb 19 1986
MAXIMUM PEAK FLOW	93	Jun 11	1190	Sep 25 1986
MAXIMUM PEAK STAGE	5.38	Jun 11	9.81	Sep 25 1986

e--Estimated.

MILK RIVER BASIN

06144450 MIDDLE CREEK ABOVE LODGE CREEK, NEAR GOVENLOCK, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°06'01", long 109°49'02" (NAD 27), in NE$^{1}/_{4}$ sec.4, T.2, R.29 W., third meridian, Hydrologic Unit 10050007, on left bank, 0.7 mi upstream from Lodge Creek, and 9 mi south of Govenlock.

DRAINAGE AREA.--276 mi^{2}.

PERIOD OF RECORD.--March 1962 to October 1966 and February 1986 to current season. Seasonal records only. March 1911 to May 1931 and March 1962 to current season in reports of Department of the Environment, Canada. Published as "at Hammond's Ranch" 1911-31.

GAGE.--Water-stage recorder. Elevation of gage is 2,830 ft (NGVD 29). Prior to Mar. 1, 1962, nonrecording gage at site 1,000 ft downstream at different datum.

REMARKS.--Records good. Natural flow of stream affected by Middle Creek Reservoir (station 06144360), several smaller reservoirs, diversions for irrigation, and return flow from irrigated areas. At high reservoir levels flow may be diverted to Lodge Creek through Middle Creek Reservoir. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
4			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
5			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
6			0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00		
7			0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00		
8			0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00		
9			0.00	0.00	0.00	0.00	2.3	0.00	0.00	0.00		
10			0.00	0.00	0.00	5.2	5.4	0.00	0.00	0.00		
11			0.00	0.00	0.00	1.0	1.6	0.00	0.00	0.00		
12			0.00	0.00	0.00	0.07	0.71	0.00	0.00	0.00		
13			0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.00		
14			0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00		
15			0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00		
16			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
17			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
18			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
19			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
20			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
21			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
22			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
23			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
24			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
25			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
26			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
27			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
28			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
29			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
30			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
31			0.00	---	0.00	---	0.00	0.00	---	0.00		
TOTAL			0.00	0.00	0.00	6.27	10.54	0.00	0.67	0.00		
MEAN			0.000	0.000	0.000	0.209	0.340	0.000	0.022	0.000		
MAX			0.00	0.00	0.00	5.2	5.4	0.00	0.32	0.00		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	0.00	0.00	12	21	0.00	1.3	0.00		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1911 - 2002*

MEAN	13.04	54.29	13.43	6.856	4.013	0.545	2.661	0.590
MAX	71.8	457	222	61.1	35.1	9.76	63.3	8.35
(WY)	1997	1917	1927	1965	1923	1915	1986	1987
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	1919	1991	1989	1926	1914	1911	1912	1913

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1911 - 2002*	
HIGHEST DAILY MEAN	5.4	Jul 10	a1170	Apr 24 1922
LOWEST DAILY MEAN	0.00	Many days	0.00	Mar 13 1911
MAXIMUM PEAK FLOW	11	Jul 9	738	Sep 26 1986
MAXIMUM PEAK STAGE	4.60	Jul 9	13.84	Sep 26 1986

*--During periods of operation.
a--Maximum discharge not determined.

MILK RIVER BASIN

06145500 LODGE CREEK BELOW MCRAE CREEK, AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'19", long 109°43'02" (NAD 27), in SW$^1/_4$ sec.5, T.1, R.28 W., third meridian, in Saskatchewan, Hydrologic Unit 10050007, on right bank 0.3 mi downstream from McRae Creek, 0.4 mi north of international boundary, 0.8 mi northeast of Willow Creek Port of Entry, 31 mi north of Havre, MT, and at river mile 84.3.

DRAINAGE AREA.--825 mi^2, of which 88 mi^2 are noncontributing.

PERIOD OF RECORD.--October 1951 to current season (seasonal records only). Prior to October 1951, records were collected on both McRae Coulee (1927-51) and Lodge Creek above McRae Coulee (1910-51). Summations are equivalent to records at this site. Prior to March 1965, published as "below McRae Coulee."

REVISED RECORDS.--W 1983: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,731.0 ft (International Boundary Survey datum).

REMARKS.--Records good. Natural flow affected by numerous storage reservoirs, diversions for irrigation of about 3,000 acres, and return flow from irrigated areas. Water Survey of Canada satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.00	0.00	0.00	0.00	83	0.04	1.4	0.07		
2			0.00	0.00	0.00	0.00	19	0.04	1.0	0.04		
3			0.00	0.00	0.00	0.00	8.2	0.04	0.78	0.07		
4			0.00	0.00	0.00	0.00	4.9	0.04	0.71	0.07		
5			0.00	0.00	0.00	0.00	3.3	0.04	0.67	0.07		
6			0.00	0.00	0.00	0.00	2.2	0.07	0.88	0.04		
7			0.00	0.00	0.00	0.00	1.5	0.04	7.8	0.04		
8			0.00	0.00	0.00	0.00	1.5	0.07	5.7	0.04		
9			0.00	0.00	0.00	0.04	1.6	0.07	3.3	0.04		
10			0.00	0.00	0.00	0.14	0.95	0.07	2.0	0.04		
11			0.00	0.00	0.00	4.7	0.71	0.07	1.2	0.04		
12			0.00	0.00	0.00	39	2.3	0.04	0.85	0.04		
13			0.00	0.00	0.00	10	2.5	0.04	0.57	0.04		
14			0.00	0.00	0.00	4.0	1.4	0.07	0.42	0.04		
15			0.00	0.00	0.00	1.9	1.0	0.07	0.32	0.04		
16			0.00	0.00	0.00	0.92	0.67	0.07	0.28	0.04		
17			0.00	0.00	0.00	0.46	0.46	65	0.21	0.04		
18			0.00	0.00	0.00	0.25	0.32	97	0.18	0.04		
19			0.00	0.00	0.00	0.18	0.28	98	0.14	0.04		
20			0.00	0.00	0.00	0.11	0.28	97	0.11	0.04		
21			0.00	0.00	0.00	0.07	0.14	96	0.07	0.04		
22			0.00	0.00	0.00	46	0.11	94	0.07	0.04		
23			0.00	0.00	0.00	200	0.07	91	0.11	0.04		
24			0.00	0.00	0.00	177	0.07	85	0.07	0.04		
25			0.00	0.00	0.00	173	0.07	64	0.07	0.04		
26			0.00	0.00	0.00	172	0.04	21	0.07	0.04		
27			0.00	0.00	0.00	170	0.07	9.8	0.07	0.04		
28			0.00	0.00	0.00	166	0.04	5.7	0.04	0.04		
29			0.00	0.00	0.00	165	0.04	3.9	0.04	0.04		
30			0.00	0.00	0.00	160	0.04	2.8	0.07	0.04		
31			0.00	---	0.00	---	0.04	2.0	---	0.04		
TOTAL			0.00	0.00	0.00	1490.77	136.80	833.08	29.20	1.36		
MEAN			0.000	0.000	0.000	49.69	4.413	26.87	0.973	0.044		
MAX			0.00	0.00	0.00	200	83	98	7.8	0.07		
MIN			0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04		
AC-FT			0.00	0.00	0.00	2960	271	1650	58	2.7		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1952 - 2002

MEAN	54.41	139.1	40.13	24.78	10.05	2.310	13.95	1.472
MAX	374	1899	500	294	174	33.1	678	52.3
(WY)	1997	1952	1967	1965	1955	1993	1986	1987
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	1953	1992	1992	1963	1958	1954	1952	1953

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1952 - 2002	
HIGHEST DAILY MEAN	200	Jun 23	7770	Sep 26 1986
LOWEST DAILY MEAN	0.00	Mar 1	0.00	Mar 1 1952
MAXIMUM PEAK FLOW	246	Jun 23	9890	Sep 25 1986
MAXIMUM PEAK STAGE	4.53	Jun 23	16.36	Sep 25 1986

a--From rating curve extended above 4,000 ft^3/s on basis of slope-area measurement of peak flow.

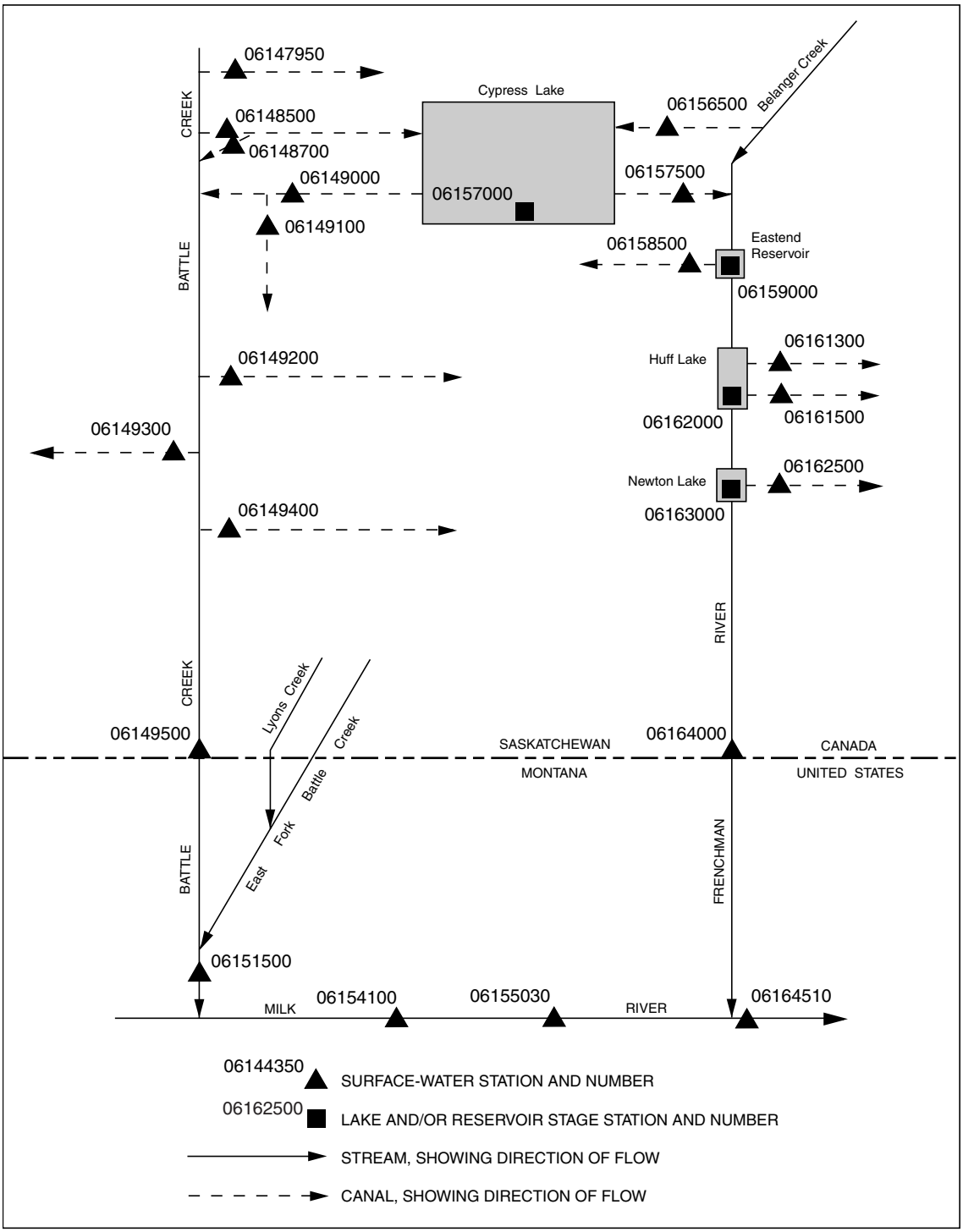

Figure 12. Schematic diagram showing diversions and storage in Battle Creek and Frenchman River Basins.

MILK RIVER BASIN

06147950 GAFF DITCH NEAR MERRYFLAT, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°26'05", long 109°50'07" (NAD 27), in NW$^1/_4$ sec.34, T.5, R.29 W., third meridian, Hydrologic Unit 10050008, on left bank about 200 ft downstream from headgates, and 4 mi southwest of Merryflat.

PERIOD OF RECORD.--March 1972 to current season (seasonal record only). March 1964 to current season in reports of Department of the Environment, Canada.

GAGE.--Water-stage recorder. Elevation of gage is 3,350 ft (NGVD 29).

REMARKS.--Records poor. Water is diverted from left bank of Battle Creek in NW$^1/_4$ sec.34, T.5. R.29 W., third meridian, for irrigation of about 890 acres along Battle Creek. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 42 ft^3/s, Apr. 22, 1971; no flows at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e0.00	12	0.42	0.07	0.00	0.00	0.00		
2			e0.00	e0.00	11	0.28	0.07	0.00	0.00	0.00		
3			e0.00	e0.00	12	0.18	0.07	0.00	0.00	0.00		
4			e0.00	e0.00	12	0.11	0.07	0.00	0.00	0.00		
5			e0.00	e0.00	14	0.04	0.04	0.00	0.00	0.00		
6			e0.00	e0.00	9.0	0.00	0.04	0.00	0.04	0.00		
7			e0.00	e0.00	11	0.00	0.00	0.00	0.04	0.00		
8			e0.00	e0.00	14	0.00	0.00	0.00	0.04	0.00		
9			e0.00	e0.00	12	0.00	0.00	0.00	0.04	0.00		
10			e0.00	e0.00	14	0.07	0.00	0.00	0.04	0.00		
11			e0.00	e0.00	15	0.11	0.00	0.00	0.04	0.04		
12			e0.00	e0.00	19	0.11	0.00	0.00	0.04	0.04		
13			e0.00	e0.00	18	0.11	0.00	0.00	0.04	0.04		
14			e0.00	6.3	18	0.07	0.00	0.00	0.00	0.04		
15			e0.00	30	18	0.07	0.00	0.00	0.00	0.04		
16			e0.00	28	20	0.07	0.00	0.00	0.00	0.04		
17			e0.00	22	19	0.07	0.00	0.00	0.00	0.04		
18			e0.00	27	16	0.07	0.00	0.00	0.00	0.04		
19			e0.00	24	10	0.07	0.00	0.00	0.00	0.07		
20			e0.00	18	15	0.07	0.00	0.00	0.00	0.07		
21			e0.00	15	14	0.11	0.00	0.00	0.00	0.07		
22			e0.00	19	7.0	0.11	0.00	0.00	0.00	0.07		
23			e0.00	19	5.6	0.11	0.00	0.00	0.00	e0.04		
24			e0.00	15	5.5	0.07	0.00	0.00	0.00	e0.04		
25			e0.00	10	3.3	0.07	0.00	0.00	0.00	e0.04		
26			e0.00	9.4	1.4	0.07	0.00	0.00	0.00	e0.04		
27			e0.00	18	1.1	0.11	0.00	0.00	0.00	e0.04		
28			e0.00	19	1.0	0.07	0.00	0.00	0.00	e0.00		
29			e0.00	19	0.88	0.07	0.00	0.00	0.00	e0.00		
30			e0.00	20	0.74	0.07	0.00	0.00	0.00	e0.00		
31			e0.00	---	0.53	---	0.00	0.00	---	e0.00		
TOTAL			0.00	318.70	330.05	2.78	0.36	0.00	0.32	0.80		
MEAN			0.000	10.62	10.65	0.093	0.012	0.000	0.011	0.026		
MAX			0.00	30	20	0.42	0.07	0.00	0.04	0.07		
MIN			0.00	0.00	0.53	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	632	655	5.5	0.7	0.00	0.6	1.6		

e--Estimated.

MILK RIVER BASIN

06148500 CYPRESS LAKE WEST INFLOW CANAL NEAR WEST PLAINS, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°28'18", long 109°37'08" (NAD 27), in SE$^1/_4$ sec.18, T.6, R.27 W., third meridian, Hydrologic Unit 10050008, on left bank 2.5 mi downstream from canal headgates, 5.5 mi northeast of West Plains, and 13 mi northwest of Consul.

PERIOD OF RECORD.--March 1939 to current season (seasonal records only). Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Elevation of gage is 3,210 ft (NGVD 29). Prior to Oct. 16, 1956, at site 2.3 mi upstream at different datum.

REMARKS.--Records good. Canal diverts water from Battle Creek in NW$^1/_4$ sec.1, T.6, R.28 W., third meridian, for storage in Cypress Lake. Part or all of flow may be returned to Battle Creek via Cypress Lake West Inflow Canal Drain (station 06148700) 0.4 mi downstream. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 884 ft^3/s, Apr. 27, 1965; no flow at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e0.00	0.00	0.00	3.2	0.00	0.00	15		
2			e0.00	e0.00	0.00	0.00	2.8	0.00	0.00	15		
3			e0.00	e0.00	0.00	0.00	2.7	0.00	0.00	15		
4			e0.00	e0.00	0.00	0.00	2.8	0.00	0.00	11		
5			e0.00	e0.00	0.00	0.00	2.5	0.00	0.00	0.99		
6			e0.00	e0.00	0.00	0.00	2.4	0.00	0.04	0.28		
7			e0.00	e0.00	0.00	0.00	2.3	0.00	0.07	0.07		
8			e0.00	e0.00	0.00	0.00	31	0.00	0.04	0.04		
9			e0.00	e0.00	0.00	0.74	10	0.00	14	0.04		
10			e0.00	e0.00	0.00	8.1	30	0.00	36	0.00		
11			e0.00	e0.00	0.00	130	33	0.00	23	0.00		
12			e0.00	e0.04	0.00	328	19	0.00	14	0.00		
13			e0.00	e0.18	0.00	287	14	0.00	1.4	0.00		
14			e0.00	e4.1	0.00	273	3.4	0.00	4.2	0.00		
15			e0.00	99	0.00	232	2.8	0.00	5.5	0.00		
16			e0.00	289	0.00	117	2.6	0.00	8.5	0.00		
17			e0.00	82	0.00	67	2.6	0.00	9.3	0.00		
18			e0.00	20	0.00	4.1	2.3	0.00	11	0.00		
19			e0.00	3.4	0.00	8.8	2.0	0.00	11	0.00		
20			e0.00	2.8	0.00	24	1.8	0.00	11	0.00		
21			e0.00	2.2	0.00	60	1.8	0.00	10	0.00		
22			e0.00	1.5	0.00	47	1.7	0.00	10	0.00		
23			e0.00	0.92	0.00	56	1.6	0.00	10	0.00		
24			e0.00	e0.46	0.00	55	0.67	0.00	10	0.00		
25			e0.00	0.39	0.00	55	0.04	0.00	10	0.00		
26			e0.00	0.18	0.00	38	0.04	0.00	10	0.00		
27			e0.00	0.07	0.00	22	0.00	0.00	11	0.00		
28			e0.00	0.04	0.00	24	0.00	0.00	11	0.00		
29			e0.00	0.00	0.00	25	0.00	0.00	11	0.00		
30			e0.00	0.00	0.00	18	0.00	0.00	12	0.00		
31			e0.00	---	0.00	---	0.00	0.00	---	0.00		
TOTAL			0.00	506.28	0.00	1879.74	179.05	0.00	254.05	57.42		
MEAN			0.000	16.88	0.000	62.66	5.776	0.000	8.468	1.852		
MAX			0.00	289	0.00	328	33	0.00	36	15		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	1000	0.00	3730	355	0.00	504	114		

e--Estimated.

MILK RIVER BASIN

06148700 CYPRESS LAKE WEST INFLOW CANAL DRAIN NEAR OXARAT, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°28'25", long 109°36'38" (NAD 27), in NW$^1/_4$ sec.17, T.6, R.27 W., third meridian, Hydrologic Unit 10050008, on left bank about 500 ft downstream from drain gate on Cypress Lake west inflow canal, 0.5 mi upstream from Battle Creek, and 4 mi northwest of Oxarat.

PERIOD OF RECORD.--March 1963 to current season (seasonal records only). March 1955 to current season in reports of Department of the Environment, Canada.

GAGE.--Water-stage recorder. Elevation of gage is 3,200 ft (NGVD 29).

REMARKS.--Records fair. Drain used as an emergency bypass to return diverted water to Battle Creek. It may also be used to return stored water from Cypress Lake when lake stage is high.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 450 ft^3/s, Apr. 20, 1955; no flow at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e0.00	0.00	0.00	0.00	0.04	0.00	0.00		
2			e0.00	e0.00	0.00	0.00	0.00	0.04	0.00	0.00		
3			e0.00	e0.00	0.00	0.00	0.00	0.04	0.00	0.00		
4			e0.00	e0.00	0.00	0.00	0.00	0.04	0.00	0.00		
5			e0.00	e0.00	0.00	0.00	0.00	0.04	0.00	0.00		
6			e0.00	e0.00	0.00	0.00	0.00	0.04	0.07	0.00		
7			e0.00	e0.00	0.00	0.00	0.00	0.04	0.07	0.00		
8			e0.00	e0.00	0.00	0.00	0.07	0.04	0.07	0.00		
9			e0.00	e0.00	0.00	0.00	0.07	0.04	0.07	0.00		
10			e0.00	e0.00	0.00	0.00	0.11	0.00	0.18	0.00		
11			e0.00	e0.00	0.00	0.00	0.07	0.00	0.11	0.00		
12			e0.00	e0.11	0.00	0.00	0.04	0.04	0.07	0.00		
13			e0.00	e0.14	0.00	0.00	0.04	0.04	0.04	0.00		
14			e0.00	0.04	0.00	0.00	0.04	0.04	0.04	0.00		
15			e0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.00		
16			e0.00	0.00	0.00	0.00	0.07	0.04	0.04	0.00		
17			e0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.00		
18			e0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00		
19			e0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00		
20			e0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00		
21			e0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00		
22			e0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00		
23			e0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00		
24			e0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00		
25			e0.00	0.00	0.00	0.00	0.00	0.00	0.00	e0.00		
26			e0.00	0.00	0.00	0.00	0.00	0.00	0.04	e0.00		
27			e0.00	0.00	0.00	0.00	0.00	0.00	0.04	e0.00		
28			e0.00	0.00	0.00	0.00	0.00	0.00	0.00	e0.00		
29			e0.00	0.00	0.00	0.00	0.00	0.00	0.00	e0.00		
30			e0.00	0.00	0.00	0.00	0.00	0.00	0.04	e0.00		
31			e0.00	---	0.00	---	0.04	0.00	---	e0.00		
TOTAL			0.00	0.29	0.00	0.00	0.79	0.60	1.24	0.00		
MEAN			0.000	0.010	0.000	0.000	0.025	0.019	0.041	0.000		
MAX			0.00	0.14	0.00	0.00	0.11	0.04	0.18	0.00		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	0.6	0.00	0.00	1.6	1.2	2.5	0.00		

e--Estimated.

MILK RIVER BASIN

06149000 CYPRESS LAKE WEST OUTFLOW CANAL NEAR WEST PLAINS, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°28'14", long 109°35'18" (NAD 27), in SW$^1/_4$ sec.16, T.6, R.27 W., third meridian, Hydrologic Unit 10050008, on left bank 1.1 mi downstream from Cypress Lake West Dam, 6 mi northeast of West Plains, and 13 mi north of Consul.

PERIOD OF RECORD.--March 1940 to current season (seasonal records only). Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Elevation of gage is 3,180 ft (NGVD 29). Prior to Sept. 18, 1952, at site 1 mi upstream and 300 ft downstream from Cypress Lake West Dam at different datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Canal diverts water from Cypress Lake in NW$^1/_4$ sec.15, T.6, R.27 W., third meridian, for irrigation of 5,500 acres in Battle Creek basin in Saskatchewan. Water may be delivered to Battle Creek or diverted into Vidora Ditch at gate structure near lower end of canal. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 304 ft^3/s, May 4, 1951; no flow at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e0.00	0.39	100	0.21	0.00	0.00	0.11		
2			e0.00	e0.00	0.35	95	0.00	0.00	0.00	0.00		
3			e0.00	e0.00	0.42	89	0.00	0.00	0.00	0.04		
4			e0.00	e0.00	0.53	101	0.00	0.00	0.00	0.00		
5			e0.00	e0.00	0.53	101	0.00	0.00	0.14	0.04		
6			e0.00	e0.00	0.49	102	0.00	0.00	0.28	0.00		
7			e0.00	e0.00	0.53	102	0.00	0.00	0.25	0.04		
8			e0.00	e0.00	0.46	107	0.39	0.00	0.14	0.04		
9			e0.00	e0.00	0.42	107	0.18	0.00	0.00	0.00		
10			e0.00	e0.00	0.42	75	0.25	0.00	0.00	0.04		
11			e0.00	e0.35	0.42	20	0.88	0.00	0.00	0.00		
12			e0.00	e0.88	0.42	2.7	0.57	0.00	0.00	0.00		
13			e0.00	e1.5	0.46	21	0.21	0.00	0.00	0.00		
14			e0.00	e1.2	0.64	3.2	0.04	0.00	0.00	0.00		
15			e0.00	e0.99	69	2.9	0.00	0.00	0.00	0.00		
16			e0.00	e2.0	105	2.9	0.00	0.04	0.00	0.00		
17			e0.00	1.6	112	2.9	0.00	0.00	0.00	0.00		
18			e0.00	1.1	110	3.0	0.00	0.00	0.00	0.04		
19			e0.00	0.92	112	2.9	0.00	0.00	0.00	0.04		
20			e0.00	0.81	113	2.9	0.00	0.00	0.00	0.04		
21			e0.00	0.78	113	2.7	0.00	0.00	0.00	0.14		
22			e0.00	0.81	113	2.6	0.00	0.00	0.00	0.11		
23			e0.00	0.67	113	2.6	0.00	0.00	0.00	0.00		
24			e0.00	0.49	112	2.5	0.00	0.00	0.00	0.00		
25			e0.00	0.49	108	2.5	0.00	0.00	0.00	0.00		
26			e0.00	0.46	111	2.4	0.00	0.00	0.00	0.00		
27			e0.00	0.46	110	2.4	0.00	0.00	0.00	0.04		
28			e0.00	0.46	109	2.3	0.00	0.00	0.00	0.00		
29			e0.00	0.42	105	2.2	0.00	0.00	0.00	0.00		
30			e0.00	0.42	103	1.9	0.00	0.00	0.04	0.00		
31			e0.00	---	102	---	0.00	0.00	---	0.00		
TOTAL			0.00	16.81	1826.48	1067.5	2.73	0.04	0.85	0.72		
MEAN			0.000	0.560	58.92	35.58	0.088	0.001	0.028	0.023		
MAX			0.00	2.0	113	107	0.88	0.04	0.28	0.14		
MIN			0.00	0.00	0.35	1.9	0.00	0.00	0.00	0.00		
AC-FT			0.00	33	3620	2120	5.4	0.08	1.7	1.4		

e--Estimated.

MILK RIVER BASIN

06149100 VIDORA DITCH NEAR CONSUL, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°27'27", long 109°35'30" (NAD 27), in SW$^1/_4$ sec.9, T.6, R.27 W., third meridian, Hydrologic Unit 10050008, on left bank 0.5 mi downstream from headgate near lower end of Cypress Lake west outflow canal, 12 mi north of Consul.

PERIOD OF RECORD.--March 1963 to current season (seasonal records only). March 1952 to current season in reports of Department of the Environment, Canada.

GAGE.--Water-stage recorder. Elevation of gage is 3,200 ft (NGVD 29). Prior to Aug. 1, 1963, at datum 1.0 ft higher.

REMARKS.--Records fair. Canal diverts water from Cypress Lake west outflow canal in NE$^1/_4$ sec.8, T.6, R.27 W., third meridian, for irrigation of about 2,140 acres in the Battle Creek basin. Water may be delivered either to this canal or returned to Battle Creek from Cypress Lake. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 101 ft^3/s, May 26, 1988; no flow at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.00	0.00	0.00	49	0.00	0.00	0.00	0.00		
2			0.00	0.00	0.00	43	0.00	0.00	0.00	0.00		
3			0.00	0.00	0.00	37	0.00	0.00	0.00	0.00		
4			0.00	0.00	0.00	44	0.00	0.00	0.00	0.00		
5			0.00	0.00	0.00	43	0.00	0.00	0.00	0.00		
6			0.00	0.00	0.00	43	0.00	0.00	0.00	0.00		
7			0.00	0.00	0.00	43	0.00	0.00	0.00	0.00		
8			0.00	0.00	0.00	47	0.42	0.00	0.00	0.00		
9			0.00	0.00	0.00	48	e0.04	0.00	0.00	0.00		
10			0.00	0.00	0.00	30	0.00	0.00	0.00	0.00		
11			0.00	0.00	0.00	4.6	0.00	0.00	0.00	0.00		
12			0.00	0.00	0.00	e0.07	0.00	0.00	0.00	0.00		
13			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
14			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
15			0.00	0.00	29	0.00	0.00	0.00	0.00	0.00		
16			0.00	0.00	52	0.00	0.00	0.00	0.00	0.00		
17			0.00	0.00	58	0.00	0.00	0.00	0.00	0.00		
18			0.00	0.00	56	0.00	0.00	0.00	0.00	0.00		
19			0.00	0.00	59	0.00	0.00	0.00	0.00	0.00		
20			0.00	0.00	60	0.00	0.00	0.00	0.00	0.00		
21			0.00	0.00	61	0.00	0.00	0.00	0.00	0.00		
22			0.00	0.00	64	0.00	0.00	0.00	0.00	0.00		
23			0.00	0.00	63	0.00	0.00	0.00	0.00	0.00		
24			0.00	0.00	59	0.00	0.00	0.00	0.00	0.00		
25			0.00	0.00	56	0.00	0.00	0.00	0.00	0.00		
26			0.00	0.00	59	0.00	0.00	0.00	0.00	0.00		
27			0.00	0.00	58	0.00	0.00	0.00	0.00	0.00		
28			0.00	0.00	57	0.00	0.00	0.00	0.00	0.00		
29			0.00	0.00	53	0.00	0.00	0.00	0.00	0.00		
30			0.00	0.00	52	0.00	0.00	0.00	0.00	0.00		
31			0.00	---	51	---	0.00	0.00	---	0.00		
TOTAL			0.00	0.00	947.00	431.67	0.46	0.00	0.00	0.00		
MEAN			0.000	0.000	30.55	14.39	0.015	0.000	0.000	0.000		
MAX			0.00	0.00	64	49	0.42	0.00	0.00	0.00		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	0.00	1880	856	0.9	0.00	0.00	0.00		

e--Estimated.

MILK RIVER BASIN

06149200 RICHARDSON DITCH NEAR CONSUL, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°21'50", long 109°32'12" (NAD 27), near center of south line of sec.11, T.5, R.27 W., third meridian, Hydrologic Unit 10050008, on left bank 420 ft downstream from headgate, 4.8 mi north of Consul.

PERIOD OF RECORD.--March 1963 to current season (seasonal records only). 1910-12, 1914, 1916-20, 1922-33, 1935, July 1946 to current season in reports of Department of the Environment, Canada. Estimates of seasonal diversion only in most seasons prior to 1946.

GAGE.--Water-stage recorder. Prior to June 26, 1949, nonrecording gages at different sites and datums. June 26, 1949, to Aug. 28, 1963, water-stage recorder at present site at datum 1.00 ft higher.

REMARKS.--Records good. Ditch diverts from left bank of Battle Creek in SW$^{1}/_{4}$ sec.11, T.5, R.27 W., third meridian, for irrigation of about 1,330 acres along Battle Creek. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 72 ft^{3}/s, June 15, 1974; no flow at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.00	0.00	0.00	40	0.00	0.00	0.00	0.00		
2			0.00	0.00	0.00	41	0.00	0.00	0.00	0.00		
3			0.00	0.00	0.00	38	0.00	0.00	0.00	0.00		
4			0.00	0.00	0.00	25	0.00	0.00	0.00	0.00		
5			0.00	0.00	0.00	13	0.00	0.00	0.00	0.00		
6			0.00	0.00	0.00	0.53	0.00	0.00	0.00	0.00		
7			0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00		
8			0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00		
9			0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00		
10			0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.00		
11			0.00	0.00	0.00	0.57	0.00	0.00	0.00	0.00		
12			0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00		
13			0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00		
14			0.00	0.00	0.00	0.18	0.04	0.00	0.00	0.00		
15			0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00		
16			0.00	0.00	24	0.00	0.00	0.00	0.00	0.00		
17			0.00	0.00	30	0.00	0.00	0.00	0.00	0.00		
18			0.00	0.00	34	0.00	0.00	0.00	0.00	0.00		
19			0.00	0.00	35	0.00	0.00	0.00	0.00	0.00		
20			0.00	0.00	41	0.00	0.00	0.00	0.00	0.00		
21			0.00	0.00	41	0.00	0.00	0.00	0.00	0.00		
22			0.00	0.00	37	0.00	0.00	0.00	0.00	0.00		
23			0.00	0.00	36	0.00	0.00	0.00	0.00	0.00		
24			0.00	0.00	38	0.00	0.00	0.00	0.00	0.00		
25			0.00	0.00	39	0.00	0.00	0.00	0.00	0.00		
26			0.00	0.00	40	0.00	0.00	0.00	0.00	0.00		
27			0.00	0.00	38	0.00	0.00	0.00	0.00	0.00		
28			0.00	0.00	39	0.00	0.00	0.00	0.00	0.00		
29			0.00	0.00	39	0.00	0.00	0.00	0.00	0.00		
30			0.00	0.00	39	0.00	0.00	0.00	0.00	0.00		
31			0.00	---	39	---	0.00	0.00	---	0.00		
TOTAL			0.00	0.00	589.00	159.88	0.04	0.00	0.00	0.00		
MEAN			0.000	0.000	19.00	5.329	0.001	0.000	0.000	0.000		
MAX			0.00	0.00	41	41	0.04	0.00	0.00	0.00		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	0.00	1170	317	0.08	0.00	0.00	0.00		

MILK RIVER BASIN

06149300 MCKINNON DITCH NEAR CONSUL, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°20'00", long 109°29'40" (NAD 27), in NW$^1/_4$ sec.30, T.4, R.26 W., third meridian, Hydrologic Unit 10050008, on right bank 1.0 mi downstream from headgate on Battle Creek, and 2.7 mi northeast of Consul.

PERIOD OF RECORD.--March 1963 to current season (seasonal records only). 1911-26, 1929-31, and March 1938 to current season in reports of Department of the Environment, Canada. Estimates of seasonal diversions only in many years prior to 1947.

GAGE.--Water-stage recorder. Prior to September 1949, nonrecording gages at various sites and datums. Sept. 4, 1949, to Aug. 29, 1963, water-stage recorder at present site at datum 1.00 ft higher.

REMARKS.--Records good. Ditch diverts from right bank of Battle Creek in NE$^1/_4$ sec.30, T.4, R.26 W., third meridian, for irrigation of about 1,320 acres along Battle Creek. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 68 ft^3/s, June 18, 1975; no flow at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.00	0.00	0.00	11	0.00	0.00	0.00	0.00		
2			0.00	0.00	0.00	6.6	0.00	0.00	0.00	0.00		
3			0.00	0.00	0.00	5.8	0.00	0.00	0.00	0.00		
4			0.00	0.00	0.00	5.9	0.00	0.00	0.00	0.00		
5			0.00	0.00	0.00	16	0.00	0.00	0.00	0.00		
6			0.00	0.00	0.00	38	0.00	0.00	0.00	0.00		
7			0.00	0.00	0.00	43	0.00	0.00	0.00	0.00		
8			0.00	0.00	0.00	44	0.00	0.00	0.00	0.00		
9			0.00	0.00	0.00	49	0.00	0.00	0.00	0.00		
10			0.00	0.00	0.00	53	0.00	0.00	0.00	0.00		
11			0.00	0.00	0.00	58	0.00	0.00	0.00	0.00		
12			0.00	0.00	0.00	53	0.00	0.00	0.00	0.00		
13			0.00	0.00	0.00	34	0.00	0.00	0.00	0.00		
14			0.00	0.00	0.00	17	0.00	0.00	0.00	0.00		
15			0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00		
16			0.00	0.00	8.6	0.21	0.00	0.00	0.00	0.00		
17			0.00	0.00	9.1	0.07	0.00	0.00	0.00	0.00		
18			0.00	0.00	9.1	0.00	0.00	0.00	0.00	0.00		
19			0.00	0.00	9.5	0.00	0.00	0.00	0.00	0.00		
20			0.00	0.00	9.6	0.00	0.00	0.00	0.00	0.00		
21			0.00	0.00	9.1	0.00	0.00	0.00	0.00	0.00		
22			0.00	0.00	6.9	0.00	0.00	0.00	0.00	0.00		
23			0.00	0.00	9.1	0.00	0.00	0.00	0.00	0.00		
24			0.00	0.00	12	0.00	0.00	0.00	0.00	0.00		
25			0.00	0.00	12	0.00	0.00	0.00	0.00	0.00		
26			0.00	0.00	13	0.00	0.00	0.00	0.00	0.00		
27			0.00	0.00	13	0.00	0.00	0.00	0.00	0.00		
28			0.00	0.00	12	0.00	0.00	0.00	0.00	0.00		
29			0.00	0.00	12	0.00	0.00	0.00	0.00	0.00		
30			0.00	0.00	11	0.00	0.00	0.00	0.00	0.00		
31			0.00	---	11	---	0.00	0.00	---	0.00		
TOTAL			0.00	0.00	167.00	435.25	0.00	0.00	0.00	0.00		
MEAN			0.000	0.000	5.387	14.51	0.000	0.000	0.000	0.000		
MAX			0.00	0.00	13	58	0.00	0.00	0.00	0.00		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	0.00	331	863	0.00	0.00	0.00	0.00		

MILK RIVER BASIN

06149400 NASHLYN CANAL NEAR CONSUL, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°13'57", long 109°33'27" (NAD 27), in NE$^1/_4$ sec.22, T.3, T.27 W., third meridian, Hydrologic Unit 10050008, on left bank 0.8 mi downstream from headgate on Battle Creek, and 5.9 mi south of Consul.

PERIOD OF RECORD.--March 1963 to current season (seasonal records only); 1912, 1914-35, 1938 to current season in reports of Department of the Environment, Canada. Prior to March 1950, estimates of seasonal diversions only in many seasons. Prior to Mar. 1, 1971, published as "Stirling and Nash Ditch".

GAGE.--Water-stage recorder. Prior to Sept. 21, 1949, water-stage recorder at present site or nonrecording gages at site 0.5 mi downstream at different datums.

REMARKS.--Records good. Ditch diverts water from left bank of Battle Creek in SW$^1/_4$ sec.27, T.3, R.27 W., third meridian, for irrigation of about 1,880 acres along Battle Creek. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 85 ft^3/s, Apr. 14, 1952; no flow at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.00	0.00	11	33	0.00	0.00	0.00	0.00		
2			0.00	0.00	9.3	24	0.00	0.00	0.00	0.00		
3			0.00	0.00	8.3	25	0.00	0.00	0.00	0.00		
4			0.00	1.7	7.7	25	0.00	0.00	0.00	0.00		
5			0.00	1.9	6.6	25	0.00	0.00	0.00	0.00		
6			0.00	1.8	6.3	27	0.00	0.00	0.07	0.00		
7			0.00	2.6	6.9	28	0.00	0.00	0.00	0.00		
8			0.00	2.2	7.4	29	0.00	0.00	0.00	0.00		
9			0.00	0.39	6.9	25	0.00	0.00	0.00	0.00		
10			0.00	0.04	6.3	1.6	0.00	0.00	0.00	0.00		
11			0.00	1.4	6.4	0.35	0.00	0.00	0.00	0.00		
12			0.00	11	9.3	0.14	0.00	0.00	0.00	0.00		
13			0.00	19	6.8	0.07	0.00	0.00	0.00	0.00		
14			0.00	38	4.7	0.04	0.00	0.00	0.00	0.00		
15			0.00	40	2.6	0.04	0.00	0.00	0.00	0.00		
16			0.00	43	1.9	0.04	0.00	0.00	0.00	0.00		
17			0.00	39	4.2	0.04	0.00	0.00	0.00	0.00		
18			0.00	31	5.5	0.00	0.00	0.00	0.00	0.00		
19			0.00	34	0.32	0.00	0.00	0.00	0.00	0.00		
20			0.00	32	0.07	0.00	0.00	0.00	0.00	0.00		
21			0.00	30	0.04	0.00	0.00	0.00	0.00	0.00		
22			0.00	33	0.04	0.00	0.00	0.00	0.00	0.00		
23			0.00	33	2.5	0.00	0.00	0.00	0.00	0.00		
24			0.00	20	12	0.00	0.00	0.00	0.00	0.00		
25			0.00	11	17	0.00	0.00	0.00	0.00	0.00		
26			0.00	12	45	0.00	0.00	0.00	0.00	0.00		
27			0.00	16	46	0.00	0.00	0.00	0.00	0.00		
28			0.00	15	42	0.00	0.00	0.00	0.00	0.00		
29			0.00	14	41	0.00	0.00	0.00	0.00	0.00		
30			0.00	11	36	0.00	0.00	0.00	0.00	0.00		
31			0.00	---	36	---	0.00	0.00	---	0.00		
TOTAL			0.00	494.03	396.07	243.32	0.00	0.00	0.07	0.00		
MEAN			0.000	16.47	12.78	8.111	0.000	0.000	0.002	0.000		
MAX			0.00	43	46	33	0.00	0.00	0.07	0.00		
MIN			0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	980	786	483	0.00	0.00	0.1	0.00		

MILK RIVER BASIN

06149500 BATTLE CREEK AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'07", long 109°25'18" (NAD 27), in SE$^1/_4$ sec.4, T.1, R.26 W., third meridian, Hydrologic Unit 10050008, on left bank 600 ft north of international boundary, in Saskatchewan, 8 mi upstream from Woodpile Coulee, 30 mi north of Chinook, MT, and at mile 69.8.

DRAINAGE AREA.--997 mi^2, of which 378 mi^2 is probably noncontributing.

PERIOD OF RECORD.--April 1917 to current season (seasonal records only most seasons). Monthly discharge only for March 1918 and March 1928, published in WSP 1309.

REVISED RECORDS.--WSP 1389: 1935(M), 1936, 1937-38(M). WSP 1729: 1924, 1926, 1932 (monthly discharge only). W 1983: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,729.8 ft (International Boundary Commission Survey Datum).

REMARKS.--Records good. Natural flow of stream affected by storage reservoirs, diversions for irrigation of about 9,500 acres, and return flow from irrigated areas. Water may be diverted into or from Frenchman River basin through Cypress Lake. Water Survey of Canada satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.00	0.00	1.4	2.2	43	7.9	11	4.0		
2			0.00	0.00	5.1	3.2	31	8.2	11	3.6		
3			0.00	0.00	4.2	2.9	25	8.0	10	3.3		
4			0.00	0.00	2.8	2.0	21	8.5	9.9	3.2		
5			0.00	0.00	2.0	1.8	20	9.0	9.7	3.1		
6			0.00	0.00	1.9	1.1	21	13	13	2.8		
7			0.00	0.04	1.6	0.74	18	12	30	4.4		
8			0.00	0.04	1.5	0.67	20	15	132	4.6		
9			0.00	0.11	1.3	1.2	33	52	97	4.3		
10			0.00	0.92	1.1	22	74	41	71	7.3		
11			0.00	3.3	0.99	155	27	21	63	17		
12			0.00	49	0.81	180	26	20	58	16		
13			0.00	32	0.99	212	39	25	56	16		
14			0.00	22	0.92	128	31	24	47	16		
15			0.00	11	0.67	309	24	20	38	16		
16			0.00	8.8	0.57	243	18	19	32	16		
17			0.00	9.3	0.46	137	15	18	31	16		
18			0.00	19	0.32	124	14	17	31	15		
19			0.00	13	0.21	103	18	14	27	15		
20			0.00	7.1	0.14	97	14	17	24	15		
21			0.00	6.4	0.11	122	12	14	19	16		
22			0.00	4.3	0.35	97	11	15	14	17		
23			0.00	8.4	1.6	80	10	27	11	16		
24			0.00	4.4	5.1	66	8.5	24	9.3	12		
25			0.00	3.5	9.1	45	7.8	19	7.2	12		
26			0.00	3.1	10	56	7.1	16	5.9	14		
27			0.00	3.0	7.9	57	10	16	4.9	17		
28			0.00	2.5	12	60	12	15	4.5	20		
29			0.00	1.9	16	58	6.8	13	4.0	16		
30			0.00	1.7	7.0	48	5.7	12	4.0	14		
31			0.00	---	3.7	---	6.7	11	---	12		
TOTAL			0.00	214.81	101.84	2414.81	629.6	551.6	885.4	364.6		
MEAN			0.000	7.160	3.285	80.49	20.31	17.79	29.51	11.76		
MAX			0.00	49	16	309	74	52	132	20		
MIN			0.00	0.00	0.11	0.67	5.7	7.9	4.0	2.8		
AC-FT			0.00	426	202	4790	1250	1090	1760	723		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1917 - 2002

MEAN	49.54	126.9	57.85	32.74	16.81	7.028	8.049	7.952
MAX	353	1526	538	261	250	50.7	332	57.7
(WY)	1997	1952	1927	1927	1955	1975	1986	1987
MIN	0.000	4.34	0.77	0.000	0.000	0.000	0.000	0.000
(WY)	1936	1981	1937	1937	1919	1919	1919	1920

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1917 - 2002	
HIGHEST DAILY MEAN	309	Jun 15	5590	Apr 15 1952
LOWEST DAILY MEAN	0.00	Many days	0.00	Mar 1 1918
MAXIMUM PEAK FLOW	342	Jun 15	a9780	Sep 25 1986
MAXIMUM PEAK STAGE	5.41	Jun 15	11.57	Sep 25 1986

a--From rating table extended above 4,400 ft^3/s on basis of slope-area measurement of peak flow.

06151500 BATTLE CREEK NEAR CHINOOK, MT

LOCATION.--Lat 48°39'05", long 109°13'47" (NAD 27), in NW$^1/_4$SW$^1/_4$NE$^1/_4$ sec.3, T.33 N., R.19 E., Blaine County, Hydrologic Unit 10050008, on left bank, 4 mi north of Chinook, and at river mile 14.

DRAINAGE AREA.--1,539 mi^2.

PERIOD OF RECORD.--April 1905 to September 1921 (monthly discharge only, published in WSP 1309), June 1984 to current year (seasonal records only). Published as North Fork Milk River near Chinook prior to 1913.

GAGE.--Water-stage recorder. Elevation of gage is 2,410 ft (NGVD 29). Apr. 22, 1905 to Apr. 8, 1918, chain gage 100 ft downstream, and Apr. 9, 1918 to Sept. 30, 1921, chain gage on bridge 600 ft downstream at same datum but different from present datum.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Diversions for irrigation of about 11,000 acres upstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				e0.00	0.00	0.00	37	3.0	6.7			
2				e0.00	0.00	0.00	32	7.7	6.7			
3				e0.00	0.00	0.00	34	12	7.2			
4				e0.00	0.00	0.00	28	9.9	7.0			
5				e0.00	0.00	0.00	23	7.7	5.1			
6				e0.00	0.00	0.00	19	4.4	4.6			
7				e0.02	0.00	0.00	15	0.14	9.4			
8				e0.02	0.00	0.00	18	0.47	11			
9				e0.10	0.00	0.00	24	8.2	7.0			
10				e0.20	0.00	0.00	27	16	81			
11				e0.20	0.00	0.00	36	54	79			
12				e0.20	0.00	0.00	52	72	63			
13				e0.10	0.00	122	29	36	55			
14				0.05	0.00	123	19	23	49			
15				0.03	0.00	106	23	19	48			
16				0.00	0.00	157	32	22	43			
17				0.00	0.00	185	25	19	38			
18				0.00	0.00	96	18	19	35			
19				0.00	0.00	60	15	16	32			
20				0.00	0.00	71	14	13	31			
21				0.00	0.00	46	12	11	28			
22				0.00	0.00	72	11	9.4	26			
23				0.00	0.00	88	7.9	6.9	24			
24				0.00	0.00	76	5.4	6.6	21			
25				0.00	0.00	57	1.6	5.5	17			
26				0.00	0.00	47	13	12	14			
27				0.00	0.00	31	8.5	17	13			
28				0.00	0.00	33	1.6	15	11			
29				0.00	0.00	39	0.44	13	8.9			
30				0.00	0.00	40	0.15	9.2	8.2			
31				---	0.00	---	0.05	6.9	---			
TOTAL				0.92	0.00	1449.00	581.64	475.01	789.8			
MEAN				0.031	0.000	48.30	18.76	15.32	26.33			
MAX				0.20	0.00	185	52	72	81			
MIN				0.00	0.00	0.00	0.05	0.14	4.6			
AC-FT				1.8	0.00	2870	1150	942	1570			

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1984 - 2002

MEAN	60.39	23.94	21.23	13.04	2.800	51.87
MAX	539	101	48.3	57.6	15.3	910
(WY)	1996	1986	2002	2000	2002	1986
MIN	0.031	0.000	0.085	0.016	0.000	0.000
(WY)	2002	2002	1984	1984	1984	1984

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1984 - 2002	
HIGHEST DAILY MEAN	185	Jun 17	12000	Sep 26 1986
LOWEST DAILY MEAN	0.00	Apr 1	0.00	Jul 12 1984
MAXIMUM PEAK FLOW	246	Jun 16	19400	Sep 26 1986
MAXIMUM PEAK STAGE	3.58	Jun 16	22.91	Sep 26 1986

e--Estimated.

MILK RIVER BASIN

06154100 MILK RIVER NEAR HARLEM, MT

LOCATION.--Lat 48°29'22", long 108°45'28" (NAD 27), in NE$^1/_4$SE$^1/_4$NE$^1/_4$ sec.32, T.32 N., R.23 E., Blaine County, Hydrologic Unit 10050004, Fort Belknap Indian Reservation, on right bank 30 ft downstream from U.S. Highway 2 bridge, 0.6 mi northeast of unincorporated community of Fort Belknap Agency, 3.5 mi southeast of Harlem, and at river mile 332.2.

DRAINAGE AREA.--9,822 mi^2.

PERIOD OF RECORD.--October 1959 to September 1969, October 1982 to current year (seasonal record beginning 1994 water year). Gage heights only for period Apr. 3-25, 1952, published as "at Fort Belknap" in 1260-B.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,319.48 ft (NGVD 29). Apr. 3-25, 1952, nonrecording gage on old bridge 200 ft downstream at different datum. Nov. 1, 1959, to Mar. 12, 1968, nonrecording gage or water-stage recorder at several sites within 0.5 mi of present site at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow increased during irrigation season by water from St. Mary Canal (station number 05018500). Flow mainly regulated by Fresno Reservoir (station number 06136500) since 1939. Diversions for irrigation of about 60,000 acres of which about 13,000 acres lie downstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 1952 reached a stage of about 23.5 ft, present site and datum.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e40	e50	394	585	961	580	382	466		
2			e40	e60	403	516	805	600	391	466		
3			e40	72	414	484	619	626	407	469		
4			e35	67	420	492	501	634	414	473		
5			e35	61	467	420	445	661	392	472		
6			e35	56	502	365	337	789	376	475		
7			e35	52	518	346	280	825	406	457		
8			e35	52	523	308	267	829	441	436		
9			e35	57	511	386	834	1210	446	435		
10			e35	60	516	647	804	1190	439	398		
11			e35	53	473	892	686	571	468	382		
12			e35	49	460	876	662	377	503	377		
13			e35	50	468	520	674	354	527	382		
14			e35	44	465	491	614	311	515	367		
15			e35	14	449	635	564	517	514	347		
16			e35	5.0	510	905	572	597	521	343		
17			e35	3.8	666	1090	656	618	566	349		
18			e35	3.4	757	1330	505	631	453	318		
19			e35	3.1	712	1510	441	574	483	266		
20			e40	3.5	633	1610	431	546	425	189		
21			e40	4.0	587	1780	546	512	418	165		
22			e40	8.8	536	1750	603	432	443	170		
23			e40	170	592	2320	602	328	452	163		
24			e40	243	605	2060	561	306	475	155		
25			e40	326	573	1670	526	310	533	153		
26			e40	371	570	1360	553	376	546	154		
27			e40	384	605	1230	627	386	539	151		
28			e40	390	606	1260	709	408	535	150		
29			e40	387	567	1240	692	401	499	136		
30			e35	386	533	1120	656	392	475	77		
31			e35	---	532	---	620	386	---	89		
TOTAL			1150	3485.6	16567	30198	18353	17277	13984	9430		
MEAN			37.10	116.2	534.4	1007	592.0	557.3	466.1	304.2		
MAX			40	390	757	2320	961	1210	566	475		
MIN			35	3.1	394	308	267	306	376	77		
AC-FT			2280	6910	32860	59900	36400	34270	27740	18700		

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1993 AND SEASONS 1994 - 2002*

MEAN	69.42	84.49	436.0	576.0	668.8	595.7	575.7	398.2	353.1	208.6	94.43	71.79
MAX	139	200	2287	2935	3506	1506	2484	726	1913	949	289	198
(WY)	1990	1987	1996	1965	1967	1965	1965	1965	1986	1987	1987	1987
MIN	19.0	26.5	37.1	54.4	129	232	138	10.3	20.9	37.4	31.2	25.9
(WY)	1985	1985	2002	1961	2001	1985	2001	1988	1988	1989	1964	1985

SUMMARY STATISTICS	FOR 2002 SEASON		WATER YEARS 1960 - 1993*		SEASONS 1994 - 2002*	
ANNUAL MEAN			349.5			
HIGHEST ANNUAL MEAN			857	1965		
LOWEST ANNUAL MEAN			139	1984		
HIGHEST DAILY MEAN	2320	Jun 23	12900	Sep 29 1986	6190	Mar 18 1996
LOWEST DAILY MEAN	3.1	Apr 19	a0.00	Aug 10 1988	2.5	Apr 6 2001
ANNUAL SEVEN-DAY MINIMUM			0.00	Aug 24 1988		
MAXIMUM PEAK FLOW	2600	Jun 23	13900	Sep 29 1986	6450	Mar 18 1996
MAXIMUM PEAK STAGE	16.30	Jun 23	25.73	Sep 29 1986	23.88	Mar 18 1996
INSTANTANEOUS LOW FLOW			0.00	Aug 1 1988		
ANNUAL RUNOFF (AC-FT)			253200			
10 PERCENT EXCEEDS			682			
50 PERCENT EXCEEDS			180			
90 PERCENT EXCEEDS			39			

*--During period of operation (1960-69, 1983 to current year. Seasonal record station beginning 1994 water year).
a--No flow on many days in August and September 1988.
e--Estimated.

MILK RIVER BASIN

06154400 PEOPLES CREEK NEAR HAYS, MT

LOCATION.--Lat 48°13'25", long 108°42'48" (NAD 27), in SW$^1/_4$ sec.35, T.29 N., R.23 E., Blaine County, Hydrologic Unit 10050009, on right bank 45 ft downstream from bridge on State Highway 66, 2.5 mi downstream from Myrtle Creek, 16.4 mi north of Hays, and at river mile 47.2.
DRAINAGE AREA.--220 mi^2.
PERIOD OF RECORD.--December 1966 to current year.
GAGE.--Water-stage recorder. Datum of gage is 2,714.10 ft (NGVD 29).
REMARKS.--Records poor. Some storage in numerous stock and beaver ponds and diversions for irrigation of about 1,300 acres upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.05	e0.05	e0.05	e0.05	e0.00	0.01	0.00	e0.10	e0.00	e0.00	e0.00	e0.00
2	e0.05	e0.05	e0.05	e0.05	e0.00	0.00	0.00	e0.05	e0.00	e0.00	e0.00	e0.00
3	e0.05	e0.05	e0.05	e0.05	e0.00	0.00	0.00	e0.00	e0.00	e0.00	e0.00	e0.00
4	e0.05	e0.05	e0.05	e0.05	e0.00	0.00	0.00	e0.00	e0.00	e0.00	e0.00	e0.00
5	e0.05	e0.05	e0.05	e0.05	e0.00	0.00	0.00	e0.00	e0.00	e0.00	e0.00	e0.00
6	e0.05	e0.05	e0.05	e0.05	e0.00	0.00	0.03	e0.00	e0.00	e0.00	e0.00	e0.00
7	e0.05	e0.05	0.08	e0.05	e0.00	0.00	0.06	e0.08	e0.00	e0.00	e0.00	e0.00
8	e0.05	e0.05	e0.05	e0.05	e0.00	0.00	0.07	e0.40	e0.00	e0.00	e0.00	e0.00
9	e0.05	e0.05	e0.05	e0.05	e0.00	0.00	0.07	e0.70	e0.00	e0.00	e0.00	e0.00
10	e0.05	e0.05	e0.04	e0.05	e0.00	0.00	0.08	e1.0	e0.12	e0.00	e0.00	e0.00
11	e0.05	e0.05	e0.02	e0.05	e0.00	0.00	0.07	e1.5	e1.1	e0.00	e0.00	e0.00
12	e0.05	e0.05	e0.02	e0.05	e0.00	0.00	0.05	e1.2	e2.4	e0.00	e0.00	e0.00
13	e0.05	e0.05	e0.04	e0.05	e0.00	0.00	0.02	e0.98	e3.8	e0.00	e0.00	e0.00
14	e0.05	e0.05	e0.05	e0.05	e0.00	0.00	0.01	e0.84	e5.0	e0.00	e0.00	e0.00
15	e0.05	e0.05	e0.05	e0.05	e0.00	0.00	0.03	e0.72	e4.5	e0.00	e0.00	e0.00
16	e0.05	e0.05	e0.05	e0.05	e0.00	0.00	0.43	e0.40	e3.5	e0.00	e0.20	e0.00
17	e0.05	e0.05	0.10	e0.02	e0.00	0.00	0.08	e0.10	e2.5	e0.00	e0.40	e0.00
18	e0.05	e0.05	0.08	e0.00	e0.00	0.00	0.07	e0.05	e2.0	e0.00	e1.0	e0.00
19	e0.05	e0.05	0.06	e0.00	e0.00	0.00	0.04	e0.00	e1.5	e0.00	e1.5	e0.00
20	e0.05	e0.05	0.08	e0.00	e0.00	0.00	0.01	e0.00	e0.50	e0.00	e1.0	e0.00
21	e0.05	e0.05	e0.04	e0.00	e0.00	0.00	0.00	e0.00	e0.10	e0.00	e0.80	e0.00
22	e0.05	e0.05	e0.04	e0.00	e0.00	0.00	0.00	e0.00	e0.05	e0.00	e0.50	e0.00
23	e0.05	e0.05	e0.05	e0.00	e0.00	0.00	0.00	e0.00	e0.00	e0.00	e0.30	e0.00
24	e0.05	e0.05	e0.05	e0.00	e0.00	0.00	0.00	e0.00	e0.00	e0.00	e0.20	e0.00
25	e0.05	e0.05	e0.05	e0.00	e0.00	0.00	0.00	e0.00	e0.00	e0.00	e0.10	e0.00
26	e0.05	e0.05	e0.05	e0.00	e0.00	0.00	0.00	e0.00	e0.00	e0.00	e0.04	e0.00
27	e0.05	e0.05	e0.05	e0.00	0.00	e0.00	0.00	e0.00	e0.00	e0.00	e0.02	e0.00
28	e0.05	e0.05	e0.05	e0.00	0.00	e0.00	0.05	e0.00	e0.00	e0.00	e0.02	e0.00
29	e0.05	e0.05	e0.05	e0.00	---	e0.00	0.07	e0.00	e0.00	e0.00	e0.00	e0.00
30	e0.05	e0.05	e0.05	e0.00	---	e0.00	e0.20	e0.00	e0.00	e0.00	e0.00	e0.00
31	e0.05	---	e0.05	e0.00	---	0.00	---	e0.00	---	e0.00	e0.00	---
TOTAL	1.55	1.50	1.60	0.82	0.00	0.01	1.44	8.12	27.07	0.00	6.08	0.00
MEAN	0.050	0.050	0.052	0.026	0.000	0.000	0.048	0.262	0.902	0.000	0.196	0.000
MAX	0.05	0.05	0.10	0.05	0.00	0.01	0.43	1.5	5.0	0.00	1.5	0.00
MIN	0.05	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	3.1	3.0	3.2	1.6	0.00	0.02	2.9	16	54	0.00	12	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2002, BY WATER YEAR (WY)

MEAN	3.525	3.414	2.786	3.561	9.272	28.80	17.96	30.57	21.22	8.441	2.426	3.700
MAX	37.1	20.5	12.9	30.0	74.9	285	122	190	123	51.5	21.3	57.6
(WY)	1987	1987	1987	1971	1971	1979	1979	1975	1982	1975	1975	1986
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.048	0.007	0.034	0.000	0.000	0.000
(WY)	1972	1972	1972	1972	1998	2002	2002	2001	2001	1972	1967	1969

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1967 - 2002	
ANNUAL TOTAL	35.12		48.19			
ANNUAL MEAN	0.096		0.132		11.15*	
HIGHEST ANNUAL MEAN					47.8	1979
LOWEST ANNUAL MEAN					0.10	2001
HIGHEST DAILY MEAN	6.1	Jul 13	5.0	Jun 14	1000	Mar 7 1979
LOWEST DAILY MEAN	0.00	Feb 20	0.00	Jan 18	b0.00	Dec 1 1966
ANNUAL SEVEN-DAY MINIMUM	0.00	Feb 20	0.00	Jan 18	0.00	Dec 1 1966
MAXIMUM PEAK FLOW			a unknown		c8460	Jun 8 1972
MAXIMUM PEAK STAGE			a6.05	Jul 10	15.03	Jun 8 1972
INSTANTANEOUS LOW FLOW			0.00	Jan 18	0.00	Jan 2 1995
ANNUAL RUNOFF (AC-FT)	70		96		8080	
10 PERCENT EXCEEDS	0.22		0.09		21	
50 PERCENT EXCEEDS	0.05		0.00		1.2	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

*--Median of yearly mean discharge, 5.17 ft^3/s, 3,740 ac-ft/yr.
a--Backwater from beaver dam.
b--No flow at times most years.
c--From floodmark, from rating curve extended above 490 ft^3/s on basis of slope-area measurement of peak flow.
e--Estimated.

MILK RIVER BASIN

06154410 LITTLE PEOPLES CREEK NEAR HAYS, MT

LOCATION.--Lat 47°57'58", long 108°39'36" (NAD 27), in SE$^1/_4$SE$^1/_4$NW$^1/_4$ sec.32, T.26 N., R.24 E., Blaine County, Hydrologic Unit 10050009, on right bank 0.5 mi upstream from west entrance to Mission Canyon, 2 mi southeast of Hays, and at river mile 23.1.
DRAINAGE AREA.--13.0 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1972 to current year.
REVISED RECORDS.--WDR MT-81-1: Drainage area.
GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 3,769.72 ft (NGVD 29). August 1972 to June 24, 1976, gage at former site at datum 10.00 ft higher. Prior to Apr. 22, 1987, gage located 330 ft downstream.
REMARKS.--Water-discharge records fair. No known regulation or diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.1	1.0	0.88	0.95	1.0	1.2	1.3	1.8	7.1	1.8	2.2
2	1.1	1.1	1.0	0.90	0.95	1.1	1.2	1.2	1.8	6.7	1.8	2.1
3	1.1	1.1	1.0	0.90	0.95	1.1	1.2	1.2	1.9	6.4	1.8	2.2
4	1.1	1.1	1.0	0.85	0.97	1.1	1.2	1.2	1.6	6.0	1.8	2.1
5	1.1	1.1	1.0	0.85	1.0	1.1	1.2	1.3	1.5	5.7	2.6	2.1
6	1.1	1.1	0.97	0.85	1.0	1.1	1.3	1.3	1.5	5.8	2.1	2.1
7	1.1	1.1	0.96	0.88	1.0	1.1	1.3	1.3	1.5	6.0	2.2	2.0
8	1.1	1.1	0.96	0.88	1.0	1.1	1.3	1.3	1.7	6.2	4.7	1.8
9	1.1	1.1	0.96	0.89	1.0	1.1	1.3	1.3	1.8	5.5	9.4	1.8
10	1.1	1.1	0.95	0.91	1.0	1.1	1.2	1.3	2.5	5.1	5.5	1.8
11	1.2	1.1	0.96	0.91	1.0	1.1	1.2	1.3	6.9	4.8	4.1	1.8
12	1.1	1.1	0.95	0.92	1.0	1.1	1.2	1.3	6.5	4.8	3.7	1.8
13	1.2	1.1	0.96	0.92	1.0	1.1	1.1	1.3	4.8	4.7	3.4	1.7
14	1.1	1.1	0.95	0.90	1.0	1.1	1.2	1.3	4.2	4.7	3.2	1.7
15	1.1	1.1	0.95	0.90	1.0	1.1	1.2	1.3	4.1	4.3	3.2	1.6
16	1.1	1.1	0.95	0.90	1.0	1.1	1.2	1.3	4.1	4.3	3.3	1.6
17	1.1	1.1	0.90	0.90	1.0	1.1	1.1	1.4	3.9	4.0	3.2	1.6
18	1.1	1.1	0.90	0.90	1.0	1.1	1.2	1.4	3.8	3.9	3.1	1.7
19	1.1	1.1	0.90	0.90	1.0	1.1	1.1	1.4	3.5	3.8	3.0	1.6
20	1.1	1.1	0.89	0.90	1.0	1.2	1.2	1.4	3.4	3.6	3.0	1.6
21	1.1	1.1	0.85	0.90	1.0	1.1	1.2	1.5	3.4	3.6	2.9	1.6
22	1.1	1.0	0.87	0.90	1.0	1.1	1.2	1.7	29	3.5	2.6	1.6
23	1.1	1.0	0.87	0.90	1.0	1.1	1.2	1.7	43	3.2	2.6	1.6
24	1.1	1.0	0.86	0.90	1.0	1.1	1.2	1.7	29	3.0	2.4	1.5
25	1.1	1.0	0.88	0.90	1.0	1.1	1.2	1.8	18	2.2	2.4	1.5
26	1.1	1.0	0.89	0.90	1.0	1.2	1.2	1.7	14	2.2	2.4	1.5
27	1.1	1.0	0.90	0.91	1.0	1.2	1.2	1.7	11	2.2	2.4	1.5
28	1.1	1.0	0.90	0.92	1.0	1.2	1.2	1.7	9.2	2.1	2.3	1.5
29	1.1	1.0	0.89	0.98	---	1.2	1.2	1.7	8.3	2.0	2.2	1.5
30	1.1	1.0	0.89	0.95	---	1.2	1.2	1.8	7.6	1.9	2.2	1.5
31	1.1	---	0.90	0.95	---	1.2	---	1.8	---	1.8	2.2	---
TOTAL	34.3	32.1	28.81	27.95	27.82	34.7	36.1	44.9	235.3	131.1	93.5	52.2
MEAN	1.106	1.070	0.929	0.902	0.994	1.119	1.203	1.448	7.843	4.229	3.016	1.740
MAX	1.2	1.1	1.0	0.98	1.0	1.2	1.3	1.8	43	7.1	9.4	2.2
MIN	1.1	1.0	0.85	0.85	0.95	1.0	1.1	1.2	1.5	1.8	1.8	1.5
AC-FT	68	64	57	55	55	69	72	89	467	260	185	104

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2002, BY WATER YEAR (WY)

MEAN	2.376	2.185	2.026	1.916	1.809	2.332	4.556	12.16	8.361	5.436	2.958	2.596
MAX	6.92	4.60	3.75	3.84	3.51	5.52	21.5	75.6	26.6	32.9	8.11	8.42
(WY)	1987	1987	1986	1976	1986	1996	1979	1974	1975	1993	1993	1978
MIN	1.11	1.07	0.93	0.90	0.95	1.09	1.20	1.45	1.98	1.41	1.22	1.14
(WY)	2002	2002	2002	2002	1997	1985	2002	2002	2000	2000	2000	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1972 - 2002	
ANNUAL TOTAL	512.91		778.78			
ANNUAL MEAN	1.405		2.134		4.072*	
HIGHEST ANNUAL MEAN					11.6	1974
LOWEST ANNUAL MEAN					1.46	2001
HIGHEST DAILY MEAN	8.3	Jun 14	43	Jun 23	500	May 25 1974
LOWEST DAILY MEAN	0.85	Dec 21	0.85	Dec 21	0.67	May 21 1997
ANNUAL SEVEN-DAY MINIMUM	0.87	Dec 20	0.87	Jan 3	0.76	May 18 1997
MAXIMUM PEAK FLOW			50	Jun 23	a576	May 25 1974
MAXIMUM PEAK STAGE			1.31	Jun 23	b4.57	May 25 1974
INSTANTANEOUS LOW FLOW			0.80	Dec 22	0.67	May 21 1997
ANNUAL RUNOFF (AC-FT)	1020		1540		2950	
10 PERCENT EXCEEDS	1.7		3.9		6.7	
50 PERCENT EXCEEDS	1.3		1.2		2.2	
90 PERCENT EXCEEDS	1.0		0.90		1.3	

*--Median of yearly mean discharge, 3.16 ft^3/s.
a--From rating curve extended above 44 ft^3/s, on basis of slope-area measurement of peak flow.
b--From floodmark, at site and datum then in use.

06154410 LITTLE PEOPLES CREEK NEAR HAYS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1977 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance for many days are available in files of the District office.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)
OCT 2001											
24...	1115	1.1	8.4	456	2.5	4.0	240	58.8	22.7	1.52	.1
APR 2002											
16...	1100	1.2	8.2	485	5.0	7.0	260	65.9	23.4	1.51	.1
JUN											
04...	1025	1.6	8.4	492	15.0	11.0	270	68.0	23.6	1.55	.1
JUL											
25...	1015	2.2	8.3	521	29.5	13.5	270	73.4	21.8	1.81	.1

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001											
24...	2.60	232	1.13	.3	10.2	35.0	.81	272	<.04	.07	<.008
APR 2002											
16...	3.24	226	.52	.3	9.5	48.0	.93	288	<.04	E.03	<.008
JUN											
04...	3.51	181	.87	.3	10.1	52.0	1.16	269	<.04	<.05	<.008
JUL											
25...	4.53	214	1.26	.3	11.2	68.7	1.85	312	<.04	<.05	<.008

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001												
24...	<.02	E2	<.04	<.8	E.4	40	<1	1	<1	47	39	.12
APR 2002												
16...	<.02	E1	<.04	<.8	.7	30	<1	3	1	60	45	.15
JUN												
04...	<.02	<2	<.04	<.8	.8	40	<1	2	1	52	32	.14
JUL												
25...	<.02	E1	<.04	<.8	1.0	20	<1	1	2	44	25	.15

E--Estimated.

MILK RIVER BASIN

06154550 PEOPLES CREEK BELOW KUHR COULEE, NEAR DODSON, MT

LOCATION.--Lat 48°21'49", long 108°21'16" (NAD 27), in NW$^1/_4$NW$^1/_4$NE$^1/_4$ sec.16, T.30 N., R.26 E., Phillips County, Hydrologic Unit 10050009, on right bank 10 ft downstream from bridge on county highway, 2.4 mi downstream from Kuhr Coulee, 5.5 mi southwest of Dodson, and at river mile 7.8.

DRAINAGE AREA.--675 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1918 to November 1921 (fragmentary), June 1951 to September 1973, October 1981 to September 1988 (published as "near Dodson"), October 1988 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,309.18 ft (NGVD 29) (levels by Bureau of Indian Affairs). Prior to June 1951, nonrecording gage at site 0.5 mi upstream at different datum. June 1, 1951 to Sept. 30, 1988, water-stage recorder at sites 2.5 mi upstream at different datum.

REMARKS.--Water-discharge records fair. Diversions for irrigation of about 3,300 acres upstream from station. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	e0.00	e0.00	e0.00	e0.00	e0.00	0.04	0.09	0.00	0.00	0.00
2	0.00	0.00	e0.00	e0.00	e0.00	e0.00	e0.00	0.03	0.17	0.00	0.00	0.00
3	0.00	0.00	e0.00	e0.00	e0.00	e0.00	e3.5	0.03	0.39	0.00	0.00	0.00
4	0.00	0.00	e0.00	e0.00	e0.00	e0.00	3.7	0.00	0.68	0.00	0.00	0.00
5	0.00	0.00	e0.00	e0.00	e0.00	e0.00	3.6	0.00	0.61	0.00	0.00	0.00
6	0.00	0.00	e0.00	e0.00	e0.00	e0.00	4.9	0.00	0.45	0.00	0.00	0.00
7	0.00	0.00	e0.00	e0.00	e0.00	e0.00	4.0	0.06	0.28	0.00	0.00	0.00
8	0.00	0.00	e0.00	e0.00	e0.00	e0.00	5.0	0.59	0.16	0.00	0.00	0.00
9	0.00	0.00	e0.00	e0.00	e0.00	e0.00	4.6	1.0	0.23	0.00	40	0.00
10	0.00	0.00	e0.00	e0.00	e0.00	e0.00	4.4	1.4	1.7	0.00	97	0.00
11	0.00	0.00	e0.00	e0.00	e0.00	e0.00	4.3	3.6	30	0.00	40	0.00
12	0.00	0.00	e0.00	e0.00	e0.00	e0.00	4.1	3.4	14	0.00	17	0.00
13	0.00	0.00	e0.00	e0.00	e0.00	e0.00	3.6	2.2	12	0.00	9.8	0.00
14	0.00	0.00	e0.00	e0.00	e0.00	e0.00	3.4	1.8	10	0.00	7.6	0.00
15	0.00	0.00	e0.00	e0.00	e0.00	e0.00	2.6	1.3	8.7	0.00	4.5	0.00
16	0.00	0.00	e0.00	e0.00	e0.00	e0.00	1.9	1.2	7.5	0.00	2.3	0.00
17	0.00	0.00	e0.00	e0.00	e0.00	e0.00	1.6	1.1	6.8	0.00	1.3	0.00
18	0.00	0.00	e0.00	e0.00	e0.00	e0.00	1.3	0.83	4.5	0.00	0.62	0.00
19	0.00	0.00	e0.00	e0.00	e0.00	e0.00	1.1	0.55	3.4	0.00	0.21	0.00
20	0.00	0.00	e0.00	e0.00	e0.00	e0.00	0.88	0.35	2.6	0.00	0.02	0.00
21	0.00	0.00	e0.00	e0.00	e0.00	e0.00	0.75	0.38	1.7	0.00	0.00	0.00
22	0.00	0.00	e0.00	e0.00	e0.00	e0.00	0.73	0.21	1.1	0.00	0.00	0.00
23	0.00	0.00	e0.00	e0.00	e0.00	e0.00	0.54	0.25	1.8	0.00	0.00	0.00
24	0.00	0.00	e0.00	e0.00	e0.00	e0.00	0.49	0.15	2.2	0.00	0.00	0.00
25	0.00	0.00	e0.00	e0.00	e0.00	e0.00	0.35	0.11	3.1	0.00	0.00	0.00
26	0.00	0.00	e0.00	e0.00	e0.00	e0.00	0.23	0.10	1.8	0.00	0.00	0.00
27	0.00	0.00	e0.00	e0.00	e0.00	e0.00	0.12	0.07	0.73	0.00	0.00	0.00
28	0.00	0.00	e0.00	e0.00	e0.00	e0.00	0.09	0.06	0.15	0.00	0.00	0.00
29	0.00	0.00	e0.00	e0.00	---	e0.00	0.06	0.04	0.02	0.00	0.00	0.00
30	0.00	0.00	e0.00	e0.00	---	e0.00	0.06	0.02	0.00	0.00	0.00	0.00
31	0.00	---	e0.00	e0.00	---	e0.00	---	0.03	---	0.00	0.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	61.90	20.90	116.86	0.00	220.35	0.00
MEAN	0.000	0.000	0.000	0.000	0.000	0.000	2.063	0.674	3.895	0.000	7.108	0.000
MAX	0.00	0.00	0.00	0.00	0.00	0.00	5.0	3.6	30	0.00	97	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	0.00	0.00	0.00	0.00	0.00	123	41	232	0.00	437	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1918 - 2002, BY WATER YEAR (WY)*

MEAN	8.549	5.805	4.576	5.306	30.72	78.79	55.01	54.46	42.02	22.51	3.346	13.01
MAX	195	63.6	61.5	64.1	369	385	520	575	332	128	31.2	480
(WY)	1987	1987	1987	1971	1971	1996	1965	1986	1953	1983	1993	1986
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.57	0.094	0.001	0.000	0.000	0.000
(WY)	1959	1957	1953	1956	1956	2002	1962	1998	2001	1918	1919	1918

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1918 - 2002*	
ANNUAL TOTAL	369.41		420.01			
ANNUAL MEAN	1.012		1.151		27.40	
HIGHEST ANNUAL MEAN					131	1986
LOWEST ANNUAL MEAN					0.94	2002
HIGHEST DAILY MEAN	62	Jul 13	97	Aug 10	5070	Sep 25 1986
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	0.00	Jun 11 1918
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00	Oct 1	0.00	Jun 11 1918
MAXIMUM PEAK FLOW			131	Aug 9	a7590	Sep 25 1986
MAXIMUM PEAK STAGE			4.49	Aug 9	b17.05	Mar 29 1952
INSTANTANEOUS LOW FLOW					0.00	Jul 8 1996
ANNUAL RUNOFF (AC-FT)	733		833		19850	
10 PERCENT EXCEEDS	2.6		2.0		46	
50 PERCENT EXCEEDS	0.00		0.00		3.0	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

*--During period of operation (1918-21 (fragmentary), 1951-73, 1982 to currrent year.
a--Gage height, 15.91 ft, from floodmark, at different site and datum.
b--Backwater from ice, from floodmark in gage house, at different site and datum.
e--Estimated.

06154550 PEOPLES CREEK BELOW KUHR COULEE, NEAR DODSON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1989-92, 1994, May 1999 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
APR 2002									
16...	1345	1.8	8.6	1440	5.0	9.5	.59	<.013	<.002
JUN									
04...	1230	.74	8.7	1950	20.0	18.5	.53	<.013	<.002
AUG									
20...	0945	.02	8.3	1040	22.5	19.0	.83	<.013	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
APR 2002					
16...	<.007	.050	77	92	.45
JUN					
04...	<.007	.021	67	4	.01
AUG					
20...	<.007	.078	94	16	<.01

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
APR 2002											
16...	1345	340	70.9	39.0	6.53	5	200	267	12.5	.5	6.25
AUG											
20...	0945	250	55.1	27.9	9.33	4	135	263	10.4	.4	11.7

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
APR 2002											
16...	476	1.32	4.72	971	E2	<.1	<.8	3.5	<1	6	3
AUG											
20...	288	.95	.04	695	3	<.1	<.8	3.7	<1	5	3

E--Estimated.

06155030 MILK RIVER NEAR DODSON, MT

LOCATION.--Lat 48°24'11", long 108°17'35" (NAD 27), in NE$^1/_4$SE$^1/_4$NW$^1/_4$ sec.36, T.31 N., R.26 E., Phillips County, Hydrologic Unit 10050004, on left bank 30 ft downstream from U.S. Highway 2 bridge, 0.95 mi downstream from Dodson Dam, 1.9 mi west of Dodson, and at river mile 273.2.

DRAINAGE AREA.--11,192 mi^2.

PERIOD OF RECORD.--October 1982 to current year (seasonal record beginning water year 1994).

GAGE.--Water-stage recorder. Elevation of gage is 2,250 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Numerous diversions for irrigation upstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e45	8.2	0.48	12	803	48	11	12		
2			e45	8.8	0.43	13	650	40	11	12		
3			e50	11	1.8	14	475	37	12	11		
4			e50	15	5.4	13	302	36	12	11		
5			e45	15	5.8	15	144	38	13	11		
6			e45	14	6.6	16	55	43	14	11		
7			e45	11	8.8	15	32	101	14	11		
8			e45	7.7	10	14	23	184	15	11		
9			e45	7.1	12	14	19	227	16	11		
10			e45	7.1	13	15	39	451	17	10		
11			e50	6.4	13	31	209	612	17	9.7		
12			e50	5.5	13	271	171	265	18	9.4		
13			e50	4.9	7.0	304	122	51	21	8.7		
14			e45	4.2	4.5	100	114	29	26	8.1		
15			e45	4.0	4.6	35	101	25	29	8.2		
16			e45	3.8	4.9	32	68	25	27	8.2		
17			e40	3.0	6.0	137	56	27	21	8.0		
18			e40	2.6	7.5	388	58	34	17	8.0		
19			e40	2.2	11	612	45	47	15	7.9		
20			e45	2.3	17	750	32	54	13	7.6		
21			e45	2.3	20	859	27	48	12	6.8		
22			e45	2.3	19	1000	26	37	12	5.1		
23			e45	2.2	11	1090	28	28	12	3.7		
24			e45	2.1	10	1380	30	25	12	2.9		
25			e50	8.9	11	1510	32	21	12	2.6		
26			40	25	12	1280	31	18	12	2.4		
27			2.1	41	12	1030	31	18	13	2.3		
28			2.8	48	13	893	32	20	14	2.2		
29			12	52	15	887	44	21	14	2.2		
30			10	15	14	874	62	15	13	2.0		
31			9.3	---	13	---	66	10	---	1.8		
TOTAL			1216.2	342.6	302.81	13604	3927	2635	465	228.8		
MEAN			39.23	11.42	9.768	453.5	126.7	85.00	15.50	7.381		
MAX			50	52	20	1510	803	612	29	12		
MIN			2.1	2.1	0.43	12	19	10	11	1.8		
AC-FT			2410	680	601	26980	7790	5230	922	454		

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1993 AND SEASONS 1994-2002*

MEAN	83.25	129.2	449.4	196.8	190.1	244.2	181.4	67.43	134.1	203.1	106.2	77.81
MAX	230	526	2252	1691	1685	655	599	362	1727	2688	421	275
(WY)	1990	1986	1996	1996	1986	1995	1991	1993	1986	1987	1987	1987
MIN	18.2	20.3	15.9	2.35	3.41	16.4	8.72	6.68	0.71	5.07	25.3	17.3
(WY)	1985	1985	1985	1999	2001	1983	2001	2000	2000	1991	1985	1985

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1994 - 2002		WATER YEARS 1982 - 2002*	
ANNUAL TOTAL						
ANNUAL MEAN					185.0	
HIGHEST ANNUAL MEAN					590	1996
LOWEST ANNUAL MEAN					10.6	2001
HIGHEST DAILY MEAN	1510	Jun 25	5000	Mar 20 1996	11500	Sep 26 1986
LOWEST DAILY MEAN	0.43	May 2	0.18	May 6 2001	c0.00	Sep 16 1983
ANNUAL SEVEN-DAY MINIMUM					0.00	Sep 16 1983
MAXIMUM PEAK FLOW	1560	Jun 25	a5200	Mar 17 1994	13200	Sep 26 1986
MAXIMUM PEAK STAGE	12.27	Jun 25	b24.51	Mar 14 1996	29.79	Sep 26 1986
INSTANTANEOUS LOW FLOW					0.00	Oct 6 1990
ANNUAL RUNOFF (AC-FT)					134000	
10 PERCENT EXCEEDS					399	
50 PERCENT EXCEEDS					50	
90 PERCENT EXCEEDS					5.8	

*--Seasonal record beginning water year 1994.
a--Gage height, 22.71 ft.
b--Backwater from ice.
c--No flow at times most years.
e--Estimated.

06155900 MILK RIVER AT CREE CROSSING, NEAR SACO, MT

LOCATION.--Lat 48°32'25", long 107°31'10" (NAD 27), in NW$^1/_4$SE$^1/_4$SE$^1/_4$ sec.11, T.32 N., R.32 E., Phillips County, Hydrologic Unit 10050004, on right bank 25 ft upstream from bridge on Phillips County road, 500 ft upstream from Nelson Canal, 9.9 mi northwest of Saco, and at river mile 273.2.

DRAINAGE AREA.--13,118 mi^2.

PERIOD OF RECORD.--May 2000 to current year (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 2,188 ft (NGVD 29).

REMARKS.--Seasonal records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e43	e20	40	37	826	97	83	43		
2			e41	e15	71	42	782	169	84	43		
3			e43	e15	57	71	721	198	95	45		
4			e52	e15	31	97	608	188	122	42		
5			e50	e15	16	106	507	196	108	42		
6			e40	e15	9.3	100	408	208	99	41		
7			e40	e15	6.4	79	284	236	117	46		
8			e34	e20	6.5	56	165	237	131	44		
9			e37	e20	5.6	71	117	224	131	42		
10			e38	e20	4.6	131	102	335	131	41		
11			e38	e25	20	273	68	396	124	40		
12			e35	e30	28	424	49	485	127	38		
13			e40	e30	26	221	53	627	126	39		
14			e40	e30	27	190	299	547	116	39		
15			e35	36	27	422	287	372	117	38		
16			e35	32	25	365	256	265	113	39		
17			e30	30	24	230	256	212	127	37		
18			e30	27	24	159	215	185	150	37		
19			e30	24	21	135	170	167	143	37		
20			e30	22	17	356	145	156	139	37		
21			e30	20	15	555	154	165	138	37		
22			e30	20	17	673	144	183	140	38		
23			e35	19	25	825	158	194	127	37		
24			e40	17	30	1180	153	169	108	36		
25			e45	14	49	1470	122	146	81	34		
26			e45	13	48	1640	85	136	69	35		
27			e40	14	46	1820	81	130	60	35		
28			e40	15	41	1610	80	118	54	34		
29			e45	14	37	1230	82	91	48	31		
30			e45	13	36	948	90	77	45	29		
31			e30	---	38	---	95	76	---	29		
TOTAL			1186	615	868.4	15516	7562	6985	3253	1185		
MEAN			38.26	20.50	28.01	517.2	243.9	225.3	108.4	38.23		
MAX			52	36	71	1820	826	627	150	46		
MIN			30	13	4.6	37	49	76	45	29		
AC-FT			2350	1220	1720	30780	15000	13850	6450	2350		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 2000 - 2002

MEAN	51.19	23.85	43.88	246.0	157.4	114.9	49.11	26.53
MAX	64.1	27.6	95.7	549	284	237	108	40.5
(WY)	2001	2001	2000	2002	2002	2002	2002	2003
MIN	38.3	20.1	9.44	68.1	28.3	16.7	18.6	12.6
(WY)	2002	2002	2001	2001	2001	2001	2000	2002

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 2000 - 2002	
HIGHEST DAILY MEAN	1820	Jun 27	1820	Jun 27 2002
LOWEST DAILY MEAN	4.6	May 10	2.6	May 28 2001
MAXIMUM PEAK FLOW	1850	Jun 27	1850	Jun 27 2002
MAXIMUM PEAK STAGE	7.58	Jun 27	7.58	Jun 27 2002
INSTANTANEOUS LOW FLOW	a4.5	May 10	2.6	May 28 2001

a--Gage height, 2.01 ft.
e--Estimated.

MILK RIVER BASIN

06156500 BELANGER CREEK DIVERSION CANAL NEAR VIDORA, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°29'39", long 109°21'54" (NAD 27), in NW$^1/_4$ sec.19, T.6, R.25 W., third meridian, Hydrologic Unit 10050013, on left bank 0.3 mi downstream from diversion weir and 12 mi north of Vidora.

PERIOD OF RECORD.--March 1946 to current season (seasonal records only). Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Elevation of gage is 3,200 ft (NGVD 29), from Cypress Lake elevation.

REMARKS.--Records fair. Canal diverts water from right bank of Belanger Creek in SW$^1/_4$ sec.30, T.6, R.25 W., third meridian, for storage in Cypress Lake. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 696 ft^3/s, June 28, 1998; no flow at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e0.00	2.9	0.00	0.00	0.00	0.00	0.00		
2			e0.00	e0.00	3.0	0.00	0.00	0.00	0.00	0.00		
3			e0.00	e0.00	3.2	0.00	0.00	0.00	0.00	0.00		
4			e0.00	e0.00	2.8	0.00	0.00	0.00	0.00	0.00		
5			e0.00	e0.00	2.6	0.00	0.00	0.00	0.00	0.00		
6			e0.00	e0.00	2.7	0.00	0.00	0.00	0.00	0.00		
7			e0.00	e0.00	2.6	0.00	0.00	0.00	0.00	0.00		
8			e0.00	e0.00	2.9	0.00	0.00	0.00	0.00	0.00		
9			e0.00	e0.00	3.1	0.00	0.00	0.00	0.00	0.00		
10			e0.00	e0.00	2.9	1.5	0.00	0.00	0.00	0.00		
11			e0.00	e0.46	2.9	32	0.00	0.00	0.00	0.00		
12			e0.00	e1.9	2.9	64	0.00	0.00	0.00	0.00		
13			e0.00	21	3.1	29	0.00	0.00	0.00	0.00		
14			e0.00	76	3.4	2.9	0.00	0.00	0.00	0.00		
15			e0.00	74	2.5	0.00	0.00	0.00	0.00	0.00		
16			e0.00	60	1.1	0.00	0.00	0.00	0.00	0.00		
17			e0.00	9.3	1.9	0.00	0.00	0.00	0.00	0.00		
18			e0.00	0.57	1.8	0.00	0.00	0.00	0.00	0.00		
19			e0.00	0.00	1.8	0.00	0.00	0.00	0.00	0.00		
20			e0.00	0.11	1.7	0.00	0.00	0.00	0.00	0.00		
21			e0.00	3.1	1.8	0.00	0.00	0.00	0.00	0.00		
22			e0.00	3.8	2.2	0.00	0.00	0.00	0.00	0.00		
23			e0.00	3.8	2.8	0.32	0.00	0.00	0.00	0.00		
24			e0.00	2.9	2.5	0.00	0.00	0.00	0.00	0.00		
25			e0.00	2.7	0.60	0.00	0.00	0.00	0.00	0.00		
26			e0.00	2.7	0.32	0.00	0.00	0.00	0.00	0.00		
27			e0.00	2.6	0.14	0.00	0.00	0.00	0.00	0.00		
28			e0.00	2.6	0.00	0.00	0.00	0.00	0.00	0.00		
29			e0.00	2.9	0.00	0.00	0.00	0.00	0.00	0.00		
30			e0.00	3.0	0.00	0.00	0.00	0.00	0.00	0.00		
31			e0.00	---	0.00	---	0.00	0.00	---	0.00		
TOTAL			0.00	273.44	62.16	129.72	0.00	0.00	0.00	0.00		
MEAN			0.000	9.115	2.005	4.324	0.000	0.000	0.000	0.000		
MAX			0.00	76	3.4	64	0.00	0.00	0.00	0.00		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	542	123	257	0.00	0.00	0.00	0.00		

e--Estimated.

MILK RIVER BASIN

06157500 CYPRESS LAKE EAST OUTFLOW CANAL NEAR VIDORA, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°29'12", long 109°21'08" (NAD 27), in SE$^1/_4$ sec.19, T.6, R.25 W., third meridian, Hydrologic Unit 10050013, on right bank 500 ft upstream from Belanger Creek, and 12.3 mi north of Vidora.

PERIOD OF RECORD.--April to October 1940, April 1943 to current season (seasonal records only). Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Elevation of gage is 3,180 ft (NGVD 29). Prior to Sept. 26, 1946, at datum 2.24 ft higher and Sept. 26, 1946, to May 18, 1950, at datum 1.54 ft higher.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Canal diverts water from Cypress Lake for irrigation in Frenchman River basin in Saskatchewan. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 202 ft^3/s, Apr. 19, 1952; no flow at times most seasons.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.14	e0.18	1.2	1.3	3.8	0.32	0.25	0.64		
2			e0.14	e0.18	0.67	0.46	3.4	0.32	0.25	0.71		
3			e0.18	e0.18	0.46	0.39	3.0	0.32	0.25	0.74		
4			e0.21	e0.18	0.39	0.32	2.8	0.32	0.25	0.64		
5			e0.18	e0.18	0.32	0.32	2.6	0.32	0.28	0.60		
6			e0.14	e0.18	0.39	0.28	2.3	0.32	0.35	0.53		
7			e0.14	e0.18	0.39	0.21	4.5	0.71	1.6	0.85		
8			e0.14	e0.18	0.42	0.11	2.0	0.64	2.0	1.4		
9			e0.14	e0.18	0.49	0.32	2.1	0.99	1.7	1.3		
10			e0.14	e1.6	0.74	2.2	0.99	1.1	1.4	1.1		
11			e0.18	e2.5	0.42	5.9	0.78	1.1	1.2	0.99		
12			e0.21	e5.3	0.32	15	0.81	0.88	0.99	0.99		
13			e0.25	e5.8	0.32	15	0.88	0.78	0.81	0.99		
14			e0.25	e6.6	0.35	13	0.92	0.78	0.67	1.0		
15			e0.25	e19	0.25	11	1.1	0.74	0.53	1.0		
16			e0.21	e15	0.25	10	1.1	0.78	0.42	1.1		
17			e0.21	e10	0.25	10	0.95	0.92	0.35	1.1		
18			e0.18	e6.4	0.21	10	0.81	1.0	0.35	1.1		
19			e0.18	6.3	0.18	11	0.71	0.95	0.42	1.1		
20			e0.14	6.1	0.21	10	0.60	0.85	0.39	1.2		
21			e0.14	5.5	0.25	14	0.53	0.71	0.64	1.3		
22			e0.14	2.3	0.28	14	0.46	0.57	0.57	1.6		
23			e0.14	1.3	0.46	13	0.39	0.46	0.49	1.7		
24			e0.18	1.0	0.35	12	0.35	0.39	0.53	1.6		
25			e0.18	0.71	0.32	10	0.35	0.35	0.53	1.6		
26			e0.18	0.67	0.32	8.2	0.32	0.35	0.57	1.6		
27			e0.18	0.67	0.35	6.6	0.32	0.32	0.60	1.6		
28			e0.18	0.71	0.39	5.6	0.32	0.32	0.60	1.6		
29			e0.18	0.88	1.1	4.8	0.32	0.28	0.60	1.6		
30			e0.18	2.2	2.9	4.3	0.32	0.28	0.71	1.6		
31			e0.18	---	2.3	---	0.32	0.25	---	1.5		
TOTAL			5.47	102.16	17.25	209.31	40.15	18.42	20.30	36.38		
MEAN			0.176	3.405	0.556	6.977	1.295	0.594	0.677	1.174		
MAX			0.25	19	2.9	15	4.5	1.1	2.0	1.7		
MIN			0.14	0.18	0.18	0.11	0.32	0.25	0.25	0.53		
AC-FT			11	203	34	415	80	37	40	72		

e--Estimated.

MILK RIVER BASIN

06158500 EASTEND CANAL AT EASTEND, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°30'21", long 108°50'54" (NAD 27), in NW$^1/_4$ sec.25, T.6, R.22 W., third meridian, Hydrologic Unit 10050013, on left bank 600 ft downstream from Eastend Reservoir headgate, 1.5 mi west of Eastend.

PERIOD OF RECORD.--March 1937 to current season (seasonal records only). Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,998.58 ft (Canadian Geodetic Vertical Datum 1928). Prior to June 1973, at sites within 1 mi, at different datums.

REMARKS.--Records good. Canal diverts water from Eastend Reservoir in NW$^1/_4$ sec.25, T.6, R.22 W., third meridian, on right bank for irrigation of about 3,100 acres in the Frenchman River basin in Saskatchewan. Water Survey of Canada satellite telemeter at station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 91 ft^3/s, May 18, 1993; no flow at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.00	0.00	0.00	0.00	0.00	72	0.00	0.00		
2			0.00	0.00	0.00	0.00	0.00	71	0.00	0.00		
3			0.00	0.00	0.00	0.00	0.00	72	0.00	0.00		
4			0.00	0.00	0.00	0.00	0.00	66	0.00	0.00		
5			0.00	0.00	0.00	0.00	0.00	62	0.00	0.00		
6			0.00	0.00	0.00	0.00	0.00	61	0.00	0.00		
7			0.00	0.00	0.00	0.00	0.00	60	0.00	0.00		
8			0.00	0.00	0.00	0.00	0.00	45	0.00	0.00		
9			0.00	0.00	0.00	0.00	0.00	16	0.00	0.00		
10			0.00	0.00	0.00	0.00	0.00	2.9	0.00	0.00		
11			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
12			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
13			0.00	0.00	48	0.00	0.00	0.00	0.00	0.00		
14			0.00	0.00	76	0.00	0.00	0.00	0.00	0.00		
15			0.00	0.00	80	0.00	0.00	0.00	0.00	0.00		
16			0.00	0.00	82	0.00	0.00	0.00	0.00	0.00		
17			0.00	0.00	87	0.00	0.00	0.00	0.00	0.00		
18			0.00	0.00	87	0.00	0.00	0.00	0.00	0.00		
19			0.00	0.00	87	0.00	0.00	0.00	0.00	0.00		
20			0.00	0.00	87	0.00	0.00	0.00	0.00	0.00		
21			0.00	0.00	85	0.00	0.00	0.00	0.00	0.00		
22			0.00	0.00	84	0.00	0.00	0.00	0.00	0.00		
23			0.00	0.00	84	0.00	0.00	0.00	0.00	0.00		
24			0.00	0.00	85	0.00	0.00	0.00	0.00	0.00		
25			0.00	0.00	82	0.00	0.00	0.00	0.00	0.00		
26			0.00	0.00	71	0.00	0.00	0.00	0.00	0.00		
27			0.00	0.00	67	0.00	0.00	0.00	0.00	0.00		
28			0.00	0.00	65	0.00	0.00	0.00	0.00	0.00		
29			0.00	0.00	56	0.00	48	0.00	0.00	0.00		
30			0.00	0.00	26	0.00	67	0.00	0.00	0.00		
31			0.00	---	0.71	---	72	0.00	---	0.00		
TOTAL			0.00	0.00	1339.71	0.00	187.00	527.90	0.00	0.00		
MEAN			0.000	0.000	43.22	0.000	6.032	17.03	0.000	0.000		
MAX			0.00	0.00	87	0.00	72	72	0.00	0.00		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	0.00	2660	0.00	371	1050	0.00	0.00		

MILK RIVER BASIN

06161300 HUFF LAKE PUMPING CANAL NEAR VAL MARIE, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°22'20", long 107°53'05" (NAD 27), in NW$^1/_4$ sec.7, T.5, R.14 W., third meridian, Hydrologic Unit 10050013, on right bank 50 ft downstream from pump discharge outlet, and 11 mi northwest of Val Marie.

PERIOD OF RECORD.--March 1963 to current season (seasonal records only). Published as Val Marie West Pumping Canal near Val Marie, Saskatchewan, March 1963 to October 1980. July 1950 to current season in reports of Department of the Environment, Canada.

GAGE.--Water-stage recorder. Prior to 1956 and subsequent to 1960, records obtained from occasional discharge measurements and records of pump operation.

REMARKS.--Records poor. Canal diverts water from Huff Lake in NW$^1/_4$ sec.7, T.5, R.14 W., third meridian, on left bank for irrigation of about 2,100 acres in the Frenchman River basin in Saskatchewan.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 31 ft^3/s, May 30 to June 2, 7-10, 1975, May 5, 6, 7, 9, 1977; no flow at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.00	0.00	0.00	24	0.00	0.00	0.00	0.00		
2			0.00	0.00	0.00	24	0.00	0.00	0.00	0.00		
3			0.00	0.00	0.00	24	0.00	0.00	0.00	0.00		
4			0.00	0.00	0.00	24	0.00	0.00	0.00	0.00		
5			0.00	0.00	0.00	18	0.00	0.00	0.00	0.00		
6			0.00	0.00	0.00	7.7	0.00	0.00	0.00	0.00		
7			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
8			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
9			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
10			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
11			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
12			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
13			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
14			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
15			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
16			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
17			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
18			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
19			0.00	0.00	18	0.00	0.00	0.00	0.00	0.00		
20			0.00	0.00	23	0.00	0.00	0.00	0.00	0.00		
21			0.00	0.00	21	0.00	0.00	0.00	0.00	0.00		
22			0.00	0.00	20	0.00	0.00	0.00	0.00	0.00		
23			0.00	0.00	12	0.00	0.00	0.00	0.00	0.00		
24			0.00	0.00	19	0.00	0.00	0.00	0.00	0.00		
25			0.00	0.00	23	0.00	0.00	0.00	0.00	0.00		
26			0.00	0.00	24	0.00	0.00	0.00	0.00	0.00		
27			0.00	0.00	24	0.00	0.00	0.00	0.00	0.00		
28			0.00	0.00	25	0.00	0.00	0.00	0.00	0.00		
29			0.00	0.00	25	0.00	0.00	0.00	0.00	0.00		
30			0.00	0.00	25	0.00	0.00	0.00	0.00	0.00		
31			0.00	---	25	---	0.00	0.00	---	0.00		
TOTAL			0.00	0.00	284.00	121.70	0.00	0.00	0.00	0.00		
MEAN			0.000	0.000	9.161	4.057	0.000	0.000	0.000	0.000		
MAX			0.00	0.00	25	24	0.00	0.00	0.00	0.00		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	0.00	563	241	0.00	0.00	0.00	0.00		

MILK RIVER BASIN

06161500 HUFF LAKE GRAVITY CANAL NEAR VAL MARIE, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°22'10", long 107°53'06" (NAD 27), in SW$^1/_4$ sec.7, T.5, R.14 W., third meridian, Hydrologic Unit 10050013, on right bank 100 ft downstream from Huff Lake headgate and 11 mi northwest of Val Marie.

PERIOD OF RECORD.--March 1946 to current season (seasonal records only). Published as Val Marie West Gravity Canal near Val Marie, Saskatchewan, March 1946 to October 1980. Monthly figures only prior to March 1947, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,662.88 ft (Canadian Geodetic Vertical Datum 1928). Prior to Sept. 27, 1949, at site 0.5 mi downstream at different datum.

REMARKS.--Records fair. Canal diverts water from Huff Lake in SW$^1/_4$ sec.7, T.5, R.14 W., third meridian, on left bank for irrigation of about 1,900 acres in the Frenchman River basin in Saskatchewan. Since 1962, records have been based on gate openings in Huff Lake Dam.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 68 ft^3/s, July 24, 1996; no flow at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.00	0.00	0.00	33	0.00	0.00	0.00	0.00		
2			0.00	0.00	0.00	31	0.00	0.00	0.00	0.00		
3			0.00	0.00	0.00	24	0.00	0.00	0.00	0.00		
4			0.00	0.00	0.00	23	0.00	0.00	0.00	0.00		
5			0.00	0.00	0.00	34	0.00	0.00	0.00	0.00		
6			0.00	0.00	0.00	42	0.00	0.00	0.00	0.00		
7			0.00	0.00	0.00	43	0.00	0.00	0.00	0.00		
8			0.00	0.00	0.00	40	0.00	0.00	0.00	0.00		
9			0.00	0.00	0.00	34	0.00	0.00	0.00	0.00		
10			0.00	0.00	0.00	15	0.00	0.00	0.00	0.00		
11			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
12			0.00	0.00	0.00	4.8	0.00	0.00	0.00	0.00		
13			0.00	0.00	0.00	7.9	0.00	0.00	0.00	0.00		
14			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
15			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
16			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
17			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
18			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
19			0.00	0.00	22	0.00	0.00	0.00	0.00	0.00		
20			0.00	0.00	22	0.00	0.00	0.00	0.00	0.00		
21			0.00	0.00	23	0.00	0.00	0.00	0.00	0.00		
22			0.00	0.00	24	0.00	0.00	0.00	0.00	0.00		
23			0.00	0.00	25	0.00	0.00	0.00	0.00	0.00		
24			0.00	0.00	29	0.00	0.00	0.00	0.00	0.00		
25			0.00	0.00	30	0.00	0.00	0.00	0.00	0.00		
26			0.00	0.00	28	0.00	0.00	0.00	0.00	0.00		
27			0.00	0.00	27	0.00	0.00	0.00	0.00	0.00		
28			0.00	0.00	30	0.00	0.00	0.00	0.00	0.00		
29			0.00	0.00	30	0.00	0.00	0.00	0.00	0.00		
30			0.00	0.00	31	0.00	0.00	0.00	0.00	0.00		
31			0.00		33		0.00	0.00		0.00		
TOTAL			0.00	0.00	354.00	331.70	0.00	0.00	0.00	0.00		
MEAN			0.000	0.000	11.42	11.06	0.000	0.000	0.000	0.000		
MAX			0.00	0.00	33	43	0.00	0.00	0.00	0.00		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	0.00	702	658	0.00	0.00	0.00	0.00		

MILK RIVER BASIN

06162500 NEWTON LAKE MAIN CANAL NEAR VAL MARIE, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°18'18", long 107°48'05" (NAD 27), in NE$^1/_4$ sec.15, T.4, R.14 W., third meridian, Hydrologic Unit 10050013, on right bank about 500 ft downstream from Newton Lake headgate, and 5.4 mi northwest of Val Marie.

PERIOD OF RECORD.--April 1937 to current season (seasonal records only). Published as Val Marie Main Canal near Val Marie, Saskatchewan, March 1962 to October 1980. Prior to April 1947 monthly discharge only, published in WSP 1309. Prior to March 1962, published as Val Marie Canal near Val Marie.

GAGE.--Water-stage recorder. Datum of gage is 2,622.03 ft (Canadian Geodetic Vertical Datum 1928). Prior to May 21, 1963, at several sites within 2 mi of present site at different datums.

REMARKS.--Records fair. Canal diverts water from Newton Lake in SE$^1/_4$ sec.22, T.4, R.14 W., third meridian, on left bank for irrigation of about 4,700 acres in the Frenchman River basin in Saskatchewan.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 131 ft^3/s, May 23, 1997; no flow at times each season.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.00	0.00	0.00	63	0.00	0.00	0.00	0.00		
2			0.00	0.00	0.00	59	0.00	0.00	0.00	0.00		
3			0.00	0.00	0.00	59	0.00	0.00	0.00	0.00		
4			0.00	0.00	0.00	44	0.00	0.00	0.00	0.00		
5			0.00	0.00	0.00	2.3	0.00	0.00	0.00	0.00		
6			0.00	0.00	0.00	e1.1	0.00	0.00	0.00	0.00		
7			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
8			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
9			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
10			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
11			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
12			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
13			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
14			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
15			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
16			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
17			0.00	0.00	63	0.00	0.00	0.00	0.00	0.00		
18			0.00	0.00	65	0.00	0.00	0.00	0.00	0.00		
19			0.00	0.00	65	0.00	0.00	0.00	0.00	0.00		
20			0.00	0.00	83	0.00	0.00	0.00	0.00	0.00		
21			0.00	0.00	91	0.00	0.00	0.00	0.00	0.00		
22			0.00	0.00	95	0.00	0.00	0.00	0.00	0.00		
23			0.00	0.00	93	0.00	0.00	0.00	0.00	0.00		
24			0.00	0.00	89	0.00	0.00	0.00	0.00	0.00		
25			0.00	0.00	87	0.00	0.00	0.00	0.00	0.00		
26			0.00	0.00	84	0.00	0.00	0.00	0.00	0.00		
27			0.00	0.00	97	0.00	0.00	0.00	0.00	0.00		
28			0.00	0.00	102	0.00	0.00	0.00	0.00	0.00		
29			0.00	0.00	99	0.00	0.00	0.00	0.00	0.00		
30			0.00	0.00	100	0.00	0.00	0.00	0.00	0.00		
31			0.00	---	74	---	0.00	0.00	---	0.00		
TOTAL			0.00	0.00	1287.00	228.40	0.00	0.00	0.00	0.00		
MEAN			0.000	0.000	41.52	7.613	0.000	0.000	0.000	0.000		
MAX			0.00	0.00	102	63	0.00	0.00	0.00	0.00		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	0.00	2550	453	0.00	0.00	0.00	0.00		

e--Estimated.

MILK RIVER BASIN

06164000 FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'00", long 107°18'06" (NAD 27), in SE$^1/_4$ sec.5, T.1, R.10 W., third meridian, in Saskatchewan, Hydrologic Unit 10050013, on left bank 50 ft north of international boundary, 22 mi northeast of Whitewater, MT, and at river mile 76.4.

DRAINAGE AREA.--2,120 mi^2, of which 343 mi^2 probably is noncontributing.

PERIOD OF RECORD.--April 1917 to current season (seasonal records only for most years).

REVISED RECORDS.--WSP 1389: 1938(M), 1939-41, 1942(M), 1943, 1950(M). W 1983: Drainage area.

GAGE.--Water-stage recorder and concrete control since August 1949. Elevation of gage is 2,420 ft (NGVD 29). Prior to June 23, 1937, water-stage recorder at site 0.5 mi upstream at different datum. June 23, 1937, to October 1952, water-stage recorder at site 100 ft downstream at present datum.

REMARKS.--Seasonal records good except those for Apr. 18-22 and Sept. 9 to Oct. 31, which are poor. Natural flow of stream affected by several storage reservoirs, diversions for irrigation of about 14,500 acres, and return flow from irrigated areas. Water may be diverted into or from Battle Creek basin through Cypress Lake. Water Survey of Canada satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

COOPERATION.--This is one of a number of stations which are maintained jointly by the United States and Canada.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e0.00	0.35	14	4.5	6.1	30	69		
2			e0.00	e0.00	0.53	13	2.5	5.7	25	36		
3			e0.00	e0.00	0.60	27	1.7	6.6	22	17		
4			e0.00	e0.00	0.46	24	1.1	6.5	20	9.4		
5			e0.00	e0.00	0.39	24	0.81	6.9	19	6.1		
6			e0.00	e0.00	0.35	46	0.64	7.5	20	6.4		
7			e0.00	e0.00	0.35	60	0.49	124	64	6.9		
8			e0.00	e0.00	0.49	51	2.2	597	69	7.2		
9			e0.00	e0.00	0.81	106	12	189	93	7.2		
10			e0.00	e0.00	1.9	445	18	97	84	7.1		
11			e0.00	e0.00	5.1	784	133	230	80	6.7		
12			e0.00	e0.00	3.5	706	141	576	79	6.7		
13			e0.00	e0.00	1.9	498	125	798	77	6.4		
14			e0.00	e88	1.2	303	123	886	77	6.9		
15			e0.00	e177	0.95	115	144	763	76	7.4		
16			e0.00	e265	0.74	69	182	456	76	7.2		
17			e0.00	125	0.53	43	169	269	76	7.0		
18			e0.00	66	0.35	28	167	212	76	9.8		
19			e0.00	38	0.21	20	166	183	76	7.3		
20			e0.00	24	0.14	15	166	145	73	6.2		
21			e0.00	16	0.07	9.9	141	120	73	7.4		
22			e0.00	9.3	0.07	61	67	101	73	7.8		
23			e0.00	5.7	0.07	120	46	58	73	8.0		
24			e0.00	2.9	0.04	364	26	52	75	8.0		
25			e0.00	1.7	0.04	158	20	50	75	8.1		
26			e0.00	0.99	0.04	61	18	46	74	7.8		
27			e0.00	0.71	0.04	30	17	35	74	8.2		
28			e0.00	0.60	12	17	12	32	73	8.2		
29			e0.00	0.49	20	11	15	29	72	7.7		
30			e0.00	0.42	14	7.2	11	39	72	7.2		
31			e0.00	---	12	---	7.0	41	---	6.7		
TOTAL			0.00	821.81	79.22	4230.1	1939.94	6167.3	1946	329.0		
MEAN			0.000	27.39	2.555	141.0	62.58	198.9	64.87	10.61		
MAX			0.00	265	20	784	182	886	93	69		
MIN			0.00	0.00	0.04	7.2	0.49	5.7	19	6.1		
AC-FT			0.00	1630	157	8390	3850	12230	3860	653		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1917 - 2002*

MEAN	177.7	404.4	139.0	85.55	53.49	17.26	7.295	10.55
MAX	1490	5313	1051	886	602	199	65.9	77.7
(WY)	1997	1952	1927	1923	1955	2002	1951	1966
MIN	0.000	0.35	2.54	0.39	0.021	0.000	0.000	0.000
(WY)	2002	2000	1937	1937	1984	1934	1919	1932

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1917 - 2002*	
HIGHEST DAILY MEAN	886	Aug 14	19200	Apr 15 1952
LOWEST DAILY MEAN	0.00	Mar 1	0.00	Jul 28 1919
MAXIMUM PEAK FLOW	908	Aug 14	a22700	Apr 15 1952
MAXIMUM PEAK STAGE	7.74	Aug 14	b19.90	Apr 15 1952

*--Seasonal most years.
a--From rating curve extended above 2,300 ft^3/s on basis of slope-area measurement of peak flow.
b--From floodmark.
e--Estimated.

RESERVOIRS IN FRENCHMAN RIVER BASIN IN SASKATCHEWAN

(International gaging stations)

All elevations listed for the following reservoirs are referenced to the National Geodetic Vertical Datum of 1929.

06157000 CYPRESS LAKE.--Lat 49°27'30", long 109°30'25" (NAD 27), in SE$^1/_4$ sec.12, T.6, R.27 W., third meridian, Hydrologic Unit 10050013, on south shore, and 12 mi north of Consul. DRAINAGE AREA, 107 mi^2. PERIOD OF RECORD, February 1939 to current season (seasonal records only). Records prior to October 1946, published only in WSP 1309. March to May 1952 daily elevations and contents, published in WSP 1260-B. Water-stage recorder. Datum of gage is at mean sea level (Geodetic Survey of Canada datum; subtract 33.67 ft to obtain Reclamation Service datum). Prior to 1969 season, at Reclamation Service datum. Prior to 1940, nonrecording gage on natural lake at "South" station. February 1940 to Apr. 28, 1955, elevation obtained from average of nonrecording gage readings at west and east dams. Apr. 29, 1955, to Aug. 21, 1984, gage located at east dam. REMARKS, This is an offstream reservoir formed by two earthfill dams on a natural lake of the same name which is the head of the Frenchman River. There are concrete control works at both dams. The following capacity figures are from capacity table effective January 1971; see previous reports for superseded figures. Usable capacity, 79,500 acre-ft between elevation 3,187.0 ft, bottom of west outlet works, and 3,201.9 ft, maximum design level. Dead storage, 24,300 acre-ft. Water is diverted from Battle Creek on west, 12 mi northwest of Consul, and from Belanger Creek, in the Frenchman River basin, on the east, 12 mi north of Vidora. Water is released to the same streams for irrigation. Figures given herein represent total contents. Water Survey of Canada satellite telemeter at station. This is one of a number of stations which are maintained jointly by Canada and the United States. REVISED RECORDS, W 1983: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents, 117,300 acre-ft, Apr. 21, 1955, elevation, 3,203.36 ft; minimum observed since first filling, 8,190 acre-ft, Nov. 17, 1992, elevation, 3,183.17 ft.

EXTREMES FOR CURRENT SEASON: Maximum contents, 23,340 acre-ft, May 3, elevation, 3,186.78 ft; minimum, 16,370 acre-ft, June 10, elevation, 3,185.20 ft.

06159000 EASTEND RESERVOIR.--Lat 49°30'26", long 108°51'08" (NAD 27), in NW$^1/_4$ sec.25, T.6, R.22 W., third meridian Hydrologic Unit 10050013, at dam on Frenchman River, 1.6 mi west of Eastend, and at mile 300.5. DRAINAGE AREA, 619 mi^2. PERIOD OF RECORD, February 1937 to current season (seasonal records only). Prior to 1958, published as East End Reservoir at East End. Nonrecording gages read about once a day during irrigation season and twice a day during high stages February 1937 to July 1979. Water-stage recorder. Datum of gage is at mean sea level (Geodetic Survey of Canada datum). REMARKS, Reservoir is formed by earthfill dam completed in 1939, breached during flood in 1952 and rebuilt the same year with a concrete spillway and control works. The following capacity figures are from capacity table effective September 1982. Usable capacity, 1,690 acre-ft between elevation 2,993.5 ft, bottom of outlet works, and 3,012.0 ft, maximum design level. No dead storage. Water is used for irrigation. Water Survey of Canada satellite telemeter at station. This is one of a number of stations which are maintained jointly by Canada and the United States. REVISED RECORDS (SEASONS), WSP 1309: 1948(M). WSP 1729: Drainage area. WSP 2116: 1937-65. W 1983: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents, about 3,700 acre-ft, Apr. 15, 1952, elevation, about 3,015 ft, dam overtopped; no contents at times.

EXTREMES FOR CURRENT SEASON: Maximum contents, 2,460 acre-ft, Apr. 24, elevation, 3,013.86 ft; minimum, 471 acre-ft, Mar. 1, elevation, 3,007.55 ft.

06162000 HUFF LAKE.--Lat 49°22'16", long 107°53'07" (NAD 27), in SW$^1/_4$ sec.7, T.5, R.14 W., third meridian, Hydrologic Unit 10050013, near dam on Frenchman River, 11 mi northwest of Val Marie, and at mile 169.7. DRAINAGE AREA, 1,274 mi^2. PERIOD OF RECORD, February 1940 to current season (seasonal records only). February 1940 to October 1979, published as Val Marie West Reservoir. Records prior to October 1946, published only in WSP 1309. April to May 1952 daily elevations and contents, published in WSP 1260-B. Water-stage recorder. Datum of gage is at mean sea level (Geodetic Survey of Canada datum). May 1952 to May 1954, reference point on control structure. May 1954 to May 10, 1966, nonrecording gages. May 11, 1966, to Oct. 31, 1979, recording gage on riparian gatewell. REMARKS, Reservoir is formed by earthfill dam with concrete control works completed in 1939. The following capacity figures are from capacity table effective February 1983. Usable capacity, 3,610 acre-ft between elevation 2,663.2 ft, bottom of outlet works, and 2,676.5 ft, maximum design level. Dead storage, 11 acre-ft. Water is used for irrigation. Figures given herein represent total contents. Water Survey of Canada satellite telemeter at station. This is one of a number of stations which are maintained jointly by Canada and the United States. REVISED RECORDS (SEASONS), WSP 1309: 1947-50.

EXTREMES FOR PERIOD OF RECORD: Maximum contents, 5,160 acre-ft, Mar. 26, 1997, elevation, 2,678.91 ft; no contents Feb. 28, Mar. 31, 1950, Oct. 22-31, 1984, Mar. 1-7, Aug. 6 to Sept. 14, 1985 and Feb. 28 to Apr. 11, 2002.

EXTREMES FOR CURRENT SEASON: Maximum contents observed, 4,520 acre-ft, Aug. 9, elevation, 2,677.92 ft; no contents, Feb. 28 to Apr. 11.

06163000 NEWTON LAKE.--Lat 49°18'12", long 107°48'20" (NAD 27), in NE$^1/_4$ sec.15, T.4, R.14 W., third meridian, Hydrologic Unit 10050013, at dam on Frenchman River, 5.4 mi northwest of Val Marie, and at mile 156.2. DRAINAGE AREA, 1,349 mi^2. PERIOD OF RECORD, February 1937 to current season (seasonal records only). February 1937 to October 1979, published as Val Marie Reservoir. Water-stage recorder. Datum of gage is at mean sea level (Geodetic Survey of Canada datum). Prior to May 11, 1966, nonrecording gages. REMARKS, Reservoir is formed by earthfill dam with concrete control works; construction began in 1936; storage began in 1937; construction completed in 1938. The following capacity figures are from capacity table effective February 1983. Usable capacity, 9,950 acre-ft between elevation 2,616.1 ft, bottom of outlet works, and 2,635.4 ft maximum design level. No dead storage. Water is used for irrigation. Water Survey of Canada satellite telemeter at station. This is one of a number of stations which are maintained jointly by Canada and the United States. REVISED RECORDS (SEASONS), WSP 2116: 1937-65. WSP 1729: 1949.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 18,920 acre-ft, Apr. 19, 1952, elevation, 2,638.80 ft; no contents at times.

EXTREMES FOR CURRENT SEASON: Maximum contents, 12,180 acre-ft, Aug. 11, elevation, 2,636.86 ft; minimum, no contents, Feb. 28 to Apr. 3.

MILK RIVER BASIN

RESERVOIRS IN FRENCHMAN RIVER BASIN IN SASKATCHEWAN--Continued

Seasonal monthend contents, in acre-feet, February 2002 to October 2002

Date		Cypress Lake	Eastend Reservoir	Huff Lake	Newton Lake
Feb.	28.....	20,340	472	0	0
Mar.	31.....	20,620	518	0	0
Apr.	30.....	22,520	2,390	3,530	5,210
May	31.....	18,100	729	2,320	3,510
June	30.....	20,650	2,180	3,420	9,910
July	31.....	19,470	1,940	3,490	10,060
Aug.	31.....	18,500	1,290	3,610	10,170
Sept.	30.....	19,030	794	3,100	9,300
Oct.	31.....	18,320	478	3,530	9,560

06164510 MILK RIVER AT JUNEBERG BRIDGE, NEAR SACO, MT

LOCATION.--Lat 48°30'32", long 107°13'02" (NAD 27), in NE$^1/_4$NE$^1/_4$ sec.30, T.32 N., R.35 E., Phillips County, Hydrologic Unit 10050014, on left bank 25 ft upstream from Juneberg bridge on Phillips County road, 1.5 mi downstream from Frenchman River, 6.9 mi northeast of Saco, and at river mile 152.3.

DRAINAGE AREA. --17,670 mi^2.

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,130 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow increased during irrigation season by water from St. Mary Canal which diverts from the St. Mary River near Babb (station number 05017500). Flow regulated by Fresno Reservoir (station number 06136500), two reservoirs in Lodge Creek basin in Saskatchewan (station numbers 06144260 and 06144360 and four reservoirs in Frenchman River basin in Saskatchewan. There are many small dams for the diversion of irrigation canals upstream. U. S. Army Corps of Engineers satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	32	e52	e42	e48	e46	e50	24	204	943	235	126
2	22	29	e52	e42	e50	e46	45	44	204	898	204	131
3	21	29	e50	e42	e50	e46	40	70	228	856	261	123
4	21	27	e50	e42	e50	e48	40	55	255	763	256	152
5	21	106	e48	e42	e50	e50	38	39	271	621	266	174
6	21	188	e46	e42	e50	e50	41	32	271	457	210	153
7	21	139	e44	e42	e50	e50	44	28	253	317	205	163
8	22	89	e44	e46	e50	e50	43	29	235	212	261	167
9	22	70	e44	e50	e50	e48	45	26	227	169	241	177
10	22	66	e44	e54	e50	e46	48	24	131	134	310	195
11	22	64	e44	e52	e50	e46	49	22	196	108	572	210
12	24	64	e44	e50	e50	e46	49	29	795	77	598	218
13	24	63	e44	e50	e50	e46	50	36	1010	57	828	224
14	24	63	e44	e50	e50	e48	51	38	851	199	1050	218
15	23	62	e44	e50	e50	e50	50	34	814	306	1050	212
16	23	63	e44	e46	e50	e48	46	37	758	276	1040	210
17	23	63	e44	e46	e50	e46	42	38	463	286	985	216
18	23	63	e44	e46	e50	e44	39	31	271	352	758	240
19	23	61	e44	e46	e50	e44	35	28	188	315	535	244
20	23	61	e44	e46	e50	e44	32	28	213	285	408	233
21	23	63	e44	e44	e50	e44	33	189	520	277	363	223
22	23	63	e44	e44	e50	e44	31	244	754	284	343	224
23	25	62	e44	e44	e48	e44	30	250	893	283	334	222
24	24	e50	e44	e44	e46	e46	30	255	1070	261	309	212
25	28	e45	e44	e44	e46	e48	27	264	1320	187	252	195
26	32	e50	e44	e44	e46	e50	24	265	1480	146	220	175
27	34	e50	e44	e44	e46	e50	24	220	1610	151	196	167
28	35	e50	e44	e44	e46	e50	25	218	1490	151	198	159
29	33	e50	e44	e44	---	e50	25	218	1270	151	179	151
30	32	e50	e44	e44	---	e50	27	212	1080	247	148	145
31	32	---	e42	e46	---	e50	---	217	---	253	126	---
TOTAL	772	1935	1396	1412	1376	1468	1153	3244	19325	10022	12941	5659
MEAN	24.90	64.50	45.03	45.55	49.14	47.35	38.43	104.6	644.2	323.3	417.5	188.6
MAX	35	188	52	54	50	50	51	265	1610	943	1050	244
MIN	21	27	42	42	46	44	24	22	131	57	126	123
AC-FT	1530	3840	2770	2800	2730	2910	2290	6430	38330	19880	25670	11220

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2002, BY WATER YEAR (WY)

MEAN	296.0	154.7	121.7	119.1	224.1	1011	777.7	470.0	484.0	422.6	239.7	242.4
MAX	4043	597	406	271	1758	4075	6221	2545	2258	1844	693	1517
(WY)	1987	1987	1987	1987	1996	1979	1978	1986	1982	1991	1993	1986
MIN	24.9	60.1	44.8	33.1	49.1	47.4	38.4	56.4	103	29.6	9.35	22.7
(WY)	2002	1978	1986	1985	2002	2002	2002	1989	2001	1984	1984	1984

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1978 - 2002	
ANNUAL TOTAL	23415		60703			
ANNUAL MEAN	64.15		166.3		381.1*	
HIGHEST ANNUAL MEAN					1042	1978
LOWEST ANNUAL MEAN					70.1	2001
HIGHEST DAILY MEAN	231	May 24	1610	Jun 27	12300	Apr 3 1978
LOWEST DAILY MEAN	14	Aug 28	21	Oct 3	2.1	Aug 20 1984
ANNUAL SEVEN-DAY MINIMUM	16	Aug 27	21	Oct 2	4.0	Jul 27 1984
MAXIMUM PEAK FLOW			1620	Jun 27	a12400	Apr 3 1978
MAXIMUM PEAK STAGE			6.59	Jun 27	b26.70	Mar 4 1986
ANNUAL RUNOFF (AC-FT)	46440		120400		276100	
10 PERCENT EXCEEDS	120		324		707	
50 PERCENT EXCEEDS	50		50		150	
90 PERCENT EXCEEDS	22		28		49	

*--Median of yearly mean discharge, 209 ft^3/s.
a--Gage height, 24.20 ft.
b--Back water from ice.
e--Estimated.

MILK RIVER BASIN

06166000 BEAVER CREEK BELOW GUSTON COULEE, NEAR SACO, MT

LOCATION.--Lat 48°21'25", long 107°34'48" (NAD 27), in SE$^1/_4$SW$^1/_4$NW$^1/_4$ sec. 16, T.30 N., R.32 E., Phillips County, Hydrologic Unit 10050014, on right bank, 25 ft upstream from bridge on county road, 13 mi southwest of Saco, 22.5 river miles downstream from Guston Coulee, and at mile 61.1.

DRAINAGE AREA. --1,208 mi^2.

PERIOD OF RECORD.--April 1920 to September 1921, April 1981 to current year (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 2,215 ft (NGVD 29).

REMARKS.--Seasonal records fair. Some regulation by numerous small reservoirs on tributary streams. Diversions for irrigation upstream from gage. U.S. Geological Survey satellite telemetry at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
			0.00	0.00	0.00	0.00	54	0.00	6.7	0.65		
2			0.00	0.00	0.00	0.00	68	0.36	9.4	0.48		
3			0.00	0.00	0.00	0.00	58	9.2	14	0.43		
4			0.00	0.00	0.00	0.00	36	18	15	0.36		
5			0.00	0.00	0.00	0.00	23	19	18	0.32		
6			0.00	0.00	0.00	0.00	16	16	18	0.26		
7			0.00	0.00	0.00	0.00	11	17	21	0.22		
8			0.00	0.00	0.00	0.00	9.5	26	19	0.18		
9			0.00	0.00	0.00	0.00	5.2	27	19	0.14		
10			0.00	0.00	0.00	0.00	6.6	25	15	0.09		
11			0.00	0.00	0.00	0.00	6.0	19	14	0.05		
12			0.00	0.00	0.00	0.00	4.8	20	38	0.00		
13			0.00	0.00	0.00	0.00	3.9	18	36	0.00		
14			0.00	0.00	0.00	0.00	2.9	37	22	0.00		
15			0.00	0.00	0.00	0.00	2.6	54	4.0	0.00		
16			0.00	0.00	0.00	0.00	4.2	54	0.55	0.00		
17			0.00	0.00	0.00	0.00	7.2	46	0.20	0.00		
18			0.00	0.00	0.00	0.00	5.3	40	4.4	0.00		
19			0.00	0.00	0.00	0.11	0.21	35	9.6	0.00		
20			0.00	0.00	0.00	1.3	0.00	33	8.9	0.00		
21			0.00	0.00	0.00	4.5	0.00	32	7.5	0.00		
22			0.00	0.00	0.00	8.8	0.00	26	6.1	0.00		
23			0.00	0.00	0.00	45	0.00	22	4.5	0.00		
24			0.00	0.00	0.00	55	0.00	20	4.1	0.00		
25			0.00	0.00	0.00	40	0.00	20	3.1	0.00		
26			0.00	0.00	0.00	132	0.00	24	2.7	0.00		
27			0.00	0.00	0.00	312	0.00	24	2.5	0.00		
28			0.00	0.00	0.00	248	0.02	19	1.6	0.00		
29			0.00	0.00	0.00	138	0.16	12	1.2	0.00		
30			0.00	0.00	0.00	77	0.36	8.6	0.84	0.00		
31			0.00	---	0.00	---	0.25	7.4	---	0.00		
TOTAL			0.00	0.00	0.00	1061.71	325.20	728.56	326.89	3.18		
MEAN			0.000	0.000	0.000	35.39	10.49	23.50	10.90	0.103		
MAX			0.00	0.00	0.00	312	68	54	38	0.65		
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00		
AC-FT			0.00	0.00	0.00	2110	645	1450	648	6.3		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1981 - 2002*

MEAN	53.62	20.25	60.18	35.93	46.14	7.439	61.23	22.94
MAX	204	140	718	315	223	40.7	1187	342
(WY)	1986	1987	1986	1982	1998	1993	1986	1987
MIN	0.000	0.000	0.000	0.000	0.021	0.000	0.000	0.000
(WY)	1995	1995	1984	2001	1985	2001	1984	1985

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1981 - 2002*	
HIGHEST DAILY MEAN	312	Jun 27	11900	Sep 27 1986
LOWEST DAILY MEAN	0.00	many days	a0.00	Apr 5 1981
MAXIMUM PEAK FLOW	325	Jun 27	b23500	Sep 26 1986
MAXIMUM PEAK STAGE	5.57	Jun 27	14.68	Sep 26 1986

*--During period of operation (1981 to current year).
a--No flow at times each year.
b--From slope-area measurement of peak flow.

MILK RIVER BASIN

06169500 ROCK CREEK BELOW HORSE CREEK, NEAR INTERNATIONAL BOUNDARY

(Hydrologic bench-mark station)

LOCATION.--Lat 48°58'10", long 106°50'20" (NAD 27), in NE$^1/_4$NW$^1/_4$ sec.15, T.37 N., R.37 E., Valley County, Hydrologic Unit 10050015, on right bank 2 mi south of international boundary, 3 mi downstream from Horse Creek, 21 mi northwest of Opheim, MT, and at river mile 82.0.

DRAINAGE AREA.--328 mi^2.

PERIOD OF RECORD.--March 1916 to October 1926, September 1956 to current year (seasonal records only prior to October 1978). Monthly discharge only for some periods, published in WSP 1309. Published as Rock Creek near Barnard, Mt. 1916-17. Prior to September 1956, records were collected at both Horse Creek (1914-56) and Rock Creek above Horse Creek (1914-56). Summations are equivalent to records at this site.

REVISED RECORDS.--WSP 1509: 1925(M), WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,530 ft (NGVD 29). March 1916 to October 1926, nonrecording gages at several sites within 500 ft upstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Several small diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 15, 1952, reached a stage of 12.6 ft, from floodmarks, discharge, 5,110 ft^3/s, by slope-area measurement of peak flow.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.28	1.1	e0.55	e0.00	e0.00	e0.00	e0.00	7.3	2.7	6.3	0.33	0.90
2	0.27	1.1	e0.40	e0.00	e0.00	e0.00	e0.00	6.9	2.8	4.6	0.33	1.3
3	0.25	1.1	e0.40	e0.00	e0.00	e0.00	e0.00	6.5	3.1	3.4	0.33	1.7
4	0.26	1.1	e0.40	e0.00	e0.00	e0.00	e0.00	5.9	3.2	2.6	0.33	1.6
5	0.28	1.1	e0.40	e0.00	e0.00	e0.00	e0.00	5.5	4.7	2.0	0.38	1.6
6	0.31	1.2	e0.40	e0.00	e0.00	e0.00	e0.00	5.6	4.5	1.7	0.43	1.6
7	0.37	1.2	e0.35	e0.00	e0.00	e0.00	e0.00	5.3	3.8	1.4	0.51	1.9
8	0.45	1.2	e0.35	e0.00	e0.00	e0.00	e0.30	5.7	5.2	1.2	0.67	2.1
9	0.49	1.2	e0.30	e0.00	e0.00	e0.00	e1.0	5.9	12	1.6	1.3	3.2
10	0.54	1.0	e0.30	e0.00	e0.00	e0.00	e10	5.9	186	1.5	3.4	9.3
11	0.59	1.1	e0.30	e0.00	e0.00	e0.00	e20	6.4	451	8.1	5.1	7.5
12	0.57	1.1	e0.25	e0.00	e0.00	e0.00	e50	9.2	187	9.7	5.8	3.9
13	0.54	1.1	e0.25	e0.00	e0.00	e0.00	e150	7.8	96	7.6	4.2	3.1
14	0.56	1.0	e0.25	e0.00	e0.00	e0.00	176	7.8	52	4.3	2.7	3.3
15	0.60	1.0	e0.25	e0.00	e0.00	e0.00	132	6.6	33	2.8	2.1	3.2
16	0.64	1.1	e0.25	e0.00	e0.00	e0.00	88	5.9	23	2.2	1.8	2.9
17	0.68	1.5	e0.25	e0.00	e0.00	e0.00	61	5.3	16	1.9	1.5	2.4
18	0.70	1.6	e0.25	e0.00	e0.00	e0.00	42	4.7	12	1.5	1.3	2.1
19	0.69	1.4	e0.25	e0.00	e0.00	e0.00	35	4.1	9.4	1.2	1.2	2.0
20	0.71	1.1	e0.25	e0.00	e0.00	e0.00	30	3.7	7.7	1.0	1.2	1.6
21	0.76	0.90	e0.20	e0.00	e0.00	e0.00	24	3.2	6.1	0.80	1.2	1.2
22	0.76	0.97	e0.20	e0.00	e0.00	e0.00	20	3.0	5.4	0.66	1.1	1.2
23	0.84	1.1	e0.15	e0.00	e0.00	e0.00	17	3.1	39	0.54	0.96	1.1
24	0.93	e1.0	e0.10	e0.00	e0.00	e0.00	e12	3.2	147	0.46	0.90	1.2
25	0.97	e0.95	e0.05	e0.00	e0.00	e0.00	e12	3.3	52	0.42	0.79	1.2
26	0.97	e0.90	e0.00	e0.00	e0.00	e0.00	e10	3.5	22	0.40	0.76	1.2
27	0.94	e0.85	e0.00	e0.00	e0.00	e0.00	10	3.8	19	0.35	0.76	1.2
28	0.90	e0.80	e0.00	e0.00	e0.00	e0.00	9.0	3.6	16	0.33	0.76	1.2
29	1.0	e0.50	e0.00	e0.00	---	e0.00	8.4	3.5	11	0.33	0.76	1.2
30	1.1	e0.50	e0.00	e0.00	---	e0.00	8.1	3.1	8.2	0.33	0.83	1.4
31	1.1	---	e0.00	e0.00	---	e0.00	---	3.0	---	0.33	0.90	---
TOTAL	20.05	31.77	7.10	0.00	0.00	0.00	925.80	158.3	1440.8	71.55	44.63	69.30
MEAN	0.647	1.059	0.229	0.000	0.000	0.000	30.86	5.106	48.03	2.308	1.440	2.310
MAX	1.1	1.6	0.55	0.00	0.00	0.00	176	9.2	451	9.7	5.8	9.3
MIN	0.25	0.50	0.00	0.00	0.00	0.00	0.00	3.0	2.7	0.33	0.33	0.90
AC-FT	40	63	14	0.00	0.00	0.00	1840	314	2860	142	89	137

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2002, BY WATER YEAR (WY)*

MEAN	1.852	1.518	0.751	0.290	6.171	80.70	84.41	15.34	12.99	9.792	1.278	1.100
MAX	9.33	2.79	2.19	1.78	96.1	369	437	89.0	102	63.6	13.4	12.5
(WY)	1987	1981	1980	1981	1981	1976	1969	1982	1991	1969	1975	1986
MIN	0.001	0.10	0.026	0.000	0.000	0.000	3.97	1.46	0.17	0.004	0.000	0.000
(WY)	1989	1989	1996	1984	1980	1965	1992	1992	1988	1988	1959	1958

06169500 ROCK CREEK BELOW HORSE CREEK, NEAR INTERNATIONAL BOUNDARY--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1956 - 2002**		
ANNUAL TOTAL	1907.24		2769.30				
ANNUAL MEAN	5.225		7.587		14.33***		
HIGHEST ANNUAL MEAN					37.4		1999
LOWEST ANNUAL MEAN					1.88		1998
HIGHEST DAILY MEAN	100	Mar 14	451	Jun 11	3460	Apr 7	1969
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Dec 26	0.00	Mar 1	1957
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00	Dec 26	0.00	Mar 1	1957
MAXIMUM PEAK FLOW			558	Jun 11	4420	Apr 7	1969
MAXIMUM PEAK STAGE			5.84	Jun 11	13.40	Mar 29	1978
INSTANTANEOUS LOW FLOW			0.00	Dec 26	a0.00	Mar 1	1957
ANNUAL RUNOFF (AC-FT)	3780		5490		10390		
10 PERCENT EXCEEDS	15		9.5		14		
50 PERCENT EXCEEDS	0.90		0.90		1.0		
90 PERCENT EXCEEDS	0.00		0.00		0.00		

*--During period of operation (September 1956 to current year).
**--Seasonal records only prior to October 1978.
***--Median of yearly discharge, 9.95 ft^3/s, 7,210 acre-ft/yr (October 1978 to current year).
a--At times most years.
e--Estimated.

MILK RIVER BASIN

06172310 MILK RIVER AT TAMPICO, MT

LOCATION.--Lat 48°18'29", long 106°49'19" (NAD 27), in SW$^1/_4$SW$^1/_4$SW$^1/_4$ sec.32, T.30 N., R.38 E., Valley County, Hydrologic Unit 10050012, on right bank, at county bridge 0.8 miles downstream from Buggy Creek and 0.3 miles northeast of Tampico, and at river mile 98.7.

DRAINAGE AREA.--21,078 mi^2.

PERIOD OF RECORD.--October 1973 to September 1977, May 1987 to current year (seasonal record beginning 1995 water year).

GAGE.--Water-stage recorder. Elevation of gage is 2,110 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow increased during irrigation season by water from St. Mary Canal which diverts from the St. Mary River near Babb. Flow regulated by Fresno and Nelson Reservoirs, five reservoirs in Lodge Creek basin in Saskatchewan, and four reservoirs in Frenchman River basin in Saskatchewan. Many small dams for the diversion of irrigation canals upstream, the closest being Vandalia Dam 19 mi upstream. Diversions upstream from station for irrigation of about 126,000 acres of which about 17,000 acres lies downstream from station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 17, 1952 reached an observed stage of 38.67 ft at gage 200 ft downstream from Vandalia Dam, furnished by the U.S. Army Corps of Engineers; discharge about 45,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e52	e15	13	8.0	1340	26	74	e130		
2			e52	e15	12	9.8	1140	29	68	e120		
3			e52	e15	13	9.9	975	30	66	e110		
4			e52	e15	12	6.3	871	30	67	e110		
5			e52	e15	12	7.5	758	37	75	e110		
6			e52	e15	13	9.0	575	43	100	e100		
7			e52	e15	12	1.8	399	67	137	e100		
8			e52	e15	13	7.1	217	96	171	e120		
9			e52	e15	11	20	132	159	225	e160		
10			e52	11	10	19	89	179	191	e200		
11			e52	9.9	11	843	55	241	189	e190		
12			e52	29	11	1850	42	442	189	e180		
13			e54	60	9.5	2130	32	510	175	e170		
14			e54	57	10	1760	27	760	169	e170		
15			e54	64	9.7	1280	24	971	164	e160		
16			e54	30	8.5	1050	24	1030	169	148		
17			e54	13	8.2	883	24	1050	176	143		
18			e52	16	7.7	441	24	997	182	139		
19			e52	18	7.3	291	24	786	187	135		
20			e52	17	7.7	228	25	552	193	129		
21			e52	18	8.8	135	25	403	170	122		
22			e52	18	9.3	320	24	320	147	111		
23			e52	16	9.9	630	25	295	138	107		
24			e53	15	7.1	816	28	263	133	104		
25			e53	12	10	1510	29	220	125	99		
26			e53	11	19	2140	29	177	114	97		
27			e20	12	22	1990	27	148	100	94		
28			e15	13	21	1800	27	111	91	91		
29			e15	13	15	1620	26	94	84	91		
30			e15	13	9.9	1490	25	96	83	73		
31			e15	---	9.4	---	26	89	---	82		
TOTAL			1445	600.9	353.0	23305.4	7088	10251	4152	3895		
MEAN			46.61	20.03	11.39	776.8	228.6	330.7	138.4	125.6		
MAX			54	64	22	2140	1340	1050	225	200		
MIN			15	9.9	7.1	1.8	24	26	66	73		
AC-FT			2870	1190	700	46230	14060	20330	8240	7730		

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1994, AND SEASONS 1995-2002*

MEAN	211.4	178.0	1024	788.6	555.5	589.2	529.2	212.3	171.3	188.4	216.9	152.3
MAX	791	433	3809	3911	4555	1852	2515	769	903	906	710	363
(WY)	1974	1974	1994	1996	1975	1974	1991	1993	1993	1994	1976	1976
MIN	55.2	49.3	46.6	3.35	6.59	11.7	8.35	4.63	6.52	29.1	90.0	66.9
(WY)	1989	1989	2002	1992	2001	1977	1977	1988	1988	2002	1989	1989

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1995 - 2002*		WATER YEARS 1974 - 1994*	
ANNUAL MEAN					400	
HIGHEST ANNUAL MEAN					998	1975
LOWEST ANNUAL MEAN					84.6	1988
HIGHEST DAILY MEAN	2140	Jun 26	a11000	Mar 27 1997	8180	May 26 1974
LOWEST DAILY MEAN	1.8	Jun 7	1.8	Jun 7 2002	0.00	Aug 28 1988
ANNUAL SEVEN-DAY MINIMUM					0.00	Sep 7 1988
MAXIMUM PEAK FLOW	2220	Jun 26	a11000	May 27 1997	c8210	May 26 1974
MAXIMUM PEAK STAGE	10.78	Jun 26	b27.64	Mar 27 1997	25.40	Jul 4 1991
INSTANTANEOUS LOW FLOW					0.00	Aug 28 1988
ANNUAL RUNOFF (AC-FT)					308500	
10 PERCENT EXCEEDS					920	
50 PERCENT EXCEEDS					128	
90 PERCENT EXCEEDS					13	

*--During period of operation (1974-1977, 1987 to current year. Seasonal records beginning 1995 water year).
a--Estimated daily discharge, ungaged bypass flow.
b--Backwater from ice.
c--Gage height, 23.65 ft.
e--Estimated.

MILK RIVER BASIN

06174500 MILK RIVER AT NASHUA, MT

LOCATION.--Lat 48°07'47", long 106°21'50" (NAD 27), in NE$^1/_4$NE$^1/_4$ sec.1, T.27 N., R.41 E., Valley County, Hydrologic Unit 10050012, on right bank at downstream side of former highway bridge site, 0.6 mi southwest of Nashua, 2.0 mi upstream from Porcupine Creek, and at river mile 22.7.
DRAINAGE AREA.--22,332 mi^2.
PERIOD OF RECORD.--October 1939 to current year.

WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 1729: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 2,027.75 ft (NGVD 29).
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow increased during irrigation season by water from St. Mary Canal which diverts from the St. Mary River near Babb. Flow regulated by Fresno Reservoir (station number 06136500), two reservoirs in Lodge Creek basin in Saskatchewan, and four reservoirs in Frenchman River basin in Saskatchewan. Diversions for irrigation of about 140,000 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	44	e54	e48	e52	e56	e56	20	e62	2330	52	189
2	40	44	e54	e46	e52	e56	e50	18	e60	1950	48	172
3	38	44	e54	e48	e52	e58	e45	18	59	1520	50	149
4	35	44	e54	e52	e52	e58	e50	14	55	1230	64	131
5	34	42	e54	e52	e52	e56	e60	13	59	1080	86	126
6	35	41	e54	e54	e54	e56	e70	15	59	1090	110	131
7	35	40	e54	e56	e56	e56	e80	16	45	1010	125	102
8	34	38	e54	e56	e58	e56	e100	20	41	774	146	127
9	30	49	e54	e56	e60	e56	e110	21	112	607	200	159
10	28	144	e54	e56	e60	e56	e120	24	294	585	290	231
11	30	147	e54	e56	e60	e58	e130	137	643	574	397	274
12	33	116	e55	e56	e60	e58	e120	409	1080	371	446	241
13	35	93	e55	e58	e60	e58	e100	252	1510	217	542	218
14	32	79	e55	e60	e60	e58	e86	223	2050	144	689	209
15	32	e60	e55	e58	e60	e58	e94	166	2190	135	757	199
16	33	e65	e55	e56	e60	e56	e100	117	1940	113	864	188
17	36	e65	e55	e54	e60	e56	e104	91	1500	73	1010	177
18	35	e60	e55	e52	e60	e56	e94	71	1220	49	1070	181
19	34	e60	e55	e54	e60	e56	e84	42	1010	46	1100	185
20	34	e55	e54	e56	e60	e56	e80	26	710	46	1040	187
21	37	e55	e54	e52	e60	e56	e75	17	456	49	919	193
22	37	e50	e54	e48	e60	e56	e70	16	351	42	1560	187
23	35	e50	e54	e52	e60	e56	e65	15	316	34	2720	177
24	34	e50	e54	e54	e58	e56	e60	13	800	38	2060	159
25	32	e50	e54	e56	e56	e56	e50	15	1910	46	989	151
26	33	e46	e54	e56	e56	e56	e40	20	2240	43	627	139
27	35	e48	e54	e54	e56	e56	e30	41	2540	45	498	140
28	35	e50	e52	e52	e56	e56	e25	87	2750	69	411	139
29	34	e52	e50	e50	---	e56	e20	75	2710	89	332	124
30	34	e54	e50	e46	---	e56	e20	e65	2560	69	259	123
31	38	---	e50	e48	---	e56	---	e63	---	57	228	---
TOTAL	1066	1835	1668	1652	1610	1750	2188	2140	31332	14525	19689	5108
MEAN	34.39	61.17	53.81	53.29	57.50	56.45	72.93	69.03	1044	468.5	635.1	170.3
MAX	40	147	55	60	60	58	130	409	2750	2330	2720	274
MIN	28	38	50	46	52	56	20	13	41	34	48	102
AC-FT	2110	3640	3310	3280	3190	3470	4340	4240	62150	28810	39050	10130

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

MEAN	307.3	213.3	158.2	146.5	241.7	1275	2215	994.8	957.3	671.1	309.9	275.6
MAX	6837	768	487	843	2337	6678	20930	5207	6611	3578	1754	2138
(WY)	1987	1987	1987	1974	1996	1986	1952	1975	1953	1962	1993	1978
MIN	34.4	61.2	39.7	36.0	38.9	56.5	15.1	10.5	28.0	3.56	3.42	12.6
(WY)	2002	2002	1984	1950	1949	2002	1981	1992	1984	1984	1984	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002	
ANNUAL TOTAL	60719.70		84563			
ANNUAL MEAN	166.4		231.7		647.3*	
HIGHEST ANNUAL MEAN					2359	1952
LOWEST ANNUAL MEAN					57.7	1984
HIGHEST DAILY MEAN	3160	Jun 16	2750	Jun 28	44200	Apr 18 1952
LOWEST DAILY MEAN	0.00	May 19	13	May 5	0.00	Jul 13 1984
ANNUAL SEVEN-DAY MINIMUM	0.00	May 19	16	May 1	0.00	Jul 17 1984
MAXIMUM PEAK FLOW			2840	Aug 23	45300	Apr 18 1952
MAXIMUM PEAK STAGE			8.81	Aug 23	31.38	Apr 18 1952
INSTANTANEOUS LOW FLOW			11	May 5	0.00	Jul 14 1984
ANNUAL RUNOFF (AC-FT)	120400		167700		468900	
10 PERCENT EXCEEDS	338		661		1280	
50 PERCENT EXCEEDS	55		56		179	
90 PERCENT EXCEEDS	25		34		57	

*--Median of yearly discharge, 547 ft^3/s.
e--Estimated.

06174500 MILK RIVER AT NASHUA, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-53, October 1959 to August 1994, May 1999 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records): April 2001 to current year.
INSTRUMENTATION.--Temperature recorder installed Mar. 1, 2001.
REMARKS.--Missing temperature data for May 17-21, 28 due to equipment problems. Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records): Maximum, 28.5°C, June 24, 2001; maximum may have been higher during period of lost record; minimum, 0.0°C, Apr. 1, 2001, many days in April 2002.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum, 28.0°C, many days in July; minimum, 0.0°C, many days in April.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001									
22...	0930	37	8.6	1820	9.5	5.5	.75	<.013	<.002
APR 2002									
17...	1000	133	8.2	865	5.0	6.0	.76	.378	.008
JUN									
05...	1215	65	8.4	1820	29.0	21.5	1.0	<.013	E.002
JUL									
08...	1415	768	8.0	728	31.0	26.5	3.0	.501	.012

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001					
22...	<.007	.104	82	97	9.7
APR 2002					
17...	<.007	.163	99	91	32.7
JUN					
05...	.018	.127	80	109	19.1
JUL					
08...	.057	1.43	99	2280	4720

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT 2001											
22...	0930	410	85.6	48.8	7.46	5	243	348	58.6	.5	3.77
JUN 2002											
05...	1215	400	86.9	43.5	7.64	6	263	285	53.1	.4	5.15

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT 2001											
22...	563	1.66	122	1220	2	<.2	E.6	4.0	<1	6	6
JUN 2002											
05...	587	1.66	214	1220	3	<.1	E.8	5.7	<1	8	6

E--Estimated.

MILK RIVER BASIN

06174500 MILK RIVER AT NASHUA, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	0.5	0.0	0.5	13.5	10.5	11.5	20.5	17.5	19.0	25.5	24.5	25.0
2	0.5	0.0	0.5	14.5	11.0	12.5	18.5	16.0	17.0	25.0	24.0	24.5
3	0.5	0.0	0.5	13.0	12.0	12.5	16.0	14.0	15.0	24.5	23.5	24.0
4	0.5	0.0	0.5	13.5	11.0	12.5	19.0	13.0	15.0	25.0	23.0	24.0
5	0.5	0.0	0.5	13.0	11.5	12.0	20.0	13.5	16.5	25.0	23.5	24.5
6	0.5	0.0	0.5	11.5	9.5	10.5	19.0	16.0	17.5	25.0	23.5	24.5
7	0.5	0.0	0.5	9.5	6.5	8.5	20.0	16.0	17.5	25.5	24.0	24.5
8	0.5	0.0	0.5	6.5	5.0	5.5	17.5	15.5	16.5	26.0	24.5	25.0
9	0.5	0.0	0.5	8.5	4.0	6.0	15.5	13.0	14.0	25.5	24.5	25.0
10	0.5	0.0	0.5	12.0	6.0	8.5	15.5	13.0	14.0	24.5	23.5	24.0
11	0.5	0.0	0.5	13.0	8.0	10.5	14.0	11.5	12.5	24.0	22.5	23.5
12	1.0	0.0	0.5	14.5	12.0	13.0	13.0	11.0	12.0	26.0	23.5	24.5
13	2.0	0.0	0.5	15.5	11.5	13.5	14.5	12.0	13.0	27.0	24.5	25.5
14	3.0	2.0	2.5	16.5	14.0	15.0	16.0	14.5	15.0	28.0	25.5	26.5
15	4.5	3.0	4.0	16.0	14.0	14.5	16.0	14.0	15.0	28.0	26.0	27.0
16	5.0	3.0	3.5	14.5	12.0	13.5	17.5	16.0	17.0	28.0	27.0	27.5
17	8.5	3.0	5.0	15.0	13.5	14.0	19.5	17.5	18.5	28.0	26.0	27.0
18	8.5	5.5	6.5	---	---	---	20.5	19.0	19.5	28.0	26.5	27.0
19	8.0	6.5	7.5	---	---	---	20.0	19.5	19.5	28.0	27.0	27.5
20	11.5	7.0	9.0	---	---	---	21.0	18.5	20.0	28.0	27.0	27.5
21	12.0	7.5	9.5	---	---	---	22.0	20.0	21.0	27.0	25.5	26.5
22	13.0	8.0	10.5	17.0	13.5	15.0	24.0	21.5	22.5	25.5	24.5	25.0
23	11.5	10.5	11.0	15.5	12.5	14.0	23.5	22.5	23.0	25.5	24.0	24.5
24	11.0	8.5	9.5	16.0	13.5	14.5	24.5	22.5	23.5	26.0	24.0	24.5
25	10.0	6.5	8.5	15.0	13.0	14.0	23.5	21.5	22.5	25.5	24.5	25.0
26	10.0	8.0	9.0	19.5	13.5	15.5	24.5	22.5	23.5	26.0	24.0	25.5
27	9.0	8.0	8.5	19.5	14.5	16.5	25.5	24.0	24.5	25.5	24.0	25.0
28	10.5	8.0	9.0	---	---	---	26.0	25.0	25.5	26.0	24.0	25.0
29	11.5	9.0	10.0	21.0	18.0	19.5	25.5	25.0	25.5	25.0	24.0	24.5
30	13.0	10.5	11.5	20.0	17.5	18.5	25.5	25.0	25.0	25.5	24.0	24.5
31	---	---	---	21.5	17.5	19.0	---	---	---	25.0	23.5	24.5
MONTH	13.0	0.0	4.5	---	---	---	26.0	11.0	18.5	28.0	22.5	25.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER	
1	23.5	21.5	22.5	23.5	22.5	23.0
2	22.0	20.5	21.5	22.5	21.0	22.0
3	22.0	20.5	21.5	23.0	20.5	21.5
4	21.5	19.0	20.5	23.5	21.5	22.5
5	20.5	19.0	19.5	24.0	22.0	23.0
6	23.5	20.5	21.5	23.5	23.0	23.0
7	24.0	22.5	23.5	23.0	22.5	22.5
8	23.5	22.0	22.5	22.5	21.5	22.0
9	22.5	21.0	21.5	22.0	20.5	21.0
10	22.5	20.5	21.5	22.0	20.0	21.0
11	22.0	21.0	21.5	21.5	20.0	21.0
12	21.0	20.0	20.5	22.0	20.0	21.0
13	21.5	19.5	20.5	22.0	20.5	21.0
14	21.0	20.0	20.5	21.5	20.0	20.5
15	21.0	19.5	20.0	21.5	19.5	20.5
16	20.0	19.0	19.5	21.5	20.0	20.5
17	20.0	18.5	19.0	21.0	20.0	20.5
18	20.0	18.5	19.0	20.5	19.5	20.0
19	20.0	18.5	19.0	20.5	18.5	19.5
20	20.5	19.0	19.5	19.5	17.5	18.5
21	21.0	19.5	20.0	17.5	15.5	16.5
22	21.0	18.5	20.0	15.5	14.5	15.0
23	20.0	16.5	18.0	15.0	13.5	14.0
24	22.0	19.5	20.5	14.5	13.5	14.0
25	22.0	21.5	21.5	15.0	13.0	14.0
26	23.0	21.5	22.0	14.5	13.0	14.0
27	23.5	21.5	22.5	14.5	13.0	13.5
28	23.5	21.5	22.5	14.5	12.5	13.5
29	23.5	22.0	22.5	15.5	13.0	14.0
30	24.5	22.5	23.0	15.5	14.0	14.5
31	24.0	22.5	23.5	---	---	---
MONTH	24.5	16.5	21.0	24.0	12.5	19.0

MISSOURI RIVER MAIN STEM

06177000 MISSOURI RIVER NEAR WOLF POINT, MT

LOCATION.--Lat 48°04'00", long 105°31'55" (NAD 27), in SW$^1/_4$NW$^1/_4$ sec.28, T.27 N., R.48 E., McCone County, Hydrologic Unit 10060001, on right bank 500 ft downstream from bridge on State Highway 13, 5 mi southeast of Wolf Point, 7.8 mi downstream from Wolf Creek, and at river mile 1,701.4.

DRAINAGE AREA.--82,290 mi^2.

PERIOD OF RECORD.--September 1928 to current year.

REVISED RECORDS.--WSP 1146: 1931. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,958.57 ft (NGVD 29). Prior to Apr. 13, 1930, nonrecording gages at Wolf Point ferry landing 5.5 mi upstream at different datum.

REMARKS.-- Records good except those for estimated daily discharges, which are fair. Flow partly regulated by Fort Peck Lake and many other reservoirs upstream from station. Diversion for irrigation of about 1,010,400 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 14, 1908, reached a stage of about 20 ft, (site and datum then in use).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3860	4080	5550	e5100	e5500	e5500	e4000	4530	9040	9570	8690	8970
2	4030	3840	5370	e5000	e5500	e5600	e4100	4540	9080	9360	8520	9060
3	3920	3900	5360	e4800	e5500	e5300	e4000	4580	9110	9200	8560	8900
4	3930	3880	5390	e4900	e5400	e5300	e4000	4570	8830	9360	8520	8950
5	3970	3950	5280	e5000	e5400	e5400	e4000	4260	9180	9640	8760	8770
6	4020	3890	5340	e5000	e4900	e5400	e4100	4140	9350	9610	8900	8890
7	3920	3930	5290	e4900	e5100	e5300	e4100	4440	8770	9450	9220	8870
8	3910	3910	5330	e5200	e5200	e5600	e4100	4580	8870	9420	9170	8960
9	3970	3940	5350	e4900	e5200	e5400	e4050	4440	9120	9790	9290	8860
10	3970	3960	5340	e4800	e5200	e5400	e4050	4640	9800	9580	9220	8840
11	3830	3950	5380	e4800	e5200	e5500	e4200	4510	9730	9310	9020	9100
12	3990	4010	5360	e5000	e5000	e5400	e4500	6030	9680	9440	9200	9110
13	3940	4090	5520	e4700	e5100	e5400	e4200	8340	9870	9260	9200	8760
14	3860	4010	5220	e4800	e5100	e5300	e4400	9920	10400	8890	9150	8960
15	3930	3980	5210	e5000	e5000	e4600	4590	10300	10500	8890	9150	8160
16	3920	3960	5190	e4900	e5000	e4700	4700	6740	10600	8860	9440	6740
17	4000	3970	5210	e4800	e5100	e4500	4870	6290	10100	8880	9620	5880
18	3900	4010	5170	e5200	e5000	e4500	4810	7880	9620	9010	9700	5700
19	3910	3940	5170	e5400	e5000	e4600	4720	9040	9790	9010	9750	5410
20	3850	4060	5340	e5300	e4900	e4200	4700	9020	9880	8870	9600	5530
21	3900	4020	e5300	e5000	e5100	e4000	4620	8810	9670	8800	10200	5420
22	3940	4000	e5400	e5100	e5100	e4000	4620	9700	9700	8790	10100	5460
23	3960	4010	e5300	e5000	e5100	e4000	4590	9530	9950	8760	9770	5580
24	3920	4030	e5300	e4900	e5100	e4000	4550	9010	9760	8680	11000	5470
25	3920	4070	e5400	e5300	e5400	e4000	4480	8890	9610	8710	11000	5650
26	4020	4120	e5300	e5400	e5500	e4100	4490	9070	10200	8750	9960	5450
27	e4000	4680	e5300	e5400	e5400	e4000	4610	9170	10400	8710	9450	5420
28	e4000	5380	e5500	e5700	e5500	e4100	4650	9160	10600	8760	9280	5340
29	4040	e5450	e5300	e5800	---	e4000	4590	9220	10300	8730	9120	5310
30	4040	e5450	e5600	e5500	---	e4000	4520	8860	9650	8710	9200	5270
31	4250	---	e4800	e5450	---	e4100	---	9160	---	8700	9140	---
TOTAL	122620	124470	164870	158050	145500	147200	131910	223370	291160	281500	290900	216790
MEAN	3955	4149	5318	5098	5196	4748	4397	7205	9705	9081	9384	7226
MAX	4250	5450	5600	5800	5500	5600	4870	10300	10600	9790	11000	9110
MIN	3830	3840	4800	4700	4900	4000	4000	4140	8770	8680	8520	5270
AC-FT	243200	246900	327000	313500	288600	292000	261600	443100	577500	558400	577000	430000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2002, BY WATER YEAR (WY)*

MEAN	11530	9209	9014	9709	9918	8928	9573	9243	9428	10310	12100	11840
MAX	29130	22210	13420	14270	15820	16750	27180	21800	26040	36270	27110	27150
(WY)	1956	1998	1944	1971	1976	1976	1952	1979	1975	1975	1955	1955
MIN	3151	2328	1338	995	1195	2301	1470	1182	1268	1171	3515	3274
(WY)	1993	1947	1943	1943	1943	1945	1945	1945	1945	1945	1963	1992

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1943 - 2002*	
ANNUAL TOTAL	2292640		2298340			
ANNUAL MEAN	6281		6297		10070	
HIGHEST ANNUAL MEAN					15850	1955
LOWEST ANNUAL MEAN					5607	1963
HIGHEST DAILY MEAN	12100	Jan 16	11000	Aug 24	45100	Apr 19 1952
LOWEST DAILY MEAN	3830	Oct 11	3830	Oct 11	680	Dec 5 1942
ANNUAL SEVEN-DAY MINIMUM	3900	Nov 2	3900	Nov 2	906	Jan 12 1943
MAXIMUM PEAK FLOW			11800	Aug 24	a46800	Apr 19 1952
MAXIMUM PEAK STAGE			7.42	Dec 26	15.64	Mar 27 1960
INSTANTANEOUS LOW FLOW			3830	Oct 11	b320	Dec 10 1941
ANNUAL RUNOFF (AC-FT)	4547000		4559000		7294000	
10 PERCENT EXCEEDS	10600		9600		15800	
50 PERCENT EXCEEDS	5700		5340		9070	
90 PERCENT EXCEEDS	3970		4000		4500	

SUMMARY STATISTICS	WATER YEARS 1929-1939**		
ANNUAL TOTAL			
ANNUAL MEAN	7183		
HIGHEST ANNUAL MEAN	10300		1939
LOWEST ANNUAL MEAN	4891		1937
HIGHEST DAILY MEAN	56700	Mar 25	1939
LOWEST DAILY MEAN	840	Nov 29	1937
ANNUAL SEVEN-DAY MINIMUM	910	Feb 10	1938
MAXIMUM PEAK FLOW	c66800	Mar 25	1939
MAXIMUM PEAK STAGE	d14.40	Mar 25	1939
INSTANTANEOUS LOW FLOW			
ANNUAL FUNOFF (AC-FT)	5204000		
10 PERCENT EXCEEDS	14800		
50 PERCENT EXCEEDS	5060		
90 PERCENT EXCEEDS	2600		

*--After Fort Peck Lake reached operational level (1943 to current year).
**--Prior to Fort Peck Lake reaching operational level (1929-1939).
a--Gage height, 9.98 ft.
b--Occurred outside period of record, during filling of Fort Peck Lake.
c--From rating curve extended above 39,000 ft^3/s.
d--Backwater from ice.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949-51, 1961-62, 1965-68, 1970-73, May 2002 to September 2002.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: July 1979 to September 1985, May 2002 to September 2002.

INSTRUMENTATION.--Temperature recorder installed May 16, 2002.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 21.0°C, June 28, July 18, 2002; minimum, 0.0°C, many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of operation, maximum, 21.0°C, June 28, July 18; minimum, 8.5°C, May 17, 19.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
MAY 2002											
02...	1045	4550	710	9.8	89	8.6	570	18.0	8.0	180	43.2
JUN											
07...	0945	8670	718	9.0	91	8.5	553	25.0	13.0	210	51.0
AUG											
21...	1045	9890	718	8.0	88	8.4	568	26.5	17.0	200	50.6
SEP											
05...	0930	8440	717	9.0	101	8.4	557	19.5	18.0	210	51.7

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
MAY 2002											
02...	16.5	3.08	1	33.2	162	7.92	.8	6.7	121	.45	4060
JUN											
07...	19.6	2.65	1	39.2	161	8.34	.9	6.8	117	.46	8000
AUG											
21...	18.9	3.82	1	41.9	160	8.51	.7	6.7	122	.47	9320
SEP											
05...	18.7	3.49	1	37.2	159	8.95	.8	7.1	116	.46	7730

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)
MAY 2002											
02...	330	<.015	.18	<.013	<.002	<.007	.034	3.0	3	29	42
JUN											
07...	342	<.015	.21	<.013	<.002	E.005	.106	4.9	5	36	57
AUG											
21...	349	<.015	.35	E.012	<.002	E.006	.159	3.4	5	37	114
SEP											
05...	339	<.015	.20	<.013	<.002	E.006	.052	3.3	4	36	53

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
MAY 2002											
02...	<.04	E.02	<.8	<.8	1.5	2.4	<10	670	<.08	<1	3.1
JUN											
07...	<.04	.05	<.8	E.7	1.5	3.3	E6	1570	<.08	1	.9
AUG											
21...	<.04	.09	<.8	2.1	1.5	5.8	<10	3810	<.08	3	1.1
SEP											
05...	<.04	E.03	<.8	E.8	1.5	3.0	<10	1160	<.08	<1	1.0

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAY 2002												
02...	24	<.01	E.01	1.47	3	.6	.8	1	3	45	48	590
JUN												
07...	44	<.01	.01	1.93	4	.6	.6	<1	7	35	128	3000
AUG												
21...	95	<.01	E.01	1.29	6	.8	.7	1	19	76	279	7450
SEP												
05...	32	<.01	<.01	4.03	4	.6	.8	<1	6	43	78	1780

E--Estimated.

MISSOURI RIVER MAIN STEM

06177000 MISSOURI RIVER NEAR WOLF POINT, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, MAY 2002 TO SEPTEMBER 2002

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												
13												
14												
15												
16										10.5	9.5	10.0
17										11.0	8.5	10.0
18										10.0	9.0	9.5
19										10.5	8.5	9.5
20										12.0	9.0	10.5
21										14.0	11.0	12.5
22										13.5	11.0	12.5
23										11.0	9.0	10.0
24										10.0	9.0	9.5
25										10.5	9.0	10.0
26										12.0	9.5	11.0
27										13.0	11.0	12.0
28										14.5	12.5	13.5
29										14.5	13.0	14.0
30										14.0	13.0	13.5
31										14.0	12.0	13.0
MONTH										---	---	---

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

REDWATER RIVER BASIN

06177500 REDWATER RIVER AT CIRCLE, MT

LOCATION.--Lat 47°24'51", long 105°34'30" (NAD 27), in SW$^1/_4$SW$^1/_4$ sec.11, T.19 N., R.48 E., McCone County, Hydrologic Unit 10060002, on left bank at Circle, 1 mi upstream from Horse Creek, and at river mile 110.2.

DRAINAGE AREA.--547 mi^2.

PERIOD OF RECORD.--April to November 1929, March to November 1930, July 1931 to December 1932, March to June 1933, February to November 1934, April 1935 to December 1936, April 1937 to June 1972, October 1974 to current year. Monthly discharge only for some periods, published in WSP 1309. Prior to October 1967, published as Redwater Creek at Circle.

REVISED RECORDS.--WSP 1006: 1929-30, 1932-33, 1935-39. WSP 1509: 1929, 1934. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Sharp-crested weir since Sept. 24, 1938. Datum of gage is 2,394.32 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to June 1, 1941, and Mar. 23, 1943, to Feb. 16, 1948, nonrecording gage at site 0.3 mi upstream at same datum. June 1, 1941, to Mar. 22, 1943, nonrecording gage at site 200 ft upstream at datum 2.8 ft lower. Feb. 26, 1948, to May 7, 1950, nonrecording gage at site 200 ft upstream at present datum.

REMARKS.--Records fair except those for Dec. 5 to Apr. 8, which are poor. Diversions for irrigation of about 1,200 acres upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	0.21	0.15	e0.00	0.10	0.35	e5.0	1.2	0.85	0.19	0.04	0.06
2	1.1	0.17	0.15	e0.00	0.11	0.37	e2.5	1.4	0.86	0.08	0.04	0.05
3	1.1	0.15	0.15	e0.10	0.11	0.34	e2.5	0.86	0.92	0.04	0.04	0.05
4	1.1	0.13	0.13	0.12	0.11	0.32	e3.0	0.82	1.0	0.05	0.05	0.05
5	1.1	0.12	0.12	0.11	0.11	0.29	e3.5	0.78	1.1	0.06	0.05	0.05
6	1.1	0.13	0.12	0.13	0.09	0.23	e4.0	1.0	1.1	0.05	0.06	0.07
7	1.1	0.12	0.12	0.12	0.10	0.28	e3.5	1.1	1.1	0.05	0.10	0.09
8	1.1	0.11	0.12	0.11	0.20	0.25	e3.2	1.3	0.97	0.05	0.09	0.13
9	1.1	0.12	0.12	0.12	0.14	0.25	3.1	0.90	1.1	0.05	0.11	0.11
10	1.1	0.12	0.12	0.13	0.09	0.23	3.2	0.88	2.1	0.05	0.06	0.08
11	1.1	0.12	0.11	0.12	0.21	0.24	3.2	0.73	11	0.05	0.06	0.06
12	1.1	0.13	0.12	0.13	0.20	0.34	3.3	0.69	6.3	0.04	0.09	0.06
13	0.99	0.13	0.10	0.16	0.21	0.48	3.2	0.69	4.0	0.26	0.10	0.06
14	0.94	0.13	0.12	0.15	0.19	0.64	2.5	0.65	2.8	0.79	0.10	0.05
15	0.89	0.13	0.12	0.14	0.20	0.72	2.5	0.60	1.9	0.42	0.10	0.05
16	0.84	0.12	0.11	0.13	0.25	1.1	2.1	0.56	1.4	0.25	0.06	0.05
17	0.79	0.13	0.12	0.14	0.28	0.94	1.8	0.53	1.2	0.26	0.05	0.05
18	0.73	0.13	0.14	0.13	0.25	0.72	1.6	0.57	1.0	0.25	0.05	0.05
19	0.68	0.13	0.14	0.11	0.25	0.60	1.7	0.50	0.84	0.18	0.05	0.06
20	0.64	0.15	0.13	0.12	0.27	0.51	1.5	0.47	0.75	0.13	0.05	0.07
21	0.60	0.15	0.13	0.11	0.27	0.44	1.4	0.51	0.55	0.09	0.05	0.05
22	0.56	0.15	0.14	0.15	0.32	0.36	1.3	0.46	0.50	0.06	0.05	0.06
23	0.53	0.15	0.11	0.12	0.51	0.34	1.1	0.59	0.61	0.06	0.04	0.06
24	0.49	0.15	0.07	0.13	0.48	0.32	1.0	0.72	0.57	0.06	0.05	0.09
25	0.46	0.14	0.04	0.14	0.40	0.29	0.90	0.70	0.51	0.06	0.08	0.09
26	0.42	0.15	0.03	0.13	0.32	0.35	0.84	0.72	0.48	0.05	0.08	0.09
27	0.39	0.15	0.04	0.14	0.28	0.89	0.79	0.87	0.41	0.05	0.06	0.10
28	0.36	0.15	0.08	0.14	0.31	37	0.75	0.90	0.34	0.05	0.06	0.10
29	0.31	0.15	0.04	0.14	---	e30	0.67	0.90	0.28	0.04	0.06	0.10
30	0.27	0.15	0.00	0.15	---	e16	0.67	0.88	0.24	0.04	0.06	0.09
31	0.24	---	e0.00	0.16	---	e10	---	0.87	---	0.04	0.06	---
TOTAL	24.33	4.17	3.19	3.78	6.36	105.19	66.32	24.35	46.78	3.90	2.00	2.13
MEAN	0.785	0.139	0.103	0.122	0.227	3.393	2.211	0.785	1.559	0.126	0.065	0.071
MAX	1.1	0.21	0.15	0.16	0.51	37	5.0	1.4	11	0.79	0.11	0.13
MIN	0.24	0.11	0.00	0.00	0.09	0.23	0.67	0.46	0.24	0.04	0.04	0.05
AC-FT	48	8.3	6.3	7.5	13	209	132	48	93	7.7	4.0	4.2

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)*

MEAN	0.508	0.368	0.435	0.357	15.15	72.91	17.22	3.694	14.72	11.27	2.006	2.411
MAX	19.2	7.11	8.58	6.13	141	476	418	32.1	167	116	37.4	139
(WY)	1987	1987	1952	1976	1943	1994	1952	1979	1944	1957	1932	1986
MIN	0.000	0.000	0.000	0.000	0.000	0.045	0.070	0.023	0.003	0.000	0.000	0.000
(WY)	1941	1931	1936	1936	1939	1941	1961	1961	1961	1939	1939	1940

06177500 REDWATER RIVER AT CIRCLE, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1929 - 2002*	
ANNUAL TOTAL	583.83		292.50			
ANNUAL MEAN	1.600		0.801		11.62**	
HIGHEST ANNUAL MEAN					61.6	1952
LOWEST ANNUAL MEAN					0.038	1941
HIGHEST DAILY MEAN	38	Jul 25	37	Mar 28	4510	Mar 31 1952
LOWEST DAILY MEAN	0.00	Dec 30	0.00	Dec 30	0.00	Oct 8 1929
ANNUAL SEVEN-DAY MINIMUM	0.03	Dec 25	0.02	Dec 27	0.00	Nov 20 1929
MAXIMUM PEAK FLOW			a70	Mar 28	c6960	Jun 29 1986
MAXIMUM PEAK STAGE			b5.87	Mar 28	12.93	Mar 4 1994
INSTANTANEOUS LOW FLOW					d.00	
ANNUAL RUNOFF (AC-FT)	1160		580		8420	
10 PERCENT EXCEEDS	2.1		1.2		7.2	
50 PERCENT EXCEEDS	0.36		0.16		0.20	
90 PERCENT EXCEEDS	0.05		0.05		0.00	

*--During period of operation (1932, 1936, 1938-71, 1975 to current year).
**--Median of yearly discharges, 6.49 ft^3/s.
a--About, backwater from ice.
b--Backwater from ice.
c--From rating curve extended above 3,500 ft^3/s, gage height, 12.85 ft, from floodmark.
d--No flow at times most years.
e--Estimated.

POPLAR RIVER BASIN

06178000 POPLAR RIVER AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 48°59'25", long 105°41'46" (NAD 27), in NE$^1/_4$NE$^1/_4$SE$^1/_4$ sec.6, T.37 N., R.46 E., Daniels County, Hydrologic Unit 10060003, on left bank 0.7 mi south of international boundary, 1.5 mi upstream from Coal Creek, 18.5 mi northwest of Scobey, MT, and at river mile 135.7.
DRAINAGE AREA.--358 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1931 to current season (seasonal records only for most years). Published as Middle Fork Poplar River at international boundary, March 1931 to November 1975.
REVISED RECORDS.--WSP 1389: 1931, 1935-37(M), 1939-40, 1942(M), 1943, 1948(M), 1950(M). WSP 1729: Drainage area. W 1984: Drainage area.
GAGE.--Water-stage recorder and concrete control since September 1977. Elevation of gage is 2,460 ft (NGVD 29).
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter at station. A few small diversions for irrigation upstream from station.
COOPERATION.--This is one of a number of stations which are maintained jointly by the United States and Canada.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 ft^3/s, Apr. 6, 1954, gage height, 10.25 ft, from floodmark, from rating curve extended above 2,500 ft^3/s, on basis of slope-area measurement of peak flow; no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e0.00	10	6.5	10	0.59	1.8	3.6		
2			e0.00	e0.00	10	8.2	8.8	0.49	1.7	3.2		
3			e0.00	e0.00	9.9	13	8.2	0.41	1.4	3.3		
4			e0.00	e0.00	10	17	8.2	0.43	1.4	3.5		
5			e0.00	e0.00	10	21	8.6	0.67	1.8	3.7		
6			e0.00	e5.0	10	20	8.2	0.90	2.2	4.3		
7			e0.00	e30	11	14	8.3	1.3	7.2	4.5		
8			e0.00	e90	13	12	8.3	1.9	5.0	4.4		
9			e0.00	e65	14	16	11	2.8	4.7	4.4		
10			e0.00	e35	17	31	11	3.3	4.4	4.4		
11			e0.00	e30	24	105	11	3.1	4.2	3.9		
12			e0.00	e150	27	88	10	2.5	4.0	3.7		
13			e0.00	e140	22	57	10	2.3	3.8	3.7		
14			e0.00	120	19	39	7.9	2.1	3.3	3.8		
15			e0.00	79	18	28	4.9	2.0	3.5	3.8		
16			e0.00	110	16	21	3.7	2.1	3.2	4.0		
17			e0.00	84	15	17	2.8	2.6	3.2	4.4		
18			e0.00	55	14	14	2.4	2.5	3.7	4.4		
19			e0.00	38	12	14	2.0	2.3	4.5	4.4		
20			e0.00	31	11	12	1.7	2.0	4.3	4.4		
21			e0.00	27	9.9	10	1.3	1.8	4.1	4.6		
22			e0.00	23	10	10	1.2	1.8	4.1	4.0		
23			e0.00	19	11	11	0.84	1.6	3.9	4.0		
24			e0.00	15	12	16	0.99	1.4	3.8	4.2		
25			e0.00	12	12	73	1.3	1.4	3.7	4.2		
26			e0.00	11	12	55	1.0	1.6	3.6	4.7		
27			e0.00	11	11	28	0.79	1.8	3.7	4.7		
28			e0.00	11	10	19	0.82	2.1	3.8	e4.3		
29			e0.00	11	9.0	14	0.87	2.0	3.8	e4.0		
30			e0.00	11	7.9	11	0.84	1.9	3.8	e4.5		
31			e0.00	---	7.2	---	0.74	1.8	---	e4.5		
TOTAL			0.00	1213.00	404.9	800.7	157.69	55.49	107.6	127.5		
MEAN			0.000	40.43	13.06	26.69	5.087	1.790	3.587	4.113		
MAX			0.00	150	27	105	11	3.3	7.2	4.7		
MIN			0.00	0.00	7.2	6.5	0.74	0.41	1.4	3.2		
AC-FT			0.00	2410	803	1590	313	110	213	253		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1931 - 2002*

MEAN	0.000	20.20	69.24	82.44	17.06	14.50	8.740	1.552	1.462	2.709	4.902	0.000
MAX	0.000	61.3	418	699	86.2	191	120	19.4	15.3	11.8	9.35	0.000
(WY)	1936	1981	1999	1952	1982	1963	1993	1940	1954	1955	1955	1936
MIN	0.000	0.000	0.000	5.52	3.05	0.16	0.041	0.000	0.007	0.039	0.12	0.000
(WY)	1936	1936	1950	1988	1992	1988	1988	1967	1988	1989	1937	1936

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1931 - 2002*	
HIGHEST DAILY MEAN	250	Mar 13	150	Apr 12	5000	Apr 6 1954
LOWEST DAILY MEAN	0.00	Mar 1	0.00	Mar 1	0.00	Jun 30 1932
MAXIMUM PEAK FLOW			unknown		b127000	Apr 6 1954
MAXIMUM PEAK STAGE			a4.10	Apr 12	10.25	Apr 6 1954

*--Seasonal record most years.
a--Backwater from ice.
b--From rating curve extended above 2,500 ft^3/s on basis of slope-area measurement of peak flow.
e--Estimated.

06178000 POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-65, 1976 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	TURBID-ITY LAB HACH 2100AN (NTU) (99872)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)
OCT 2001											
23...	1145	2.9	20	1.4	690	12.6	101	8.7	1240	1.5	2.0
DEC											
10...	1030	E1.5	--	1.4	705	8.0	61	8.1	1490	1.0	1.0
APR 2002											
18...	1045	59	80	12	710	11.2	91	8.3	637	5.0	3.5
JUN											
13...	1235	59	125	4.7	711	8.2	90	8.5	1600	24.0	16.0
JUL											
24...	0815	.71	40	2.6	704	6.4	76	8.8	1020	24.0	19.5

DATE	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT 2001											
23...	300	39.4	48.9	7.70	4	169	451	6.65	.5	7.6	241
DEC											
10...	430	72.7	59.5	8.72	4	184	564	7.44	.7	16.8	251
APR 2002											
18...	200	32.0	29.1	12.0	2	61	225	4.22	.2	11.9	112
JUN											
13...	340	36.8	60.1	12.9	6	248	585	6.19	.3	21.4	323
JUL											
24...	240	22.4	45.7	10.2	4	146	428	5.75	.4	.9	145

DATE	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001												
23...	6.20	792	.42	<.013	<.002	<.007	.011	1170	13	89	28	.22
DEC												
10...	E3.81	940	.31	<.013	<.002	<.007	.009	1170	18	78	35	E.14
APR 2002												
18...	63.7	400	1.7	.366	.040	.031	.151	400	162	81	14	2.2
JUN												
13...	169	1060	2.1	<.013	.006	.033	.097	1400	126	57	40	6.4
JUL												
24...	1.22	635	.92	<.013	E.002	.012	.045	1120	24	73	3	.01

DATE	TIME	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
APR 2002												
18...	1045	20.7	2.5	2	47	50	<.04	<.04	.44	<1	470	.08
JUL												
24...	0815	13.3	5.1	5	39	44	<.04	<.04	.27	<1	90	E.04

E--Estimated.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO) (01062)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
APR 2002											
18...	<1	14.8	24	2.6	2.4	2.28	3	<.3	.4	<1	3
JUL											
24...	<1	6.6	13	1.2	1.3	1.15	2	<.3	E.3	<1	1

E--Estimated.

POPLAR RIVER BASIN

06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION (REVISED).--Lat 49°00'00", long 105°24'32" (NAD 27), in SW$^1/_4$SW$^1/_4$ sec.3, T.1 N., R.26 W., second meridian, in Saskatchewan, Hydrologic Unit 10060003, on left bank 10 ft north of international boundary, 400 ft southwest of Canadian East Poplar Port of Entry, 14 mi north of Scobey, MT, and at river mile 21.9.

DRAINAGE AREA.--541 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1931 to current year (seasonal records only in most seasons prior to October 1974). Prior to March 1962, published as East Fork Poplar River at international boundary.

REVISED RECORDS.--WSP 1389: 1932, 1939, 1942-43, 1947. W 1983: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 2,410.92 ft (International Boundary Commission Survey Datum). Prior to Oct. 5, 1953, water-stage recorder at site 80 ft upstream at same datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter at station. Since September 1975 flow regulated by Morrison Dam at Cookson Reservoir 3.1 mi upstream.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	e2.6	2.1	1.9	2.0	2.1	2.2	9.3	2.2	2.4	2.2	e2.4
2	2.5	e2.3	2.1	2.1	2.0	2.0	2.1	12	2.3	2.0	1.6	e2.0
3	2.5	e2.5	2.1	2.0	2.0	2.0	2.0	12	3.5	1.8	1.9	e2.2
4	2.5	2.4	2.1	2.1	2.1	2.1	2.1	11	3.4	1.9	1.9	2.3
5	2.4	2.4	2.1	2.0	2.1	2.1	2.1	10	2.9	2.2	2.0	2.3
6	2.3	2.2	2.1	2.0	2.1	2.1	2.4	8.7	2.8	1.8	2.3	e2.0
7	1.6	2.3	2.1	2.1	2.2	2.0	2.6	8.2	2.4	2.0	2.5	e1.8
8	3.1	2.2	2.0	2.5	2.3	2.1	2.4	9.0	2.4	2.2	2.2	e2.8
9	2.8	2.2	2.1	2.4	2.2	2.0	2.5	8.6	2.9	3.5	2.1	e2.8
10	2.0	2.3	2.1	2.3	2.1	2.0	2.6	8.5	4.1	2.7	2.3	2.9
11	1.8	2.2	2.1	2.2	2.2	2.1	2.9	7.7	4.9	2.3	2.3	2.8
12	e1.8	2.0	2.1	2.1	2.1	2.1	3.4	7.5	3.7	1.9	2.2	2.6
13	e2.5	2.0	2.1	2.1	2.2	2.1	3.6	6.9	3.0	2.0	2.2	2.6
14	2.5	e2.3	2.1	2.1	2.2	2.1	4.0	7.4	2.8	1.8	2.5	2.4
15	2.4	e2.6	2.2	2.1	2.1	2.1	3.5	7.9	2.4	2.1	2.3	2.3
16	2.4	e2.6	2.2	2.1	2.2	2.1	3.4	8.4	2.2	1.9	2.4	e2.2
17	2.6	2.6	1.9	2.0	2.3	2.1	3.2	8.2	2.2	1.9	2.4	e2.0
18	2.5	2.3	2.1	2.0	2.3	2.1	3.1	8.3	2.1	1.8	2.2	e1.8
19	2.4	2.1	2.1	2.0	2.3	2.1	2.8	8.6	2.5	2.3	2.0	e2.6
20	e2.8	2.2	2.1	2.0	2.3	2.1	2.7	9.1	2.0	2.5	1.8	e2.2
21	e3.0	2.4	2.0	2.0	2.3	2.0	2.6	9.5	2.2	2.0	1.8	e2.0
22	e3.3	2.4	2.0	2.0	2.5	2.0	2.6	9.9	2.0	1.7	1.9	e1.8
23	e3.6	2.6	2.0	2.0	2.6	2.0	2.8	9.4	2.1	1.9	2.0	e1.6
24	2.8	2.5	2.0	2.0	2.4	2.0	2.7	9.2	2.9	2.0	1.9	e1.4
25	2.5	2.4	2.0	2.0	2.3	2.0	2.3	8.5	2.3	2.2	2.0	e3.0
26	2.5	2.7	2.0	2.0	2.2	2.0	2.3	8.3	1.8	2.2	2.8	e2.5
27	e2.9	2.6	2.0	2.0	2.2	2.1	2.3	7.9	1.8	2.1	2.8	e2.5
28	e3.0	2.4	2.0	2.0	2.1	2.3	2.4	4.2	2.0	1.8	2.3	e2.2
29	e3.0	2.3	2.0	2.0	---	2.5	2.5	3.0	2.4	2.0	1.8	e2.0
30	e3.1	2.1	1.9	1.9	---	2.3	2.5	2.6	1.9	1.9	e2.0	e1.8
31	3.1	---	1.9	1.9	---	2.2	---	2.4	---	2.1	e1.6	---
TOTAL	80.5	70.7	63.7	63.9	61.9	64.9	80.6	252.2	78.1	64.9	66.2	67.8
MEAN	2.597	2.357	2.055	2.061	2.211	2.094	2.687	8.135	2.603	2.094	2.135	2.260
MAX	3.6	2.7	2.2	2.5	2.6	2.5	4.0	12	4.9	3.5	2.8	3.0
MIN	1.6	2.0	1.9	1.9	2.0	2.0	2.0	2.4	1.8	1.7	1.6	1.4
AC-FT	160	140	126	127	123	129	160	500	155	129	131	134

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2002, BY WATER YEAR (WY)*

MEAN	2.609	2.462	2.262	2.198	2.677	22.26	23.60	11.52	5.383	2.864	2.390	2.519
MAX	4.65	4.42	4.37	4.40	7.95	280	306	40.7	23.2	6.84	3.31	4.10
(WY)	1980	1980	1980	1980	1997	1999	1982	1979	1979	1999	1997	1979
MIN	1.59	1.64	1.27	1.26	0.93	1.91	1.80	2.98	1.72	1.79	1.58	1.53
(WY)	1993	1993	1993	1982	1982	1992	1992	1978	1992	1977	1992	1992

06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1977 - 2002*	
ANNUAL TOTAL	1025.5		1015.4			
ANNUAL MEAN	2.810		2.782		6.910	
HIGHEST ANNUAL MEAN					32.3	1982
LOWEST ANNUAL MEAN					2.13	1992
HIGHEST DAILY MEAN	11	May 1	12	May 2	2930	Apr 15 1982
LOWEST DAILY MEAN	1.6	Apr 29	1.4	Sep 24	a0.70	Feb 28 1998
ANNUAL SEVEN-DAY MINIMUM	1.9	Feb 17	1.9	Jul 12	0.80	Jan 16 1982
MAXIMUM PEAK FLOW			14	May 3	b4020	Apr 23 1975
MAXIMUM PEAK STAGE			6.07	May 3	12.80	Mar 25 1943
INSTANTANEOUS LOW FLOW					0.70	Feb 28 1998
ANNUAL RUNOFF (AC-FT)	2030		2010		5010	
10 PERCENT EXCEEDS	4.3		3.5		6.8	
50 PERCENT EXCEEDS	2.4		2.2		2.5	
90 PERCENT EXCEEDS	2.0		1.9		1.7	

*--Since initial filling of Cookson Reservior.
a--No flow at times prior to filling Cookson Reservior.
b--Gage height, 12.01 ft.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-65, 1975 to current year.
PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: February 1982 to current year.
WATER TEMPERATURE: June 1975 to September 1983.
INSTRUMENTATION: Water-quality monitor installed April 1995.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of District office. Missing conductivity data for Oct. 1-25 due to destruction of cable by beaver activity and from May 13-15 due to equipment problems.
EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily mean, 2,040 microsiemens per centimeter (µS/cm) at 25.0°C, Feb. 10-12, 1997; minimum daily mean, 363 µS/cm at 25.0°C, July 2, 1991.
WATER TEMPERATURE (water years 1975-83): Maximum, 29.5°C, July 6, 1975, July 25, 26, 1978; minimum, 0.0°C on many days during winters most years.
EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily mean, 1,890 microsiemens per centimeter (µS/cm) at 25.0°C, Jan. 29; minimum daily mean, 892 µS/cm at 25.0°C, Apr. 24.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	TURBID-ITY LAB HACH 2100AN (NTU) (99872)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)
OCT 2001												
23...	1415	3.4	10	7.0	690	10.4	88	8.6	1490	2.5	4.0	350
DEC												
10...	1300	2.0	--	6.5	705	8.2	64	7.6	1690	1.5	1.5	440
FEB 2002												
12...	1000	2.2	15	8.7	712	11.1	82	7.6	1480	-5.0	0.0	380
APR												
18...	1345	3.1	25	11	712	10.3	88	8.3	1090	5.5	5.5	260
JUN												
13...	1000	3.1	50	22	712	8.8	91	8.5	1630	19.0	13.5	350
JUL												
31...	1300	2.1	25	18	791	9.1	102	8.4	1420	29.5	22.5	310

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
OCT 2001											
23...	62.2	46.9	8.19	5	211	537	6.22	.3	12.8	295	8.88
DEC											
10...	89.4	53.1	8.65	5	224	521	6.58	.5	17.4	319	5.58
FEB 2002											
12...	77.3	44.5	7.24	4	195	495	5.71	.4	14.8	277	5.47
APR											
18...	49.6	32.9	5.98	4	151	386	5.10	.2	8.6	216	5.88
JUN											
13...	61.1	48.8	8.14	6	247	583	6.72	.3	11.9	346	9.06
JUL											
31...	48.5	47.0	8.50	5	220	508	6.37	.3	9.6	284	5.28

POPLAR RIVER BASIN

06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	ORTHO- PHOS- PHATE, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)
OCT 2001											
23...	968	.90	.175	.017	<.007	.020	1860	13	66	51	.47
DEC											
10...	1030	1.2	.129	.006	<.007	.013	2010	17	34	116	.63
FEB 2002											
12...	921	.99	.149	.003	<.007	.016	1800	42	25	141	.84
APR											
18...	702	.76	.027	.004	<.007	.058	1280	49	63	58	.49
JUN											
13...	1080	1.4	.089	.013	<.007	.086	2060	29	78	126	1.1
JUL											
31...	931	.96	<.013	<.002	<.007	.087	2030	<10	95	53	.30

DATE	TIME	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
APR 2002												
18...	1345	7.1	2.6	4	25	28	<.04	<.04	.29	<1	630	<.08
JUL												
31...	1300	10.4	6.2	6	55	60	<.04	E.02	.24	<1	470	<.08

DATE	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	MANGA- MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
APR 2002											
18...	<1	90.5	107	1.6	1.5	1.75	3	<.3	<.4	<1	2
JUL											
31...	<1	2.8	59	2.1	2.2	1.71	3	E.2	.4	<1	3

E--Estimated.

POPLAR RIVER BASIN

06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703)
OCT 01 2001-SEP 30 2002	1.97

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	1430	1600	1820	1520	1460	1342	1390	1540	1470	1440	1440
2	---	1410	1630	1830	1560	1460	1338	1349	1640	1430	1440	1440
3	---	1400	1660	1820	1590	1460	1331	1236	1740	1440	1440	1440
4	---	1400	1680	1820	1600	1460	1341	1233	1640	1480	1440	1450
5	---	1400	1680	1820	1610	1450	1341	1245	1600	1450	1440	1450
6	---	1390	1690	1820	1610	1440	1341	1297	1680	1420	1440	1440
7	---	1400	1690	1820	1610	1430	1332	1318	1590	1430	1440	1440
8	---	1390	1700	1830	1540	1400	1317	1354	1690	1430	1440	1450
9	---	1400	1710	1820	1540	1410	1319	1410	1750	1420	1440	1450
10	---	1410	1700	1820	1520	1410	1322	1480	1830	1410	1440	1450
11	---	1420	1720	1820	1520	1410	1304	1510	1590	1410	1440	1450
12	---	1410	1740	1820	1490	1400	1272	1490	1490	1410	1440	1460
13	---	1420	1760	1830	1500	1400	1242	---	1550	1430	1440	1470
14	---	1440	1760	1830	1500	1390	1189	---	1700	1410	1440	1470
15	---	1430	1750	1840	1500	1380	1071	1530	1670	1410	1440	1470
16	---	1360	1770	1850	1500	1390	1122	1520	1730	1420	1440	1470
17	---	1320	1730	1840	1500	1390	1085	1420	1820	1420	1440	1470
18	---	1350	1770	1850	1500	1390	1077	1350	1830	1420	1440	1480
19	---	1390	1780	1860	1500	1390	1079	1340	1840	1420	1440	1480
20	---	1440	1790	1860	1500	1390	1123	1330	1510	1430	1440	1490
21	---	1480	1790	1860	1500	1390	1156	1260	1700	1430	1440	1480
22	---	1510	1800	1860	1500	1380	1197	1210	1660	1440	1440	1480
23	---	1540	1800	1870	1500	1360	1215	1240	1760	1450	1440	1480
24	---	1530	1800	1870	1480	1360	892	1270	1720	1450	1440	1480
25	1480	1570	1810	1880	1480	1360	1017	1260	1460	1450	1440	1490
26	1480	1590	1810	1880	1470	1360	1208	1250	1460	1450	1440	1490
27	1470	1590	1810	1880	1480	1360	1305	1230	1540	1450	1440	1490
28	1470	1580	1820	1880	1470	1360	1346	1230	1600	1450	1440	1490
29	1470	1570	1820	1890	---	1350	1377	1290	1560	1450	1440	1500
30	1450	1580	1820	1800	---	1340	1408	1350	1450	1440	1440	1500
31	1430	---	1820	1520	---	1340	---	1470	---	1440	1440	---
MEAN	---	1452	1749	1833	1521	1396	1234	---	1645	1434	1440	1468

POPLAR RIVER BASIN

06181000 POPLAR RIVER NEAR POPLAR, MT

LOCATION.--Lat 48°10'15", long 105°10'42" (NAD 27), in NE$^1/_4$NE$^1/_4$ sec.19, T.28 N., R.51 E., Roosevelt County, Hydrologic Unit 10060003, on right bank 4 mi north of Poplar, and at river mile 11.

DRAINAGE AREA.---3,174 mi^2.

PERIOD OF RECORD.--August 1908 to October 1924, August 1947 to September 1969, June 1975 to September 1979, October 1981 to current year. Monthly discharge only for some periods, published in WSP 1309.

WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 1176. 1948. WSP 1389: 1911. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,953.16 ft (NGVD 29). Prior to May 1, 1911, nonrecording gage at site 4.2 mi upstream at different datum. May 1, 1911, to Oct. 4, 1913, nonrecording gage at site 14 mi upstream at different datum. Oct. 5, 1913, to Oct. 31, 1924, nonrecording gage at site 2.2 mi upstream at different datum. Aug. 10, 1947, to Sept. 30, 1969, water-stage recorder at present site and datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 5,500 acres upstream from station. Flow partially regulated by Coronach Dam, on the East Fork Poplar River, 2 mi north of international boundary. U. S. Geological Survey satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 10, 1946, reached a stage of 18.1 ft, from floodmark, discharge, 40,000 ft^3/s, from slope-area measurement of peak flow made at site 20 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	21	e23	e16	e8.0	e8.0	e12	61	47	56	12	18
2	12	25	e23	e16	e8.0	e8.0	e10	58	56	68	12	16
3	11	22	e23	e16	e8.0	e8.0	e10	54	66	71	10	15
4	11	24	e23	e16	e8.0	e8.0	e10	51	65	65	12	15
5	11	24	e23	e16	e10	e8.0	e12	49	67	65	14	14
6	11	25	e23	e16	e10	e8.0	e12	50	66	63	13	16
7	11	25	e23	e16	e10	e8.0	e12	51	64	52	22	17
8	11	26	e23	e16	e10	e8.0	e12	60	72	50	98	16
9	11	26	e23	e16	e10	e8.0	e16	65	82	58	40	16
10	11	27	e20	e16	e10	e8.0	e30	75	97	64	30	17
11	11	28	e20	e16	e10	e8.0	e50	80	131	47	24	21
12	14	28	e20	e16	e10	e8.0	e64	84	151	42	21	22
13	14	29	e20	e16	e10	e8.0	e80	83	151	41	19	20
14	15	29	e20	e16	e10	e8.0	e90	82	151	37	18	19
15	15	30	e20	e13	e13	e8.0	101	90	180	35	17	19
16	14	30	e20	e13	e13	e8.0	143	95	206	35	18	19
17	14	30	e20	e11	e13	e8.0	204	90	191	38	25	19
18	14	29	e20	e11	e13	e8.0	194	84	166	34	35	19
19	14	29	e20	e11	e13	e8.0	162	75	150	31	23	20
20	15	28	e20	e11	e13	e8.0	149	65	129	27	20	19
21	16	29	e20	e11	e16	e8.0	149	59	113	24	18	18
22	16	31	e20	e11	e16	e8.0	138	58	103	22	17	18
23	17	32	e20	e11	e13	e8.0	122	58	94	21	16	18
24	18	32	e20	e8.0	e13	e8.0	106	54	109	20	15	18
25	19	32	e20	e8.0	e10	e8.0	96	52	96	21	17	18
26	19	e25	e20	e8.0	e10	e8.0	89	53	81	22	19	19
27	19	e20	e20	e8.0	e10	e8.0	81	53	74	20	20	20
28	21	e17	e16	e8.0	e10	e8.0	75	56	68	16	19	20
29	21	e20	e16	e8.0	---	e12	71	55	65	17	18	20
30	22	e23	e16	e8.0	---	e12	66	52	60	15	17	19
31	22	---	e16	e8.0	---	e12	---	49	---	13	18	---
TOTAL	462	796	631	391.0	308.0	260.0	2366	2001	3151	1190	677	545
MEAN	14.90	26.53	20.35	12.61	11.00	8.387	78.87	64.55	105.0	38.39	21.84	18.17
MAX	22	32	23	16	16	12	204	95	206	71	98	22
MIN	11	17	16	8.0	8.0	8.0	10	49	47	13	10	14
AC-FT	916	1580	1250	776	611	516	4690	3970	6250	2360	1340	1080

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 2002, BY WATER YEAR (WY)*

MEAN	28.09	26.61	16.51	8.498	27.28	332.0	672.4	122.5	86.22	77.87	27.54	24.15
MAX	81.5	93.5	50.0	30.0	743	2445	4918	421	336	800	220	206
(WY)	1925	1919	1915	1915	1996	1960	1952	1955	1953	1993	1993	1911
MIN	2.19	4.25	1.28	0.013	0.10	0.18	37.3	17.4	2.77	0.68	0.043	0.15
(WY)	1959	1959	1986	1950	1959	1965	1992	1992	1988	1984	1988	1988

06181000 POPLAR RIVER NEAR POPLAR, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1908 - 2002*	
ANNUAL TOTAL	25522.6		12778.0			
ANNUAL MEAN	69.92		35.01		120.3**	
HIGHEST ANNUAL MEAN					435	1952
LOWEST ANNUAL MEAN					13.7	1988
HIGHEST DAILY MEAN	1300	Mar 16	206	Jun 16	34200	Apr 7 1954
LOWEST DAILY MEAN	5.5	Feb 27	8.0	Jan 24	a0.00	Dec 16 1917
ANNUAL SEVEN-DAY MINIMUM	5.8	Feb 21	8.0	Jan 24	0.00	Jan 4 1950
MAXIMUM PEAK FLOW			219	Apr 17	37400	Apr 6 1954
MAXIMUM PEAK STAGE			3.15	Apr 17	b17.86	Apr 6 1954
ANNUAL RUNOFF (AC-FT)	50620		25350		87190	
10 PERCENT EXCEEDS	141		82		178	
50 PERCENT EXCEEDS	23		20		23	
90 PERCENT EXCEEDS	6.0		8.0		2.7	

*--During period of operation (1908-24 1947-69, 1975-79, 1982 to current year).
**--Median of yearly mean discharge, 83.0 ft^3/s.
a--No flow at times.
b--From floodmark, from slope-area measurement of peak flow.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975-81, 1987-94, May 1999 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Seasonal records from April 2000 to current year.

INSTRUMENTATION.--Temperature recorder installed Sept. 27, 1999.

REMARKS.--Missing data from Aug. 19 to Sept. 30 due to equipment problems. Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records): Maximum, 32.0°C, June 28, 2002; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum, 32.0°C, June 28; minimum, 0.0°C, Apr.10.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT									
18...	1145	14	8.7	1900	10.0	5.5	.48	<.013	<.002
APR									
19...	1145	165	8.7	893	11.0	5.0	.83	<.013	<.002
JUN									
05...	0930	68	8.8	1400	22.0	16.0	.83	<.013	<.002
JUL									
23...	1145	22	8.8	1710	26.0	24.0	.98	<.013	E.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT					
18...	E.004	.025	99	66	2.5
APR					
19...	<.007	.088	98	72	32.1
JUN					
05...	<.007	.083	99	157	28.8
JUL					
23...	<.007	.093	99	121	7.2

E--Estimated.

POPLAR RIVER BASIN

06181000 POPLAR RIVER NEAR POPLAR, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT											
18...	1145	220	27.7	37.2	6.74	9	322	502	129	.5	5.10
APR											
19...	1145	140	22.1	20.2	5.46	5	145	303	11.3	.3	5.04

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT											
18...	304	1.54	42.8	1130	2	<.1	<.8	2.5	<1	3	3
APR											
19...	158	.75	245	549	2	<.1	1.4	3.6	1	4	7

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	3.0	1.0	1.5	15.0	9.5	12.0	22.0	16.0	19.5	26.0	21.5	23.5
2	1.5	1.0	1.5	16.5	10.0	12.5	19.0	14.0	15.5	24.5	19.5	22.0
3	1.5	1.0	1.0	16.5	12.5	14.0	15.5	13.5	14.5	23.5	19.0	21.5
4	1.0	0.5	1.0	14.5	9.5	11.5	18.0	13.5	15.5	27.5	19.0	23.0
5	1.5	1.0	1.0	15.5	11.0	13.0	21.5	14.5	18.0	27.0	22.0	24.5
6	1.5	1.0	1.0	15.0	8.5	11.0	21.5	17.5	19.0	25.5	21.0	23.0
7	1.5	0.0	1.0	11.0	7.5	9.0	21.5	16.5	18.5	27.0	21.5	24.0
8	2.0	1.0	1.0	8.0	4.0	6.0	19.0	15.0	16.0	28.0	22.0	25.0
9	2.0	1.0	1.5	13.5	5.5	8.0	15.0	13.5	14.5	24.5	21.5	23.0
10	1.5	0.0	1.0	13.5	9.0	11.5	17.0	13.0	15.0	25.5	20.5	22.5
11	5.0	0.0	1.5	16.0	9.0	12.0	14.5	12.0	13.5	27.5	20.0	23.5
12	6.5	1.5	3.5	16.5	11.5	14.0	15.0	13.0	14.0	29.5	21.5	25.5
13	9.5	2.5	5.0	18.0	11.5	14.5	19.0	12.5	16.0	30.5	22.5	26.5
14	12.0	7.0	8.5	18.5	13.0	15.5	22.0	16.0	19.0	31.0	23.0	26.5
15	12.0	8.5	10.5	15.5	12.0	14.0	23.5	19.0	21.5	30.0	22.5	26.0
16	12.0	7.5	9.0	15.0	10.0	12.5	24.5	21.5	23.0	28.5	24.5	26.0
17	11.0	6.0	8.5	15.5	10.0	12.5	24.0	21.5	23.0	29.5	23.5	26.5
18	11.0	7.5	9.5	15.5	10.5	12.5	24.5	21.5	23.0	30.5	23.5	27.0
19	9.5	6.0	8.0	15.5	10.0	12.5	23.5	19.5	21.5	30.5	24.5	28.0
20	10.5	7.0	8.5	16.5	9.5	12.5	24.0	18.5	21.0	29.5	24.5	26.5
21	10.0	7.5	9.0	19.0	11.5	15.5	25.5	19.5	22.5	25.0	20.0	22.5
22	13.0	7.5	9.0	18.5	11.5	16.0	28.5	24.5	26.5	26.0	18.0	21.5
23	13.0	10.5	11.0	15.5	9.5	12.5	27.5	25.0	26.0	26.0	19.5	22.0
24	10.5	6.0	8.0	14.5	10.0	12.5	28.0	23.0	26.0	29.5	20.5	23.5
25	10.5	5.0	7.0	15.5	10.5	13.0	28.5	23.5	26.0	29.5	21.5	25.0
26	10.5	6.5	8.5	18.0	11.5	14.5	30.0	24.0	27.0	29.0	23.0	25.5
27	9.5	6.5	7.5	20.0	13.0	16.5	31.0	25.0	28.0	29.0	22.5	25.5
28	12.0	6.5	8.0	23.0	15.5	19.0	32.0	26.0	28.5	30.5	22.5	25.5
29	13.5	9.0	10.5	23.5	17.5	20.5	30.5	24.5	27.5	29.5	22.0	25.0
30	15.0	9.5	11.5	20.0	17.0	18.5	26.5	21.5	24.0	30.0	23.0	26.0
31	---	---	---	23.0	16.5	19.5	---	---	---	29.0	22.0	25.0
MONTH	15.0	0.0	6.0	23.5	4.0	13.5	32.0	12.0	21.0	31.0	18.0	24.5

06181000 POPLAR RIVER NEAR POPLAR, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
	AUGUST			SEPTEMBER		
1	25.0	19.5	21.5	---	---	---
2	25.0	19.0	22.0	---	---	---
3	26.0	20.5	23.0	---	---	---
4	29.5	20.5	24.5	---	---	---
5	30.5	24.5	27.0	---	---	---
6	31.5	24.0	28.5	---	---	---
7	31.0	25.0	28.0	---	---	---
8	29.5	27.0	28.0	---	---	---
9	31.5	26.5	28.0	---	---	---
10	30.0	25.0	27.0	---	---	---
11	27.5	23.0	25.5	---	---	---
12	26.0	22.5	24.0	---	---	---
13	27.5	22.5	24.5	---	---	---
14	25.5	23.5	24.5	---	---	---
15	25.0	22.5	23.5	---	---	---
16	24.5	21.0	22.5	---	---	---
17	24.5	20.0	22.5	---	---	---
18	---	---	---	---	---	---
19	---	---	---	---	---	---
20	---	---	---	---	---	---
21	---	---	---	---	---	---
22	---	---	---	---	---	---
23	---	---	---	---	---	---
24	---	---	---	---	---	---
25	---	---	---	---	---	---
26	---	---	---	---	---	---
27	---	---	---	---	---	---
28	---	---	---	---	---	---
29	---	---	---	---	---	---
30	---	---	---	---	---	---
31	---	---	---	---	---	---
MONTH	---	---	---	---	---	---

06183450 BIG MUDDY CREEK NEAR ANTELOPE, MT

LOCATION.--Lat 48°40'22", long 104°30'42" (NAD 27), in SW$^1/_4$SW$^1/_4$NW$^1/_4$ sec. 27, T.34 N., R.55 E., Sheridan County, Hydrologic Unit 10060006, on right bank, 3 mi southwest of Antelope, and 7 mi south of Plentywood, MT.
DRAINAGE AREA.--967 mi^2. Prior to 1981, drainage area published as 1,171 mi^2.
PERIOD OF RECORD.--October 1978 to current year.
REVISED RECORDS.--WDR MT-81-1: Drainage area.
GAGE.--Water-stage recorder. Elevation of gage is 2,000 ft (NGVD 29).
REMARKS.--Records good except those for estimated daily discharges, which are poor. Several known diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of instantaneous water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	8.5	e4.6	e1.0	e1.4	e3.0	e2.4	23	9.6	3.5	1.9	4.6
2	2.4	15	e4.6	e1.0	e1.4	e3.0	e2.4	25	11	3.2	1.7	4.2
3	2.0	13	e4.4	e1.0	e1.4	e3.0	e2.4	21	16	3.1	1.7	4.5
4	1.8	12	e4.4	e1.2	e1.4	e3.0	e3.0	19	22	3.1	1.8	4.2
5	1.7	11	e4.4	e1.2	e1.4	e3.0	e3.0	19	22	3.1	1.9	4.2
6	1.5	11	e4.2	e1.2	e1.4	e3.0	e5.0	25	22	2.9	1.8	5.5
7	1.5	9.7	e4.2	e1.2	e1.4	e3.0	e5.0	20	30	2.9	1.8	5.6
8	1.8	14	e4.4	e1.2	e1.4	e3.0	e8.0	20	38	3.1	1.8	5.2
9	1.8	13	e4.4	e1.4	e1.4	e3.0	e8.0	23	39	3.5	2.4	4.9
10	1.8	9.7	e4.4	e1.4	e1.4	e3.0	e13	24	35	3.4	3.4	4.8
11	2.0	6.5	e4.3	e1.4	e1.4	e3.0	e20	27	32	3.2	3.6	4.6
12	2.3	5.9	e4.3	e1.4	e1.4	e3.0	27	29	29	3.5	23	4.1
13	2.4	5.4	e4.3	e1.2	e1.6	e2.8	65	33	28	3.5	20	5.8
14	2.4	4.7	e4.2	e1.2	e1.6	e2.8	193	32	29	3.1	13	7.3
15	2.7	5.3	e4.2	e1.2	e2.0	e2.6	356	30	30	2.7	9.7	5.4
16	3.1	6.0	e4.2	e1.2	e2.2	e2.6	328	32	30	2.6	7.9	4.3
17	3.6	6.0	e4.2	e1.2	e2.8	e2.6	154	32	28	2.6	7.4	3.7
18	4.0	6.6	e4.0	e1.2	e3.0	e2.2	89	28	24	2.3	6.4	3.2
19	4.1	6.8	e3.8	e1.2	e3.8	e2.2	61	24	20	2.2	5.4	2.7
20	3.9	7.4	e3.2	e1.2	e3.8	e2.2	47	20	16	2.1	4.8	2.4
21	4.0	7.3	e2.4	e1.2	e4.6	e2.2	36	18	13	2.0	4.5	2.4
22	3.8	7.4	e2.2	e1.2	e4.6	e2.2	26	17	12	1.8	4.2	2.3
23	4.3	7.4	e2.2	e1.2	e4.2	e2.4	20	15	11	1.6	3.6	1.9
24	4.6	7.3	e2.2	e1.2	e4.2	e2.4	12	14	11	1.6	3.5	1.9
25	5.0	e4.6	e1.6	e1.2	e4.2	e2.4	6.2	13	9.2	1.8	3.6	1.8
26	5.2	e4.6	e1.6	e1.2	e3.8	e2.4	3.7	12	7.9	2.0	4.8	1.7
27	5.2	e4.8	e1.6	e1.2	e3.8	e2.4	2.3	11	6.5	2.3	4.5	1.7
28	5.5	e4.8	e1.2	e1.4	e3.0	e2.4	11	12	5.4	2.3	4.1	1.6
29	5.7	e4.6	e1.0	e1.4	---	e2.4	13	14	4.9	2.2	3.9	1.5
30	5.4	e4.6	e1.0	e1.4	---	e2.4	16	13	4.0	2.1	3.9	1.5
31	5.4	---	e1.0	e1.4	---	e2.4	---	11	---	2.0	4.3	---
TOTAL	103.4	234.9	102.7	38.2	70.0	82.0	1538.4	656	595.5	81.3	166.3	109.5
MEAN	3.335	7.830	3.313	1.232	2.500	2.645	51.28	21.16	19.85	2.623	5.365	3.650
MAX	5.7	15	4.6	1.4	4.6	3.0	356	33	39	3.5	23	7.3
MIN	1.5	4.6	1.0	1.0	1.4	2.2	2.3	11	4.0	1.6	1.7	1.5
AC-FT	205	466	204	76	139	163	3050	1300	1180	161	330	217

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 2002, BY WATER YEAR (WY)

MEAN	5.337	5.904	3.557	1.835	24.99	132.9	116.1	25.13	16.06	26.07	9.076	4.478
MAX	25.0	11.8	6.86	6.38	290	851	826	120	62.0	226	92.5	35.7
(WY)	1987	1999	1982	1983	1996	1999	1982	1979	1979	1993	1987	1997
MIN	0.14	0.88	0.45	0.000	0.000	2.65	5.04	5.29	0.23	0.031	0.000	0.000
(WY)	1989	1989	1986	1989	1989	2002	1988	1992	1988	1985	1984	1984

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1979 - 2002	
ANNUAL TOTAL	11320.60		3778.2			
ANNUAL MEAN	31.02		10.35		31.0*	
HIGHEST ANNUAL MEAN					93.2	1979
LOWEST ANNUAL MEAN					4.73	1992
HIGHEST DAILY MEAN	850	Mar 15	356	Apr 15	3160	Mar 23 1999
LOWEST DAILY MEAN	0.00	Jan 1	1.0	Dec 29	a.00	Aug 2 1981
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	1.0	Dec 28	.00	Jul 22 1984
MAXIMUM PEAK FLOW			412	Apr 15	b3190	Mar 22 1999
MAXIMUM PEAK STAGE			6.84	Apr 15	17.37	Apr 14 1982
INSTANTANEOUS LOW FLOW			0.83	Feb 17	.00	Aug 2 1981
ANNUAL RUNOFF (AC-FT)	22450		7490		22420	
10 PERCENT EXCEEDS	62		23		37	
50 PERCENT EXCEEDS	4.6		3.9		4.6	
90 PERCENT EXCEEDS	0.00		1.4		0.20	

*--Median of yearly mean discharge, 20.9 ft^3/s.
a--No flow many days most years.
b--Gage height, 16.53 ft.
e--Estimated.

BIG MUDDY CREEK BASIN

06183700 BIG MUDDY CREEK DIVERSION CANAL NEAR MEDICINE LAKE, MT

LOCATION.--Lat 48°30'34", long 104°32'55" (NAD 27), in SE$^1/_4$NW$^1/_4$SE$^1/_4$ sec. 22, T.32 N., R.55 E., Sheridan County, Hydrologic Unit 10060006, on right bank, on dike road about 2 ft upstream from canal headgate and 2.2 miles northwest of Medicine Lake.

PERIOD OF RECORD.--August 1985 to September 1991, October 1991 to current season (seasonal records).

GAGE.--Water-stage recorder. Elevation of gage is 1,940 ft (NGVD 29).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Canal diverts water into Medicine Lake at the Medicine Lake National Wildlife Refuge. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e0.00	2.4	7.4	1.6	3.8	4.0	0.60		
2			e0.00	e0.00	4.0	8.5	1.6	2.8	3.5	e1.0		
3			e0.00	e0.00	7.3	11	1.6	2.4	4.0	1.5		
4			e0.00	e0.00	10	16	1.6	2.3	4.2	1.3		
5			e0.00	e0.00	8.8	17	1.6	2.3	4.2	1.4		
6			e0.00	e0.00	8.3	15	1.6	2.3	4.6	1.4		
7			e0.00	e0.00	9.7	16	1.6	2.3	5.1	1.6		
8			e0.00	e0.00	21	17	1.6	2.3	e4.5	1.9		
9			e0.00	e0.00	22	29	1.7	2.4	e4.0	2.2		
10			e0.00	e1.0	22	37	1.7	2.2	e3.5	3.0		
11			e0.00	e1.0	21	32	1.6	2.1	e3.5	3.5		
12			e0.00	e1.4	22	29	1.6	2.1	e3.5	3.8		
13			e0.00	e2.6	24	25	1.6	2.0	e4.0	3.8		
14			e0.00	e20	28	20	1.7	4.0	e5.0	4.0		
15			e0.00	e150	33	19	1.8	6.2	e5.0	4.3		
16			e0.00	263	30	18	2.1	5.5	e4.0	4.3		
17			e0.00	241	31	18	e2.4	4.9	e3.5	4.5		
18			e0.00	179	36	17	e2.2	4.3	e3.0	4.5		
19			e0.00	138	29	15	e2.0	3.9	e2.5	4.6		
20			e0.00	90	22	12	e2.0	3.9	e2.0	4.6		
21			e0.00	65	18	9.4	e1.8	4.0	e2.0	4.9		
22			e0.00	49	18	7.2	e1.6	3.8	e1.5	4.6		
23			e0.00	33	16	5.6	e1.6	3.3	e1.5	5.0		
24			e0.00	10	13	4.2	e1.6	3.2	e1.0	5.1		
25			e0.00	4.9	11	2.3	1.9	4.0	e1.0	5.7		
26			e0.00	1.7	10	2.0	1.8	4.1	e1.0	5.9		
27			e0.00	1.6	8.6	1.8	1.8	3.8	e1.0	5.5		
28			e0.00	1.3	7.5	1.6	1.9	3.9	e1.0	5.4		
29			e0.00	1.1	7.3	1.6	2.0	4.0	0.97	4.7		
30			e0.00	1.3	7.3	1.5	3.0	3.9	0.61	5.9		
31			e0.00	---	8.2	---	4.3	3.9	---	e5.6		
TOTAL			0.00	1255.90	516.4	416.1	58.5	105.9	89.18	116.10		
MEAN			0.000	41.86	16.66	13.87	1.887	3.416	2.973	3.745		
MAX			0.00	263	36	37	4.3	6.2	5.1	5.9		
MIN			0.00	0.00	2.4	1.5	1.6	2.0	0.61	0.60		
AC-FT			0.00	2490	1020	825	116	210	177	230		

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1991 AND SEASONS 1992 - 2002*

MEAN	0.280	5.112	95.43	52.68	14.20	9.184	25.18	6.404	3.931	2.872	1.660	0.580
MAX	1.10	23.4	434	260	46.5	28.5	144	31.3	37.3	7.97	4.97	2.80
(WY)	1990	1986	1999	1997	1999	1994	1993	1987	1997	1999	1990	1990
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	1988	1988	2002	1988	1987	1987	1987	1988	1987	1988	1988	1988

SUMMARY STATISTICS	FOR 2002 SEASON		WATER YEARS 1985 - 1991*		1992 - 2002 SEASONS*	
ANNUAL MEAN			14.5			
HIGHEST ANNUAL MEAN			31.6	1989		
LOWEST ANNUAL MEAN			0.17	1988		
HIGHEST DAILY MEAN	263	Apr 16	1300	Mar 2 1986	1340	Mar 23 1999
LOWEST DAILY MEAN	0.00	Oct 1	a0.00	Feb 11 1986	0.00	Sep 22 1992
ANNUAL SEVEN-DAY MINIMUM			0.00	Feb 11 1986		
MAXIMUM PEAK FLOW	298	Apr 16	1300	Mar 2 1986	b1360	Mar 23 1999
MAXIMUM PEAK STAGE	8.26	Apr 16			c12.18	Jul 24 1993
ANNUAL RUNOFF (AC-FT)			10540			
10 PERCENT EXCEEDS			29			
50 PERCENT EXCEEDS			2.6			
90 PERCENT EXCEEDS			0.00			

*--During period of operation 1985-91, 1992 to current year. Seasonal records beginning water 1992.
a--No flow at times most year.
b--Gage height, 10.99 ft.
c--Site and datum then in use.
e--Estimated.

BIG MUDDY CREEK BASIN

06183750 LAKE CREEK NEAR DAGMAR, MT

LOCATION.--Lat 48°33'51", long 104°10'38" (NAD 27), in SE$^1/_4$SE$^1/_4$SW$^1/_4$ sec. 31, T.33 N., R.58 E., Sheridan County, Hydrologic Unit 10060006, on left bank, at downstream end of dike, just north of Medicine Lake National Wildlife Refuge and 1.7 mi southeast of Dagmar.

DRAINAGE AREA.--101 mi^2.

PERIOD OF RECORD.--September 1985 to October 1989, March 1995 to current year (seasonal records only since 1986).

GAGE.--Water-stage recorder. Elevation of gage is 1,979 ft (NGVD 29).

REMARKS.--Records poor. Numerous diversions upstream for irrigation. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e0.00	0.34	e0.05	0.00	0.00	0.00	0.00		
2			e0.00	e0.00	0.30	e0.05	0.00	0.00	0.00	0.00		
3			e0.00	e0.00	0.29	e0.05	0.00	0.00	0.00	0.00		
4			e0.00	e0.00	0.27	e0.05	0.00	0.00	0.00	0.00		
5			e0.00	e0.20	0.26	e0.05	0.00	0.00	0.00	0.00		
6			e0.00	e0.40	0.25	e0.05	0.00	0.00	0.00	0.00		
7			e0.00	e0.80	0.25	e0.05	0.00	0.00	0.00	0.00		
8			e0.00	e0.80	0.28	e0.05	0.00	0.00	0.00	0.00		
9			e0.00	e0.60	0.29	e0.05	0.00	0.00	0.00	0.00		
10			e0.00	e0.60	0.31	e0.05	0.00	0.00	0.00	0.00		
11			e0.00	e0.60	0.31	e0.05	0.00	0.00	0.00	0.00		
12			e0.00	e1.0	0.29	e0.05	0.00	0.00	0.00	0.00		
13			e0.00	e1.5	0.26	e0.05	0.00	0.00	0.00	0.00		
14			e0.00	e2.5	0.24	e0.05	0.00	0.00	0.00	0.00		
15			e0.00	e1.5	0.23	e0.05	0.00	0.00	0.00	0.00		
16			e0.00	e1.0	0.24	e0.00	0.00	0.00	0.00	0.00		
17			e0.00	e2.0	0.21	e0.00	0.00	0.00	0.00	0.00		
18			e0.00	e2.0	0.19	e0.00	0.00	0.00	0.00	0.00		
19			e0.00	e2.0	0.19	e0.00	0.00	0.00	0.00	0.00		
20			e0.00	e1.5	0.14	e0.00	0.00	0.00	0.00	0.00		
21			e0.00	e1.5	0.10	e0.00	0.00	0.00	0.00	0.00		
22			e0.00	1.8	e0.10	e0.00	0.00	0.00	0.00	0.00		
23			e0.00	0.68	e0.10	e0.00	0.00	0.00	0.00	0.00		
24			e0.00	0.50	e0.10	e0.00	0.00	0.00	0.00	0.00		
25			e0.00	0.47	e0.10	e0.00	0.00	0.00	0.00	0.00		
26			e0.00	0.45	e0.10	e0.00	0.00	0.00	0.00	0.00		
27			e0.00	0.42	e0.10	e0.00	0.00	0.00	0.00	0.00		
28			e0.00	0.40	e0.05	e0.00	0.00	0.00	0.00	0.00		
29			e0.00	0.38	e0.05	e0.00	0.00	0.00	0.00	0.00		
30			e0.00	0.37	e0.05	e0.00	0.00	0.00	0.00	e0.00		
31			e0.00	---	e0.05	---	0.00	0.00	---	e0.00		
TOTAL			0.00	25.97	6.04	0.75	0.00	0.00	0.00	0.00		
MEAN			0.000	0.866	0.195	0.025	0.000	0.000	0.000	0.000		
MAX			0.00	2.5	0.34	0.05	0.00	0.00	0.00	0.00		
MIN			0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00		
AC-FT			0.00	52	12	1.5	0.00	0.00	0.00	0.00		

STATISTICS OF MONTHLY MEAN DATA FOR SEASON 1986 - 2002*

MEAN	6.407	9.826	0.881	0.340	0.370	0.043	0.000	0.000
MAX	28.3	45.1	3.35	2.81	1.40	0.26	0.000	0.000
(WY)	1997	1997	1986	2000	1999	1999	1986	1986
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	1988	1988	1998	1997	1986	1986	1986	1986

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1986 - 2002*	
HIGHEST DAILY MEAN	2.5	Apr 14	275	Mar 29 1997
LOWEST DAILY MEAN	0.00	Mar 1	b0.00	Oct 1 1985
MAXIMUM PEAK FLOW	unknown		c506	Mar 29 1999
MAXIMUM PEAK STAGE	a6.01	Apr 11	9.14	Mar 28 1999

*--During periods of operation (September 1985 to October 1989, March 1995 to current year).
a--Backwater from ice.
b--No flow many days most years.
c--Gage height 8.52 ft.
e--Estimated.

BIG MUDDY CREEK BASIN

06183800 COTTONWOOD CREEK NEAR DAGMAR, MT

LOCATION.--Lat 48°30'35", long 104°10'23" (NAD 27), in SE$^1/_4$NE$^1/_4$SE$^1/_4$ sec. 21, T.32 N., R.58 E., Sheridan County, Hydrologic Unit 10060006, on right bank, at bridge on county road 1.2 mi southeast of Medicine Lake National Wildlife Refuge, and 5.3 mi south of Dagmar.

DRAINAGE AREA.--126 mi^2.

PERIOD OF RECORD.--August 1985 to September 1989, March 1995 to current year. Seasonal records only.

GAGE.--Water-stage recorder. Elevation of gage is 1,975 ft (NGVD 29).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e0.00	0.80	0.17	0.15	0.00	0.00	0.00		
2			e0.00	e0.00	0.73	0.42	0.09	0.00	0.00	0.00		
3			e0.00	e0.00	0.52	1.2	0.07	0.00	0.00	0.00		
4			e0.00	e0.00	0.57	2.5	0.05	0.00	0.00	0.00		
5			e0.00	e0.50	0.60	2.1	0.10	0.00	0.00	0.00		
6			e0.00	e2.0	0.66	1.3	0.07	0.00	0.00	0.00		
7			e0.00	e6.0	0.74	1.00	0.05	0.00	0.00	0.00		
8			e0.00	e20	1.0	1.5	0.05	0.00	0.00	0.00		
9			e0.00	e40	1.4	1.6	0.11	0.00	0.00	0.00		
10			e0.00	e30	3.8	2.0	0.09	0.00	0.00	0.00		
11			e0.00	e40	3.4	1.9	0.08	0.00	0.00	0.00		
12			e0.00	43	2.7	2.0	0.06	0.00	0.00	0.00		
13			e0.00	15	2.3	2.0	0.04	0.00	0.00	0.00		
14			e0.00	8.2	2.6	2.0	0.06	0.00	0.00	0.00		
15			e0.00	6.6	2.5	1.9	0.07	0.00	0.00	0.00		
16			e0.00	5.4	2.2	1.8	0.06	0.00	0.00	0.00		
17			e0.00	4.8	1.7	1.7	0.11	0.00	0.00	0.00		
18			e0.00	3.9	1.3	1.5	0.05	0.00	0.00	0.00		
19			e0.00	3.3	0.99	1.3	0.03	0.00	0.00	0.00		
20			e0.00	2.7	0.81	1.1	0.02	0.00	0.00	0.00		
21			e0.00	2.2	0.54	0.70	e0.01	0.00	0.00	0.00		
22			e0.00	1.7	0.48	0.53	e0.01	0.00	0.00	0.00		
23			e0.00	1.4	0.54	0.51	e0.01	0.00	0.00	0.00		
24			e0.00	1.5	0.56	0.53	e0.01	0.00	0.00	0.00		
25			e0.00	1.4	0.57	0.50	e0.01	0.00	0.00	0.00		
26			e0.00	1.2	0.49	0.53	e0.01	0.00	0.00	0.00		
27			e0.00	1.3	0.46	0.42	0.00	0.00	0.00	0.00		
28			e0.00	1.1	0.41	0.30	0.00	0.00	0.00	e0.00		
29			e0.00	0.95	0.34	0.23	0.00	0.00	0.00	e0.00		
30			e0.00	0.97	0.28	0.20	0.00	0.00	0.00	e0.00		
31			e0.00		0.21		0.00	0.00		e0.00		
TOTAL			0.00	245.12	36.20	35.44	1.47	0.00	0.00	0.00		
MEAN			0.000	8.171	1.168	1.181	0.047	0.000	0.000	0.000		
MAX			0.00	43	3.8	2.5	0.15	0.00	0.00	0.00		
MIN			0.00	0.00	0.21	0.17	0.00	0.00	0.00	0.00		
AC-FT			0.00	486	72	70	2.9	0.00	0.00	0.00		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1986 - 2002*

MEAN	26.64	9.393	1.322	1.646	6.101	0.147	0.041	0.010
MAX	96.2	32.6	6.95	13.7	27.4	0.71	0.33	0.096
(WY)	1997	1987	1999	2000	1997	1999	1997	2001
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	1988	1988	1988	1987	1986	1986	1986	1986

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1986 - 2002*	
HIGHEST DAILY MEAN	43	Apr 12	545	Mar 27 1997
LOWEST DAILY MEAN	0.00	Mar 1	a0.00	Oct 1 1985
MAXIMUM PEAK FLOW	68	Apr 12	b646	Mar 27 1997
MAXIMUM PEAK STAGE	3.12	Apr 12	8.76	Mar 22 1997

*--During period of operation (1985-1989, 1995 to current year; seasonal records only).
a--No flow most years.
b--Gage height, 7.08 ft.
e--Estimated.

BIG MUDDY CREEK BASIN

06183850 SAND CREEK NEAR DAGMAR, MT

LOCATION.--Lat 48°29'38", long 104°16'23" (NAD 27), in SE$^1/_4$NW$^1/_4$NW$^1/_4$ sec. 26, T.32 N., R.57 E., Sheridan County, Hydrologic Unit 10060006, at Medicine Lake National Wildlife Refuge boundary, on right bank at downstream end of culvert on county road, 1.0 mi upstream from mouth, and 7 mi southwest of Dagmar.

DRAINAGE AREA.--122 mi^2.

PERIOD OF RECORD.--August 1985 to September 1989, March 1995 to current year (seasonal records).

GAGE.--Water-stage recorder. Elevation of gage is 1,945 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. No known diversions for irrigation upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			e0.00	e0.00	1.1	0.31	1.2	0.00	0.00	0.00		
2			e0.00	e0.00	1.1	1.3	0.66	0.00	0.00	0.00		
3			e0.00	e0.00	0.93	2.9	0.34	0.00	0.00	0.00		
4			e0.00	e0.01	0.84	3.2	0.14	0.00	0.00	0.00		
5			e0.00	e1.0	0.69	8.7	0.59	0.00	0.00	0.00		
6			e0.00	e5.0	0.68	8.0	0.25	0.00	0.00	0.00		
7			e0.00	e7.0	1.0	5.6	0.15	0.00	0.00	0.00		
8			e0.00	e10	1.4	4.1	0.28	0.00	0.00	0.00		
9			e0.00	e17	2.1	3.7	1.5	0.00	0.00	0.00		
10			e0.00	e18	2.8	4.0	1.1	0.00	0.00	0.00		
11			e0.00	e18	5.1	3.4	0.59	0.00	0.00	0.00		
12			e0.00	e19	5.6	3.1	0.29	0.00	0.00	0.00		
13			e0.00	e20	3.8	3.2	0.22	0.00	0.00	0.00		
14			e0.00	13	2.7	2.8	0.14	0.00	0.00	0.00		
15			e0.00	9.2	2.0	3.0	0.02	0.00	0.00	0.00		
16			e0.00	8.9	1.6	2.7	0.00	0.00	0.00	0.00		
17			e0.00	7.2	1.4	2.3	0.00	0.00	0.00	0.00		
18			e0.00	5.9	1.2	2.1	0.00	0.00	0.00	0.00		
19			e0.00	4.8	0.91	1.7	0.00	0.00	0.00	0.00		
20			e0.00	4.2	0.87	1.4	0.00	0.00	0.00	0.00		
21			e0.00	3.4	0.88	0.98	0.00	0.00	0.00	0.00		
22			e0.00	2.6	1.0	0.66	0.00	0.00	0.00	0.00		
23			e0.00	2.2	1.1	1.1	0.00	0.00	0.00	0.00		
24			e0.00	1.8	0.97	38	0.00	0.00	0.00	0.00		
25			e0.00	1.8	1.1	45	0.00	0.00	0.00	0.00		
26			e0.00	1.5	0.86	17	0.00	0.00	0.00	0.00		
27			e0.00	1.5	0.67	8.6	0.00	0.00	0.00	0.00		
28			e0.00	1.5	0.60	4.6	0.00	0.00	0.00	0.00		
29			e0.00	1.4	0.66	2.9	0.00	0.00	0.00	0.00		
30			e0.00	1.2	0.51	1.8	0.00	0.00	0.00	0.00		
31			e0.00	---	0.46	---	0.00	0.00	---	0.00		
TOTAL			0.00	187.11	46.63	188.15	7.47	0.00	0.00	0.00		
MEAN			0.000	6.23	1.50	6.27	0.24	0.00	0.00	0.00		
MAX			0.00	20	5.6	45	1.5	0.00	0.00	0.00		
MIN			0.00	0.00	0.46	0.31	0.00	0.00	0.00	0.00		
AC-FT			0.00	371	92	373	15	0.00	0.00	0.00		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1986 - 2002*

MEAN	10.8	6.65	1.52	1.36	4.16	.39	.073	.000
MAX	33.1	16.7	6.80	9.06	21.6	3.34	.80	.000
(WY)	1999	1987	1999	2000	1997	1997	1997	1986
MIN	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1988	1988	1988	1988	1986	1986	1986	1986

SUMMARY STATISTICS	FOR 2002 SEASON		1986 - 2002 SEASONS*	
HIGHEST DAILY MEAN	45	Jun 24	142	Mar 27 1997
LOWEST DAILY MEAN	.00	Mar 1	a.00	Oct 1 1985
MAXIMUM PEAK FLOW	100	Jun 25	b247	Mar 20 1999
MAXIMUM PEAK STAGE	4.31	Jun 25	c5.80	Mar 26 1997

*--During period of operation (1985-1989, 1995 to current year; seasonal records only).
a--No flows most years.
b--Gage height, 5.66 ft.
c--From floodmark, probable date, backwater from ice.
e--Estimated.

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT

(National stream quality accounting network station)

LOCATION.--Lat 48°07'30", long 104°28'20" (NAD 27), in SE$^1/_4$NW$^1/_4$ sec.3, T.27 N., R.56 E., Richland County, Hydrologic Unit 10060005, on right bank at upstream side of bridge on State Highway 16, 2.5 mi southeast of Culbertson, 10 mi downstream from Big Muddy Creek, and at river mile 1,620.76.

DRAINAGE AREA.--91,557 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1941 to December 1951, April 1958 to current year.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,883.4 ft (NGVD 29) (U.S. Army Corps of Engineers bench mark). July 1 to Nov. 6, 1941, water-stage recorder at site 400 ft upstream at datum 0.11 ft higher. Nov. 7, 1941, to Aug. 17, 1950, water-stage recorder at site 580 ft downstream at present datum. Aug. 18, 1950, to Dec. 31, 1951, nonrecording gage on bridge at present datum. Apr. 1, 1958, to Nov. 1, 1967, water-stage recorder at site 580 ft downstream at present datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Flow partly regulated by Fort Peck Lake (station number 06131500) and many other reservoirs upstream from station. Diversions for irrigation of about 1,030,400 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3960	4470	e5700	e5800	e5600	e5600	e4500	4620	8860	9760	8640	9570
2	4000	4620	e5800	e5600	e5600	e5600	e4300	4590	9150	9440	8730	9280
3	4050	4440	e6000	e5400	e5600	e5600	e4300	4560	9200	9290	8600	9320
4	4150	4350	e6000	e5100	e5600	e5700	e4300	4590	9120	9050	8550	9190
5	4100	4360	e5800	e5200	e5600	e5500	e4300	4600	9070	9270	8680	9160
6	4140	4390	e5700	e5200	e5600	e5500	e4500	4630	8920	9390	8710	9070
7	4190	4390	e5700	e5300	e5600	e5500	e4700	4470	8980	9520	8960	9250
8	4210	4390	e5700	e5400	e5300	e5500	e4900	4550	9000	9410	9280	9240
9	4150	4390	e5700	e5300	e5500	e5500	e5200	4790	8880	9440	9590	9330
10	4180	4390	e5700	e5400	e5500	e5600	e5500	4830	8990	9560	9670	9350
11	4210	4420	e5700	e5200	e5500	e5600	e5800	4780	9610	9710	9650	9190
12	4220	4430	e5700	e5100	e5500	e5600	e6000	4790	9890	9360	9430	9310
13	4150	4450	e5700	e5100	e5500	e5500	e5800	4930	9790	9290	9280	9460
14	4200	4520	e5900	e5000	e5300	e5500	e5500	6790	9690	9240	9490	9240
15	4150	4540	e5700	e5000	e5400	e5400	5300	9080	9970	8930	9400	9230
16	4190	4470	e5600	e5100	e5400	e5200	5130	10600	10400	8700	9390	8980
17	4230	4440	e5600	e5100	e5400	e4900	5070	9210	10400	8860	9610	7680
18	4250	4420	e5600	e5100	e5400	e4900	5110	6920	10200	e9000	9860	6370
19	4270	4450	e5600	e5100	e5500	e4800	5220	6830	9780	e9100	10000	5980
20	4230	4460	e5600	e5400	e5600	e4800	5130	8500	9530	e9100	10000	5750
21	4250	4460	e5600	e5600	e5700	e4600	5070	9200	9600	e9000	10000	5550
22	4220	4500	e5700	e5400	e5800	e4600	5000	8940	9680	e8900	10000	5560
23	4270	4480	e5600	e5200	e5900	e4300	4890	9250	9710	e8900	10700	5490
24	4310	4460	e5600	e5200	e5700	e4300	4820	9760	9760	8730	10300	5570
25	4320	4470	e5600	e5200	e5500	e4300	4760	9410	9850	8670	10500	5530
26	4310	4460	e5600	e5100	e5300	e4300	4720	9040	9550	8660	11800	5530
27	4370	4490	e5600	e5200	e5400	e4400	4690	9020	9650	8600	11100	5550
28	4380	5070	e5600	e5500	e5400	e4600	4700	9080	10100	8710	10100	5460
29	4450	e5600	e5600	e5600	---	e4800	4740	9080	10300	8700	9670	5390
30	4500	e5400	e5800	e5800	---	e5000	4710	9050	10300	8710	9530	5320
31	4480	---	e5700	e5900	---	e4800	---	8920	---	8700	9410	---
TOTAL	131090	136180	176500	164600	154700	157800	148660	219410	287930	281700	298630	228900
MEAN	4229	4539	5694	5310	5525	5090	4955	7078	9598	9087	9633	7630
MAX	4500	5600	6000	5900	5900	5700	6000	10600	10400	9760	11800	9570
MIN	3960	4350	5600	5000	5300	4300	4300	4470	8860	8600	8550	5320
AC-FT	260000	270100	350100	326500	306800	313000	294900	435200	571100	558800	592300	454000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)*

MEAN	10700	9260	9143	9914	10520	10350	10540	9543	9737	10250	11370	11110
MAX	28570	22440	13280	14400	17450	20690	32840	26220	26650	37050	25300	26590
(WY)	1949	1952	1944	1986	1976	1976	1979	1979	1975	1975	1948	1948
MIN	1237	1126	1061	1010	1167	2674	1965	1353	1366	1273	3823	3771
(WY)	1942	1942	1942	1943	1942	1950	1945	1945	1945	1945	1963	1992

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1941 - 2002*	
ANNUAL TOTAL	2437380		2386100			
ANNUAL MEAN	6678		6537		10200	
HIGHEST ANNUAL MEAN					16580	1975
LOWEST ANNUAL MEAN					4083	1942
HIGHEST DAILY MEAN	12200	Jan 28	11800	Aug 26	69200	Mar 27 1943
LOWEST DAILY MEAN	3870	Sep 29	3960	Oct 1	575	Nov 22 1941
ANNUAL SEVEN-DAY MINIMUM	3930	Sep 25	4080	Oct 1	709	Nov 19 1941
MAXIMUM PEAK FLOW			12000	Aug 26	a78200	Mar 26 1943
MAXIMUM PEAK STAGE			6.23	Aug 26	b19.66	Apr 14 1979
INSTANTANEOUS LOW FLOW			3920	Oct 1	575	Nov 22 1941
ANNUAL RUNOFF (AC-FT)	4835000		4733000		7391000	
10 PERCENT EXCEEDS	10700		9600		15900	
50 PERCENT EXCEEDS	6260		5600		9490	
90 PERCENT EXCEEDS	4270		4370		4440	

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

(National stream quality accounting network station)

SUMMARY STATISTICS	FOR WATER YEARS 1941-51**		WATER YEARS 1958 - 2002***	
ANNUAL TOTAL				
ANNUAL MEAN	9245		10420	
HIGHEST ANNUAL MEAN	14520	1948	16580	1975
LOWEST ANNUAL MEAN	4083	1942	6121	1963
HIGHEST DAILY MEAN	69200	Mar 27 1943	52000	Apr 18 1979
LOWEST DAILY MEAN	575	Nov 22 1941	2000	Nov 20 1964
ANNUAL SEVEN-DAY MINIMUM	709	Nov 19 1941	2130	Nov 19 1964
MAXIMUM PEAK FLOW	a78200	Mar 26 1943	c55000	Mar 23 1960
MAXIMUM PEAK STAGE	b15.12	Mar 26 1943	b19.66	Apr 14 1979
ANNUAL RUNOFF (AC-FT)	6698000		7550000	
10 PERCENT EXCEEDS	21000		15200	
50 PERCENT EXCEEDS	6910		9720	
90 PERCENT EXCEEDS	1400		5790	

*-During period of operation (1941-52, 1958 to current year).
**--Before operational level at Fort Peck Lake was reached.
***--After operational level at Fort Peck Lake was reached.
a--Gage height, 14.80 ft, from rating curve extended above 30,000 ft^3/s.
b--Backwater from ice.
c--Gage height, 19.14 ft.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946, 1965 to 1986, 1991 to 1994, October 1996 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1965 to September 1981.
WATER TEMPERATURE: July 1965 to September 1979, July 18, 2002 to September 2002.
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976.

INSTRUMENTATION.--Temperature probe installed July 17, 2002.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD:
SPECIFIC CONDUCTANCE (water years 1965-81): Maximum daily, 941 microsiemens per centimeter (µS/cm) at 25°C, Jan. 19, 1980; minimum daily, 338 µS/cm at 25°C, Mar. 30, 1967.
WATER TEMPERATURE: Maximum 25.0°C, July 20, 2002; minimum, 0.0°C, on many days during winter period.
SEDIMENT CONCENTRATION (water years 1972-76): Maximum daily mean, 2,940 mg/L, Aug. 15, 1974; minimum daily mean, 30 mg/L, Jan. 13, 1975.
SEDIMENT LOAD (water years 1972-76): Maximum daily, 147,000 tons, June 5, 1975; minimum daily, 421 tons, Jan. 13, 1975.
EXTREMES FOR CURRENT YEAR:
WATER TEMPERATURE: During period of operation, maximum 25.0°C, July 20; minimum, 11.0°C, Sept. 23, 25, and 28.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TURBID-ITY LAB HACH 2100AN (NTU) (99872)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)
OCT 2001											
16...	1200	4200	720	11.6	100	8.6	603	16	8.0	6.5	210
APR 2002											
23...	1030	4890	715	10.2	94	8.5	625	46	10.0	9.0	210
MAY											
14...	1045	6600	715	9.0	91	8.5	620	280	23.0	13.0	200
28...	1030	9060	716	8.8	94	8.4	572	46	28.0	15.0	200
JUN											
17...	1115	10400	713	8.4	94	8.4	627	1000	27.0	17.5	200
25...	1030	9610	722	10.2	97	8.4	580	67	27.0	10.5	200
JUL											
22...	1000	E8900	728	8.2	97	8.5	568	74	28.5	21.0	220
AUG											
19...	1030	10100	720	9.0	97	8.5	579	58	25.0	16.0	210

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SODIUM AD- SORP- TION RATIO (00931)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	ALKA- LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
OCT 2001											
16...	50.7	19.8	3.72	1	44.1	165	120	147	0	9.60	.8
APR 2002											
23...	50.8	21.2	3.65	2	52.8	176	160	185	5	9.29	.9
MAY											
14...	47.5	19.5	3.95	1	46.7	169	156	184	3	9.15	.7
28...	48.3	20.0	3.60	1	39.5	162	142	174	0	8.52	.8
JUN											
17...	48.2	19.1	4.11	2	55.1	158	--	--	--	8.89	.8
25...	48.4	19.4	3.77	1	45.9	161	154	174	7	8.82	.7
JUL											
22...	53.7	19.5	3.61	1	41.0	161	162	187	5	9.72	.9
AUG											
19...	50.5	19.2	3.76	1	40.1	173	158	187	2	9.04	.9

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 2001											
16...	7.00	129	.52	4310	380	338	<.015	.11	.26	<.013	<.002
APR 2002											
23...	6.26	139	.54	5250	398	381	E.010	.19	.28	<.013	<.002
MAY											
14...	6.39	138	.53	6890	386	366	<.015	.15	.58	.026	<.002
28...	6.57	122	.49	8800	360	336	<.015	.14	.29	<.013	<.002
JUN											
17...	6.98	145	.54	11200	397	338	<.015	.21	1.1	.077	<.002
25...	6.67	130	.52	9860	380	357	<.015	.19	.37	<.013	<.002
JUL											
22...	7.14	118	.49	--	357	351	<.015	.15	.31	<.013	<.002
AUG											
19...	6.76	123	.49	9730	357	349	<.015	.14	.27	<.013	<.002

DATE	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	ORTHO- PHOS- PHATE, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC PARTIC- ULATE TOTAL (MG/L AS C) (00689)	UV ABSORB- ANCE 254 NM, WTR FLT (UNITS /CM) (50624)	UV ABSORB- ANCE 280 NM, WTR FLT (UNITS /CM) (61726)	PHEO- PHYTIN A, PHYTO- PHYTON (UG/L) (62360)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L) (70953)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)
OCT 2001											
16...	.010	E.006	.079	2.6	.9	.043	.028	.8	2.6	2.5	--
APR 2002											
23...	.007	<.007	.121	2.9	1.9	.054	.036	.8	4.4	2.7	--
MAY											
14...	.009	E.006	.34	2.8	2.8	.049	.032	1.8	5.7	2.4	--
28...	.011	.007	.166	2.2	2.9	.045	.029	.6	2.4	2.5	5
JUN											
17...	.020	.016	.63	2.7	3.6	.062	.043	--	--	2.5	--
25...	.012	.007	.18	2.7	3.5	.057	.039	2.1	7.3	2.6	5
JUL											
22...	.013	.010	.161	2.4	2.2	.047	.032	1.0	2.4	2.9	5
AUG											
19...	.013	.008	.175	2.3	1.1	.049	.033	.7	3.9	2.5	7

E--Estimated.

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
OCT 2001											
16...	--	98	--	--	--	--	--	--	<10	--	--
APR 2002											
23...	--	113	--	--	--	--	--	--	<10	--	--
MAY											
14...	--	102	--	--	--	--	--	--	<10	--	--
28...	37	103	<.04	.07	<.8	2.0	2.4	5.8	<10	<.08	3
JUN											
17...	--	108	--	--	--	--	--	--	<10	--	--
25...	40	92	E.02	.16	<.8	3.0	2.2	8.0	<10	.17	3
JUL											
22...	37	99	<.04	.07	<.8	2.0	1.4	5.9	<10	<.08	2
AUG											
19...	37	105	<.04	.07	<.8	2.1	1.8	5.7	<10	<.08	3

DATE	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)
OCT 2001										
16...	57.1	--	--	--	--	--	--	.7	469	.7
APR 2002										
23...	57.5	--	--	--	--	--	--	1.1	464	1.6
MAY										
14...	53.5	--	--	--	--	--	--	.7	487	1.8
28...	60.8	.9	84	E.01	.01	.80	7	.7	452	.9
JUN										
17...	56.3	--	--	--	--	--	--	1.0	439	1.2
25...	51.9	1.1	100	E.01	.02	1.08	8	.7	432	1.8
JUL										
22...	54.6	.4	68	<.01	.01	1.23	6	.8	464	1.8
AUG										
19...	60.3	.6	84	<.01	E.01	1.36	7	.8	466	1.1

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001					
16...	--	--	33	95	1080
APR 2002					
23...	--	--	39	189	2500
MAY					
14...	--	--	76	489	8710
28...	<1	15	55	203	4970
JUN					
17...	--	--	87	917	25700
25...	1	20	55	286	7420
JUL					
22...	<1	14	54	237	e5700
AUG					
19...	2	19	51	234	6380

E--Estimated.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)	ALPHA BHC DIS-SOLVED (UG/L) (34253)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BUTYL-ATE, WATER, DISS, REC (UG/L) (04028)	CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933)	CYANA-ZINE, WATER, DISS, REC (UG/L) (04041)
APR 2002											
23...	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020	<.005	<.018
MAY											
14...	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020	<.005	<.018
28...	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020	<.005	<.018
JUN											
17...	<.006	<.006	<.004	<.005	E.004	<.010	<.002	<.041	<.020	<.005	<.018
25...	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020	<.005	<.018
JUL											
22...	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020	<.005	<.018
AUG											
19...	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020	<.005	<.018

DATE	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	DIAZ-INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)
APR 2002											
23...	<.003	<.006	112	<.005	<.005	<.02	<.010	<.009	<.005	<.003	101
MAY											
14...	<.003	<.006	110	<.005	<.005	<.02	<.002	<.009	<.005	<.003	90.5
28...	<.003	<.006	126	<.005	<.005	<.02	<.002	<.009	<.005	<.003	97.3
JUN											
17...	<.003	<.006	97.3	<.005	<.005	<.02	<.002	<.009	<.005	<.003	99.1
25...	<.003	<.006	104	<.005	<.005	<.02	<.002	<.009	<.005	<.003	98.2
JUL											
22...	<.003	<.006	106	<.005	<.005	<.02	<.002	<.009	<.005	<.003	77.5
AUG											
19...	<.003	<.006	119	<.005	<.005	<.02	<.002	<.009	<.005	<.003	99.1

DATE	LINDANE DIS-SOLVED (UG/L) (39341)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA-THION, DIS-SOLVED (UG/L) (39532)	METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO-LACHLOR WATER DISSOLV (UG/L) (39415)	METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	P,P' DDE DISSOLV (UG/L) (34653)	PARA-THION, DIS-SOLVED (UG/L) (39542)
APR 2002											
23...	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
MAY											
14...	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
28...	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
JUN											
17...	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
25...	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
JUL											
22...	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010
AUG											
19...	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010

DATE	PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO-METON, WATER, DISS, REC (UG/L) (04037)	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)
APR 2002											
23...	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02
MAY											
14...	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02
28...	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02
JUN											
17...	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02
25...	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02
JUL											
22...	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02
AUG											
19...	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02

E--Estimated.

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
APR 2002					
23...	<.034	<.02	<.005	<.002	<.009
MAY					
14...	<.034	<.02	<.005	<.002	<.009
28...	<.034	<.02	<.005	<.002	<.009
JUN					
17...	<.034	<.02	<.005	<.002	<.009
25...	<.034	<.02	<.005	<.002	<.009
JUL					
22...	<.034	<.02	<.005	<.002	<.009
AUG					
19...	<.034	<.02	<.005	<.002	<.009

WATER TEMPERATURE, DEGREES CELSIUS, JULY 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1							20.0	18.5	19.0	20.0	19.5	19.5
2							18.5	17.5	18.0	19.5	18.0	18.5
3							18.5	17.5	18.0	19.0	17.5	18.5
4							18.0	16.5	17.5	19.5	18.5	19.0
5							17.0	16.5	16.5	20.5	19.0	19.5
6							19.5	17.0	18.0	20.5	20.0	20.0
7							20.0	19.5	19.5	21.0	20.0	20.5
8							20.0	19.5	20.0	20.5	19.5	20.0
9							19.5	18.5	19.0	19.5	18.0	18.5
10							19.0	18.0	18.5	18.0	17.0	18.0
11							19.0	18.5	18.5	18.0	17.0	17.5
12							18.5	17.5	17.5	18.5	17.5	18.0
13							18.5	17.5	18.0	19.0	18.0	18.5
14							18.5	18.0	18.5	18.5	18.0	18.0
15							18.0	17.5	17.5	18.0	17.5	18.0
16							17.5	17.0	17.5	18.0	17.5	18.0
17							17.0	16.0	16.5	18.0	17.5	18.0
18				24.5	23.0	23.5	17.0	16.0	16.5	18.0	16.5	17.0
19				24.5	23.5	24.0	17.5	16.5	17.0	16.5	15.5	16.0
20				25.0	23.5	24.0	18.5	17.0	17.5	16.0	14.5	15.5
21				24.0	21.5	22.5	18.5	18.0	18.5	14.5	13.0	13.5
22				21.5	20.5	21.0	19.5	18.0	18.5	13.0	12.0	12.5
23				20.5	19.5	20.5	20.5	19.0	19.5	12.5	11.5	12.0
24				21.5	20.0	20.5	21.0	19.5	20.5	12.5	12.0	12.0
25				22.0	20.0	21.0	20.5	20.0	20.5	12.5	11.5	12.0
26				22.5	21.5	22.0	20.5	19.0	20.0	12.5	12.0	12.0
27				22.5	21.5	22.0	20.0	19.0	19.5	12.5	12.0	12.5
28				22.0	21.0	21.5	20.5	19.5	20.0	12.5	11.5	12.0
29				21.5	20.5	21.0	20.5	20.0	20.0	13.0	12.0	12.5
30				21.0	20.0	20.5	20.5	20.0	20.5	13.5	12.5	13.0
31				21.0	20.0	20.5	20.5	20.0	20.0	---	---	---
MONTH				---	---	---	21.0	16.0	18.5	21.0	11.5	16.5

YELLOWSTONE RIVER BASIN

06186500 YELLOWSTONE RIVER AT YELLOWSTONE LAKE OUTLET, YELLOWSTONE NATIONAL PARK

LOCATION.--Lat 44°34'03", long 110°22'48" (NAD 27), Yellowstone National Park, Hydrologic Unit 10070001, on left bank 450 ft downstream from Fishing Bridge, 0.3 mi downstream from outlet of Yellowstone Lake, and at river mile 616.4.

DRAINAGE AREA.--1,006 mi^2.

PERIOD OF RECORD.--December 1922 to September 1982, October 1983 to September 1986, October 1988 to current year. Prior to October 1926, gage heights only. Monthly discharge only for winter periods in water years 1927-30, 1932-33, 1935-38, 1940, 1942-46 published in WSP 1309; figures of daily discharge for these months published in WSP 646, 666, 686, 701, 731, 746, 786, 806, 826, 856, 896, 956, 976, 1006, 1036, and 1056, have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 1309: See PERIOD OF RECORD. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 7,729.58 ft (NGVD 29). Prior to Oct. 2, 1928, nonrecording gage at site 450 ft upstream at datum 1.07 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No artificial regulation. U. S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	497	363	331	e290	e230	e300	409	514	2250	4300	2260	1120
2	489	361	328	e280	e230	e300	404	526	2530	4270	2210	1100
3	479	356	327	e280	e230	e300	402	538	2780	4210	2150	1070
4	461	354	333	e270	e230	e310	400	552	2960	4150	2140	1050
5	454	353	313	e270	e230	e310	397	573	3100	4090	2090	1030
6	457	360	318	e270	e230	e320	396	589	3220	4000	2030	1040
7	451	370	325	e270	e230	e320	400	606	3350	3930	1970	1080
8	446	368	323	e270	e240	e330	403	625	3490	3870	1930	1090
9	427	365	319	e270	e240	e330	401	636	3680	3800	1870	1090
10	426	362	317	e270	e240	e340	409	638	3770	3710	1840	1080
11	428	361	315	e260	e240	e340	419	647	3760	3630	1780	1060
12	427	363	316	e260	e240	e350	419	662	3760	3550	1710	1050
13	427	361	319	e260	e240	e350	421	693	3750	3470	1680	1030
14	425	360	319	e250	e250	e360	428	729	3730	3400	1650	1020
15	421	356	320	e250	e250	e360	447	764	3750	3340	1600	1000
16	422	353	317	e240	e260	e360	479	812	3800	3260	1560	988
17	421	352	315	e240	e260	e360	479	852	3870	3220	1520	975
18	411	352	316	e240	e270	e360	479	893	4000	3150	1480	962
19	403	351	313	e240	e270	e370	477	950	4100	3080	1440	950
20	392	348	312	e240	e280	e380	478	999	4150	3020	1410	937
21	387	353	312	e240	e280	e390	482	1070	4180	2960	1390	904
22	384	357	314	e240	e290	e400	489	1100	4240	2890	1340	890
23	386	356	312	e230	e290	420	492	1450	4300	2830	1310	876
24	377	351	310	e230	e300	420	485	1520	4300	2760	1290	862
25	368	349	309	e230	e300	421	481	1540	4330	2690	1270	837
26	362	344	309	e230	e300	420	480	1560	4360	2640	1230	828
27	360	340	308	e230	e300	422	484	1600	4360	2580	1210	812
28	357	343	e300	e230	e300	421	495	1660	4360	2520	1190	797
29	352	327	e290	e230	---	418	497	1730	4360	2460	1180	797
30	352	329	e290	e230	---	417	501	1840	4330	2400	1160	796
31	364	---	e290	e230	---	414	---	2010	---	2350	1130	---
TOTAL	12813	10618	9740	7770	7250	11313	13433	30878	112920	102530	50020	29121
MEAN	413.3	353.9	314.2	250.6	258.9	364.9	447.8	996.1	3764	3307	1614	970.7
MAX	497	370	333	290	300	422	501	2010	4360	4300	2260	1120
MIN	352	327	290	230	230	300	396	514	2250	2350	1130	796
AC-FT	25410	21060	19320	15410	14380	22440	26640	61250	224000	203400	99210	57760
CFSM	0.41	0.35	0.31	0.25	0.26	0.36	0.45	0.99	3.74	3.29	1.60	0.96
IN.	0.47	0.39	0.36	0.29	0.27	0.42	0.50	1.14	4.18	3.79	1.85	1.08

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 2002, BY WATER YEAR (WY)*

MEAN	800.4	605.6	475.2	398.1	387.3	445.7	542.8	1162	3696	4045	2214	1211
MAX	1259	984	775	699	637	717	801	2214	8574	7160	4031	1954
(WY)	1973	1951	1951	1998	1998	1962	1952	1997	1997	1982	1982	1982
MIN	327	276	246	168	122	130	175	605	1707	1272	812	538
(WY)	1989	1989	1932	1989	1989	1935	1937	1953	1934	1934	1934	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1927 - 2002*	
ANNUAL TOTAL	295657		398406			
ANNUAL MEAN	810.0		1092		1337	
HIGHEST ANNUAL MEAN					2253	1997
LOWEST ANNUAL MEAN					682	1934
HIGHEST DAILY MEAN	2530	Jun 14	4360	Jun 26	9930	Jun 19 1997
LOWEST DAILY MEAN	250	Jan 1	230	Jan 23	100	Feb 18 1993
ANNUAL SEVEN-DAY MINIMUM	250	Jan 1	230	Jan 23	113	Feb 11 1989
MAXIMUM PEAK FLOW			4410	Jun 29	9950	Jun 18 1997
MAXIMUM PEAK STAGE			6.21	Jun 29	8.90	Jun 18 1997
ANNUAL RUNOFF (AC-FT)	586400		790200		968600	
ANNUAL RUNOFF (CFSM)	0.81		1.09		1.33	
ANNUAL RUNOFF (INCHES)	10.93		14.73		18.06	
10 PERCENT EXCEEDS	2230		3430		3490	
50 PERCENT EXCEEDS	426		426		678	
90 PERCENT EXCEEDS	250		260		333	

*--During periods of operation (October 1926 to September 1982, October 1983 to September 1986, October 1988 to current year).
e--Estimated.

YELLOWSTONE RIVER BASIN

06187915 SODA BUTTE CREEK AT PARK BOUNDARY, AT SILVER GATE, MT

LOCATION.--Lat 45°00'11", long 110°00'04" (NAD 27), in SW$^1/_4$NW$^1/_4$SW$^1/_4$ sec.33, T.9 S., R.14 E., Park County, Hydrologic Unit 10070001, at Yellowstone National park boundary, 0.25 mi downstream from Silver Creek, 0.75 mi southwest of Silver Gate, and at river mile 17.8.

DRAINAGE AREA.--31.2 mi^2.

PERIOD OF RECORD.--October 1998 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 7,340 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. No known regulation or diversion upstream from station. Several observations of water temperature and specific conductance were made during the year.

COOPERATION.--Records collected by the National Park Service and U.S. Department of Agriculture, Forest Service, under the general supervision of the Geological Survey.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	5.3	e5.4	4.0	2.9	1.9	e1.5	15	735	274	36	14
2	5.3	5.3	e5.4	3.9	2.9	1.8	e1.4	19	662	245	36	13
3	5.3	5.2	e5.4	4.0	2.6	e1.8	e1.4	22	502	216	39	13
4	5.3	5.8	e5.2	3.8	2.6	e2.0	e1.6	21	454	201	66	13
5	5.2	e6.0	e5.0	3.6	2.5	e2.0	1.5	22	467	193	37	12
6	4.6	e6.0	e5.2	3.4	2.6	e2.0	2.4	18	544	175	34	23
7	4.6	e6.2	e5.2	3.4	2.7	e2.0	2.8	17	466	170	33	57
8	4.9	e6.2	5.2	3.3	2.7	e1.9	3.0	15	403	167	33	27
9	5.0	e6.2	5.2	3.4	2.5	e1.9	3.3	17	319	142	30	19
10	4.9	e5.8	5.1	3.3	2.5	e1.9	3.5	14	244	125	28	17
11	4.9	e5.4	e5.0	3.4	2.5	e1.8	3.4	14	203	113	28	16
12	4.7	e5.4	e5.0	3.4	2.5	e1.9	3.3	19	182	103	27	15
13	4.8	5.4	e4.9	3.4	2.4	e1.9	4.3	35	176	95	25	15
14	5.0	5.0	e4.9	3.3	2.4	e1.7	11	59	194	89	23	14
15	5.0	5.0	e4.9	3.2	2.3	e1.8	12	76	225	83	22	14
16	5.7	5.3	e4.9	3.1	2.3	e1.7	9.4	79	293	83	21	13
17	5.3	5.0	e4.9	3.2	2.3	e1.8	7.3	92	375	92	21	16
18	5.1	5.0	e4.9	3.2	2.3	e1.9	5.8	132	435	79	20	17
19	5.1	e5.2	4.9	3.2	2.3	e1.8	6.7	205	417	72	19	14
20	5.3	e5.2	4.6	3.2	2.1	e1.7	7.8	267	381	69	19	13
21	5.1	e5.2	4.3	3.2	1.9	e1.7	8.0	270	373	63	20	13
22	5.1	e5.2	4.1	3.3	1.9	e1.7	5.2	195	379	63	19	12
23	5.1	5.0	3.8	3.2	1.9	e1.8	5.3	138	367	71	18	12
24	5.3	e5.2	3.8	3.2	1.8	e1.7	7.1	118	389	55	18	12
25	e5.4	e5.4	4.1	3.2	1.7	e1.6	7.7	105	413	50	17	12
26	e5.8	e5.4	e4.1	3.2	1.7	e1.6	9.7	112	390	48	16	11
27	e5.2	5.3	e4.1	3.3	1.9	e1.5	11	131	372	71	18	11
28	5.0	e5.4	e4.1	3.4	2.0	e1.5	9.3	190	346	55	16	11
29	5.1	e5.4	e4.1	3.3	---	e1.6	16	289	324	45	16	11
30	5.1	e5.4	e4.0	3.2	---	e1.6	19	432	310	41	15	12
31	5.7	---	4.0	3.0	---	e1.7	---	581	---	39	14	---
TOTAL	159.2	162.8	145.7	104.2	64.7	55.2	191.7	3719	11340	3387	784	472
MEAN	5.135	5.427	4.700	3.361	2.311	1.781	6.390	120.0	378.0	109.3	25.29	15.73
MAX	5.8	6.2	5.4	4.0	2.9	2.0	19	581	735	274	66	57
MIN	4.6	5.0	3.8	3.0	1.7	1.5	1.4	14	176	39	14	11
AC-FT	316	323	289	207	128	109	380	7380	22490	6720	1560	936
CFSM	0.16	0.17	0.15	0.11	0.07	0.06	0.20	3.85	12.1	3.50	0.81	0.50
IN.	0.19	0.19	0.17	0.12	0.08	0.07	0.23	4.43	13.52	4.04	0.93	0.56

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2002, BY WATER YEAR (WY)

MEAN	9.047	5.671	3.577	2.405	2.031	1.702	7.968	135.7	307.9	124.7	27.97	14.36
MAX	11.9	6.84	4.70	3.36	2.31	1.90	14.3	167	378	212	45.0	22.4
(WY)	1999	1999	2002	2002	2002	2000	2000	2001	2002	1999	1999	1999
MIN	5.14	4.96	2.85	2.01	1.86	1.41	4.23	95.9	176	61.6	15.5	8.27
(WY)	2002	2001	2001	2000	1999	2001	1999	1999	2001	2001	2001	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1999 - 2002	
ANNUAL TOTAL	13953.1		20585.5			
ANNUAL MEAN	38.23		56.40		53.64	
HIGHEST ANNUAL MEAN					62.9	1999
LOWEST ANNUAL MEAN					38.5	2001
HIGHEST DAILY MEAN	346	May 29	735	Jun 1	735	Jun 1 2002
LOWEST DAILY MEAN	1.0	Feb 28	1.4	Apr 2	1.0	Dec 21 1998
ANNUAL SEVEN-DAY MINIMUM	1.1	Feb 27	1.5	Mar 28	1.1	Feb 27 2001
MAXIMUM PEAK FLOW			912	Jun 1	912	Jun 1 2002
MAXIMUM PEAK STAGE			3.49	Jun 1	3.49	Jun 1 2002
ANNUAL RUNOFF (AC-FT)	27680		40830		38860	
ANNUAL RUNOFF (CFSM)	1.23		1.81		1.72	
ANNUAL RUNOFF (INCHES)	16.64		24.54		23.36	
10 PERCENT EXCEEDS	162		202		202	
50 PERCENT EXCEEDS	5.3		5.4		7.5	
90 PERCENT EXCEEDS	1.7		1.9		1.8	

e--Estimated.

06187950 SODA BUTTE CREEK NEAR LAMAR RANGER STATION, YELLOWSTONE NATIONAL PARK

LOCATION.--Lat 44°52'06", long 110°09'53" (NAD 27), Yellowstone National Park, Hydrologic Unit 10070001, on left bank, 4 mi southeast of Lamar Ranger Station, and at river mile 1.5.

DRAINAGE AREA.--99.0 mi^2.

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 6,630 ft (NGVD 29).

REMARKS.--Records good except those June, which are fair and those for estimated daily discharges, which are poor. No regulation or diversion upstream from station. Several observations of water temperature and specific conductance were made during the year. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	34	16	e16	18	e14	18	75	999	470	115	52
2	31	32	e16	e16	e16	e14	e16	87	990	430	117	50
3	31	31	17	19	e15	e16	e15	109	818	390	105	50
4	31	30	17	20	e16	19	17	95	691	354	152	50
5	29	29	17	21	e17	19	19	105	635	336	100	49
6	28	32	e16	21	e17	20	24	92	795	320	89	55
7	28	38	e15	22	e18	20	26	87	816	304	84	118
8	28	32	e15	e20	e19	e17	25	77	754	289	85	78
9	30	29	e15	e20	e18	e18	25	69	689	263	75	61
10	29	28	e14	e19	e17	19	27	69	565	243	71	55
11	30	30	e14	21	e17	19	27	66	482	219	73	52
12	29	34	e15	22	e16	e17	27	76	439	195	75	50
13	30	34	e16	21	e16	18	31	133	421	183	76	49
14	32	33	18	e20	e16	e16	47	206	423	168	73	47
15	30	32	e16	e18	e15	e15	64	241	462	158	71	46
16	29	32	e16	e17	e15	e15	49	260	542	157	68	45
17	31	32	19	e18	17	e15	41	281	631	197	67	47
18	31	32	20	e19	17	e16	37	397	750	190	65	56
19	30	31	21	e19	17	e17	33	614	685	171	64	48
20	31	26	22	e19	e16	e16	e31	812	582	168	63	46
21	31	33	e21	e20	e15	e17	31	806	586	167	62	45
22	30	31	22	e19	e17	19	33	623	606	160	64	43
23	33	31	e18	e19	e18	21	34	433	586	170	62	42
24	29	30	e16	e20	e16	20	33	351	615	144	60	42
25	24	29	e14	19	e14	18	37	307	624	128	58	42
26	27	27	e14	19	e13	17	45	319	632	124	57	42
27	29	e18	e14	19	e15	17	50	374	601	132	60	42
28	30	e14	e15	e18	e14	16	49	464	553	164	59	42
29	30	16	17	e17	---	15	64	634	532	139	57	42
30	31	16	18	e17	---	16	96	884	511	126	55	43
31	34	---	19	19	---	17	---	1050	---	121	53	---
TOTAL	927	876	523	594	455	533	1071	10196	19015	6780	2335	1529
MEAN	29.90	29.20	16.87	19.16	16.25	17.19	35.70	328.9	633.8	218.7	75.32	50.97
MAX	34	38	22	22	19	21	96	1050	999	470	152	118
MIN	24	14	14	16	13	14	15	66	421	121	53	42
AC-FT	1840	1740	1040	1180	902	1060	2120	20220	37720	13450	4630	3030

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 2002, BY WATER YEAR (WY)

MEAN	44.01	32.16	25.18	25.42	23.55	23.65	62.16	405.7	690.1	290.7	95.79	57.66
MAX	68.8	40.3	31.2	33.3	32.0	32.0	127	580	1251	447	162	92.0
(WY)	1998	1997	1996	1997	2000	1997	1990	1993	1996	1998	1997	1997
MIN	27.8	21.4	16.0	16.7	16.2	17.2	32.3	217	338	106	51.0	36.1
(WY)	1989	1995	1989	1989	2002	2002	1993	1995	2001	1994	2001	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1989 - 2002	
ANNUAL TOTAL	34325		44834			
ANNUAL MEAN	94.04		122.8		148.3	
HIGHEST ANNUAL MEAN					204	1996
LOWEST ANNUAL MEAN					96.5	2001
HIGHEST DAILY MEAN	729	May 29	1050	May 31	2070	Jun 9 1996
LOWEST DAILY MEAN	14	Nov 28	13	Feb 26	12	Feb 4 1989
ANNUAL SEVEN-DAY MINIMUM	15	Dec 6	14	Feb 24	13	Feb 2 1989
MAXIMUM PEAK FLOW			1330	May 31	a2450	Jun 8 1996
MAXIMUM PEAK STAGE			7.02	May 31	7.02	May 31 2002
ANNUAL RUNOFF (AC-FT)	68080		88930		107400	
10 PERCENT EXCEEDS	332		448		484	
50 PERCENT EXCEEDS	31		32		42	
90 PERCENT EXCEEDS	18		16		21	

a--Gage height, 5.61 ft.
e--Estimated.

06188000 LAMAR RIVER NEAR TOWER FALLS RANGER STATION, YELLOWSTONE NATIONAL PARK

LOCATION.--Lat 44°55'40", long 110°23'35" (NAD 27), Yellowstone National Park, Hydrologic Unit 10070001, on left bank 0.5 mi north of the Cooke City highway, 1.6 mi northeast of Tower Falls Ranger Station, 2.7 mi downstream from Slough Creek, and at river mile 0.5.

DRAINAGE AREA.--660 mi^2.

PERIOD OF RECORD.--September 1922, April 1923 to September 1969, May 1985 to September 1986 (seasonal records only), October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 6,000 ft (NGVD 29). Prior to Sept. 16, 1925, nonrecording gage and Sept. 16, 1925 to July 29, 1927, water-stage recorder at same site at datum 1.00 ft higher. July 29, 1927 to Sept. 30, 1969, water-stage recorder at same site and datum. May 1985 to September 1986, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	190	e100	e80	e90	e85	e160	1010	10700	2120	353	185
2	117	168	e110	e90	e85	e85	e140	1170	10100	1880	339	176
3	117	158	e100	e90	e85	e85	e140	1650	7490	1670	375	169
4	117	150	e100	e85	e85	e90	e150	1410	5900	1470	502	168
5	116	143	e100	e85	e85	e90	e160	1590	5460	1360	408	164
6	110	158	e100	e85	e90	e90	243	1210	6360	1240	343	177
7	110	231	e95	e85	e100	e85	307	1050	6450	1150	317	383
8	112	193	e90	e85	e95	e85	298	955	5580	1090	313	369
9	118	144	e80	e80	e90	e90	323	795	4530	1000	318	310
10	120	148	e85	e85	e90	e90	313	776	3660	885	297	232
11	123	163	e90	e85	e90	e90	315	825	3020	814	277	210
12	128	163	e90	e85	e85	e90	293	1210	2850	753	272	197
13	131	150	e95	e85	e90	e90	320	2180	2830	705	264	191
14	139	147	e95	e80	e85	e90	592	3350	3030	676	251	183
15	142	142	e90	e70	e85	e85	1020	3540	3420	639	236	176
16	130	137	e90	e75	e90	e85	714	3460	3930	633	227	171
17	142	135	e90	e85	e90	e85	541	3320	4390	710	220	172
18	153	141	e90	e85	e90	e85	478	4410	4970	724	216	209
19	142	132	e90	e85	e90	e90	400	5970	4700	644	210	208
20	141	113	e90	e90	e90	e85	358	7840	3730	576	204	186
21	142	134	e90	e85	e95	e90	349	7760	3580	592	204	177
22	141	140	e85	e90	e100	e90	348	5360	3660	569	215	170
23	155	136	e70	e95	e110	e90	350	3550	3420	532	209	165
24	151	129	e65	e100	e90	e90	329	2770	3470	519	208	163
25	117	124	e75	e110	e95	e95	376	2470	3340	461	199	162
26	131	e110	e80	e100	e100	e100	576	2680	3230	495	190	161
27	135	e80	e90	e90	e95	e110	717	3130	3030	490	205	160
28	146	e70	e100	e85	e90	e120	664	4120	2690	637	215	162
29	149	e90	e90	e80	---	e140	778	5850	2510	462	213	162
30	153	e100	e90	e85	---	e160	1430	7920	2380	406	202	173
31	172	---	e85	e90	---	e180	---	9740	---	373	188	---
TOTAL	4119	4219	2790	2685	2555	3015	13182	103071	134410	26275	8190	5891
MEAN	132.9	140.6	90.00	86.61	91.25	97.26	439.4	3325	4480	847.6	264.2	196.4
MAX	172	231	110	110	110	180	1430	9740	10700	2120	502	383
MIN	110	70	65	70	85	85	140	776	2380	373	188	160
AC-FT	8170	8370	5530	5330	5070	5980	26150	204400	266600	52120	16240	11680

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 2002, BY WATER YEAR (WY)*

MEAN	212.7	156.7	119.9	106.5	102.2	113.3	465.3	2855	4259	1354	352.0	229.0
MAX	485	330	202	200	171	204	1684	6885	9044	3256	886	518
(WY)	1942	1928	1951	1969	1969	1999	1990	1928	1996	1943	1968	1968
MIN	109	88.1	75.5	71.8	70.0	67.9	106	969	1408	344	173	115
(WY)	1989	1937	1953	1989	1942	1964	1945	1933	1934	1931	1940	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1923 - 2002*	
ANNUAL TOTAL	216798		310402			
ANNUAL MEAN	594.0		850.4		867.0	
HIGHEST ANNUAL MEAN					1531	1997
LOWEST ANNUAL MEAN					525	1934
HIGHEST DAILY MEAN	6850	May 15	10700	Jun 1	15600	Jun 10 1996
LOWEST DAILY MEAN	65	Dec 24	65	Dec 24	45	Mar 23 1964
ANNUAL SEVEN-DAY MINIMUM	79	Dec 20	79	Dec 20	57	Mar 5 1964
MAXIMUM PEAK FLOW			13200	Jun 1	19500	Jun 10 1996
MAXIMUM PEAK STAGE			9.85	Jun 1	12.15	Jun 10 1996
INSTANTANEOUS LOW FLOW					a40	Mar 16 1945
ANNUAL RUNOFF (AC-FT)	430000		615700		628100	
10 PERCENT EXCEEDS	1800		3170		2940	
50 PERCENT EXCEEDS	147		162		183	
90 PERCENT EXCEEDS	90		85		90	

*--During periods of record {September 1922, April 1923 to September 1969, May 1985 to September 1986 (seasonal records only), October 1988 to current year}.
a--Observed, but may have been lower during periods of no gage-height record in winter.
e--Estimated.

06191000 GARDNER RIVER NEAR MAMMOTH, YELLOWSTONE NATIONAL PARK

LOCATION.--Lat 44°59'33", long 110°41'26" (NAD 27), Yellowstone National Park, Hydrologic Unit 10070001, on left bank at Wyoming-Montana state line, 400 ft upstream from highway bridge, 0.5 mi downstream from Hot River (formerly Boiling River), 1.5 mi north of Mammoth, and at river mile 2.9.

DRAINAGE AREA.--202 mi^2.

PERIOD OF RECORD.--October 1938 to September 1972, April l984 to current year. Prior to October 1959, published as Gardiner River near Mammoth.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,623.97 ft (NGVD 29) (levels by National Park Service).

REMARKS.--Records good. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	103	90	81	89	82	92	183	1170	339	154	125
2	90	99	91	79	88	80	90	181	1240	319	155	123
3	90	97	90	96	84	80	88	214	1020	305	165	121
4	90	95	90	87	88	87	89	204	823	290	171	120
5	90	95	85	85	83	87	92	220	734	276	156	120
6	91	100	90	86	84	85	102	209	781	266	149	143
7	92	107	91	86	85	84	108	224	786	259	145	158
8	92	95	89	86	84	82	106	206	733	249	149	139
9	95	92	89	86	84	83	106	186	656	238	151	131
10	94	93	78	80	82	85	114	193	584	228	145	128
11	97	94	84	88	83	85	113	217	531	220	141	125
12	94	95	89	87	82	84	114	272	487	213	140	123
13	97	93	86	87	80	83	126	361	440	207	139	123
14	101	94	96	85	88	84	169	434	427	204	136	121
15	96	94	93	84	79	83	186	434	454	197	134	120
16	95	93	84	66	82	83	153	456	489	199	132	119
17	99	93	96	87	88	83	139	484	530	192	131	120
18	98	96	94	85	86	83	132	543	596	190	130	127
19	95	91	92	81	86	85	125	653	622	189	129	123
20	96	92	93	84	86	82	122	828	519	183	128	121
21	95	97	91	85	82	83	120	879	481	184	130	120
22	94	97	91	85	85	89	122	730	488	186	131	120
23	103	97	88	84	87	89	129	552	485	177	129	118
24	94	94	67	85	85	88	121	468	489	170	130	117
25	90	96	81	85	67	87	125	427	452	167	128	117
26	93	94	87	86	75	87	136	433	442	167	127	117
27	94	89	83	85	95	87	143	469	421	174	128	117
28	97	82	96	85	87	87	140	539	397	188	129	118
29	97	90	98	80	---	86	157	660	374	167	129	117
30	96	93	89	73	---	87	194	836	359	161	129	121
31	105	---	90	89	---	90	---	1050	---	158	126	---
TOTAL	2941	2840	2751	2608	2354	2630	3753	13745	18010	6662	4296	3712
MEAN	94.87	94.67	88.74	84.13	84.07	84.84	125.1	443.4	600.3	214.9	138.6	123.7
MAX	105	107	98	96	95	90	194	1050	1240	339	171	158
MIN	90	82	67	66	67	80	88	181	359	158	126	117
AC-FT	5830	5630	5460	5170	4670	5220	7440	27260	35720	13210	8520	7360

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2002, BY WATER YEAR (WY)*

MEAN	127.5	112.7	102.7	97.31	93.30	93.94	141.1	510.4	714.6	303.4	162.4	137.0
MAX	175	151	135	134	128	128	304	1067	1354	662	236	190
(WY)	1969	1998	1998	1998	1998	1998	1990	1997	1971	1943	1943	1968
MIN	94.9	85.5	79.3	77.6	75.0	75.4	84.1	283	212	133	103	93.4
(WY)	2002	1940	1941	1941	1940	1942	1945	1960	1987	1988	1988	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1939 - 2002*	
ANNUAL TOTAL	51042		66302			
ANNUAL MEAN	139.8		181.6		216.7	
HIGHEST ANNUAL MEAN					324	1997
LOWEST ANNUAL MEAN					138	1988
HIGHEST DAILY MEAN	804	May 16	1240	Jun 2	1830	May 29 1956
LOWEST DAILY MEAN	67	Dec 24	66	Jan 16	53	Dec 15 1988
ANNUAL SEVEN-DAY MINIMUM	84	Dec 21	81	Feb 25	61	Feb 1 1989
MAXIMUM PEAK FLOW			1360	Jun 2	b2080	Jun 4 1956
MAXIMUM PEAK STAGE			4.28	Jun 2	5.03	Jun 2 1997
INSTANTANEOUS LOW FLOW			a46	Jan 16	c35	Mar 28 1942
ANNUAL RUNOFF (AC-FT)	101200		131500		157000	
10 PERCENT EXCEEDS	256		453		512	
50 PERCENT EXCEEDS	100		101		122	
90 PERCENT EXCEEDS	90		84		88	

*--During periods of operation (October 1938 to September 1972, April 1984 to present).
a--Gage height, 1.75 ft.
b--Gage height, 4.46 ft.
c--Gage height, 1.08 ft.

YELLOWSTONE RIVER BASIN

06191500 YELLOWSTONE RIVER AT CORWIN SPRINGS, MT

LOCATION.--Lat 45°06'43", long 110°47'37" (NAD 27), in NW$^1/_4$SE$^1/_4$NW$^1/_4$ sec.30, T.8 S., R.8 E., Park County, Hydrologic Unit 10070002, on left bank 20 ft downstream from county road bridge at Corwin Springs, 1.3 mi upstream from Mol Heron Creek, 7 mi northwest of Gardiner, and at river mile 549.7.

DRAINAGE AREA.--2,623 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1889 to November 1893 (published as "at Horr"), September 1910 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1912. WSP 1509: 1889-94, 1911, 1913, 1916-18, 1920-21, 1925, 1927. WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,079.09 ft (NGVD 29). Aug. 12, 1889, to Nov. 4, 1893, nonrecording gages at site 2 mi upstream at different datums. Sept. 2, 1910, to Apr. 19, 1935, nonrecording gages on bridge at present datum.

REMARKS.--Water-discharge records good. Natural storage in Yellowstone Lake. Diversions for irrigation of about 960 acres of which 40 acres lies downstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	908	962	727	633	658	692	860	2350	18900	8080	3020	1700
2	903	896	700	599	634	672	841	2360	18700	7570	2920	1680
3	890	862	587	622	631	675	799	3070	15500	7160	2940	1630
4	882	831	617	627	624	684	834	2870	12800	6830	3110	1610
5	855	822	643	619	630	695	862	3110	11900	6560	2960	1580
6	853	845	651	618	627	720	939	2710	13600	6280	2780	1620
7	857	990	643	618	627	742	1040	2550	14200	6060	2700	1880
8	861	941	642	637	642	733	1060	2420	13100	5880	2660	1980
9	880	834	648	642	643	697	1080	2120	11500	5680	2630	1830
10	859	816	619	629	630	716	1100	2120	10300	5420	2550	1720
11	859	831	637	640	648	756	1130	2150	9260	5220	2500	1660
12	877	852	680	652	656	772	1100	2650	8850	5040	2430	1630
13	888	848	679	669	653	786	1140	3710	8700	4880	2370	1600
14	905	834	644	664	667	771	1450	5850	8840	4760	2340	1580
15	899	824	597	667	651	751	2300	6150	9470	4640	2290	1550
16	861	813	565	616	648	761	1970	6280	10300	4560	2230	1530
17	881	806	628	630	662	754	1650	5910	11300	4590	2180	1510
18	915	819	660	654	670	745	1510	7480	12300	4570	2140	1570
19	883	796	652	640	693	761	1360	9830	12500	4370	2090	1550
20	876	762	648	636	713	773	1270	13200	10600	4210	2050	1510
21	866	805	645	620	702	788	1230	14000	10300	4110	2030	1470
22	855	840	645	631	705	812	1250	10300	10500	4010	2000	1420
23	889	833	647	612	732	830	1260	7400	10200	3870	1960	1400
24	884	807	589	612	748	825	1240	6240	10400	3770	1930	1380
25	802	801	564	616	698	818	1260	5790	10200	3610	1900	1370
26	803	793	587	627	643	825	1480	5970	9950	3580	1860	1330
27	822	700	602	642	705	820	1720	6580	9670	3550	1830	1330
28	840	661	630	641	722	822	1700	8080	9140	3730	1840	1320
29	844	732	653	619	---	804	1770	10600	8750	3390	1800	1300
30	841	722	660	603	---	822	2600	13800	8510	3220	1780	1350
31	891	---	649	608	---	817	---	16800	---	3110	1740	---
TOTAL	26929	24678	19738	19543	18662	23639	39805	194450	340240	152310	71560	46590
MEAN	868.7	822.6	636.7	630.4	666.5	762.5	1327	6273	11340	4913	2308	1553
MAX	915	990	727	669	748	830	2600	16800	18900	8080	3110	1980
MIN	802	661	564	599	624	672	799	2120	8510	3110	1740	1300
AC-FT	53410	48950	39150	38760	37020	46890	78950	385700	674900	302100	141900	92410

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1889 - 2002, BY WATER YEAR (WY)*

MEAN	1521	1190	964.0	850.7	838.4	920.0	1545	6094	11470	6804	3184	1951
MAX	2429	2058	1424	1361	1340	1376	3542	13590	22540	13260	5688	3207
(WY)	1973	1928	1984	1997	1997	1997	1990	1928	1997	1982	1982	1968
MIN	781	702	551	448	411	412	576	2575	4245	2025	1319	938
(WY)	1989	1989	1937	1937	1937	1937	1937	1975	1934	1919	1919	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1889 - 2002*	
ANNUAL TOTAL	718650		978144			
ANNUAL MEAN	1969		2680		3120	
HIGHEST ANNUAL MEAN					5158	1997
LOWEST ANNUAL MEAN					1903	1934
HIGHEST DAILY MEAN	12400	May 15	18900	Jun 1	32000	Jun 14 1918
LOWEST DAILY MEAN	564	Dec 25	564	Dec 25	380	Feb 5 1989
ANNUAL SEVEN-DAY MINIMUM	609	Dec 22	609	Dec 22	393	Feb 4 1937
MAXIMUM PEAK FLOW			21400	Jun 1	b32200	Jun 10 1996
MAXIMUM PEAK STAGE			8.89	Jun 1	11.50	Jun 14 1918
INSTANTANEOUS LOW FLOW			a531	Dec 25	c343	Feb 2 1989
ANNUAL RUNOFF (AC-FT)	1425000		1940000		2260000	
10 PERCENT EXCEEDS	5230		8590		8500	
50 PERCENT EXCEEDS	915		908		1400	
90 PERCENT EXCEEDS	646		634		760	

*--During periods of operation (August 1889 to November 1893, September 1910 to current year).
a--Gage height, 0.60 ft, result of freezeup.
b--Gage height, 10.92 ft.
c--Gage height, 0.12 ft, result of freezeup.

06191500 YELLOWSTONE RIVER AT CORWIN SPRINGS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1956-57, 1965, 1969-74, 1977-81, 1984-92, January 1999 to 2001.
PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: March 1984 to September 1985.
WATER TEMPERATURE: June 1977 to September 1981, March 1984 to September 1985, May 2001 to current year.
SUSPENDED-SEDIMENT DISCHARGE: May 1985 to September 1987 (seasonal records only), September 1988 to September 1990, October 1990 to current year (seasonal records only).
INSTRUMENTATION.--Temperature recorder installed May 3, 2001.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District Office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1984-85): Maximum daily, 311 microsiemens per centimeter (µS/cm) at 25.0°C, Feb. 5, 1985; minimum daily, 71 µS/cm at 25.0°C, June 21, 22, 1984.
WATER TEMPERATURE (water years 1977-81, 1984-85, 2001 to current year): Maximum, 21.5°C, July 22, 23, 1977, Aug. 4-6, 8, 2001; minimum, 0.0°C on many days during winters most years.
SEDIMENT CONCENTRATION (water years 1985-87, 1988-92): Maximum daily mean, 1,330 mg/L, May 19, 1991; minimum daily mean, 1 mg/L on several days in September 1987.
SEDIMENT LOAD (water years 1985-87, 1988-92): Maximum daily, 50,700 tons, May 25, 1991; minimum daily, 2.7 tons, Sept. 29, 1987.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum 21.0°C, July 16, minimum, 0.0°C, many days November through March.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.5	12.5	14.0	9.5	8.0	8.5	2.5	1.0	2.0	1.5	0.0	1.0
2	15.0	12.0	13.5	9.0	7.0	8.0	3.0	2.0	2.5	0.5	0.0	0.0
3	14.5	12.0	13.0	8.5	6.5	7.5	3.5	2.5	3.0	2.0	0.5	1.0
4	12.0	9.0	11.0	8.0	5.5	6.5	3.0	2.0	2.5	2.5	1.0	1.5
5	11.5	8.0	9.5	7.5	5.0	6.5	2.5	1.5	2.0	3.0	1.5	2.0
6	10.0	7.5	8.5	7.0	5.5	6.5	2.5	1.5	2.0	3.0	2.0	2.5
7	10.0	8.0	9.0	8.0	6.0	7.0	3.0	1.5	2.5	5.0	3.0	4.0
8	11.0	9.5	10.0	6.0	4.5	5.5	2.0	1.0	1.5	5.0	4.0	4.5
9	10.5	9.5	10.0	5.0	3.5	4.0	2.0	0.5	1.0	5.0	4.0	4.5
10	11.0	8.5	9.5	5.0	3.0	4.0	1.0	0.0	0.5	4.0	2.5	3.0
11	9.0	7.0	8.0	5.5	3.5	4.5	1.0	0.0	0.5	3.5	2.0	2.5
12	8.0	6.5	7.0	6.0	4.0	5.0	1.0	0.0	0.5	3.5	2.0	2.5
13	8.5	6.0	7.0	6.0	4.5	5.5	0.5	0.0	0.0	3.5	2.5	3.0
14	7.5	6.5	7.0	7.5	6.0	6.5	2.5	0.5	2.0	2.5	1.5	2.0
15	9.0	6.0	7.5	8.0	6.0	7.0	3.0	0.5	2.0	2.0	1.0	1.5
16	8.5	5.5	7.0	8.0	6.0	7.0	0.5	0.0	0.5	1.0	0.0	0.5
17	8.5	7.0	7.5	7.0	6.0	6.5	2.0	0.5	1.5	1.0	0.0	0.5
18	8.5	6.5	7.5	6.5	5.0	5.5	2.5	1.5	2.0	1.0	0.0	0.5
19	8.5	7.5	8.0	5.5	4.5	5.0	3.5	2.0	2.5	1.0	0.0	0.5
20	9.5	7.5	8.0	5.0	3.5	4.5	2.5	2.0	2.0	1.0	0.0	0.5
21	9.5	6.5	8.0	5.5	5.0	5.0	2.5	1.5	2.0	2.5	0.5	1.5
22	9.0	7.0	8.0	6.5	4.5	5.5	3.0	1.5	2.0	3.0	1.0	1.5
23	9.0	7.0	8.0	5.5	5.0	5.0	2.0	0.5	1.0	2.0	0.5	1.0
24	7.5	5.5	6.5	5.0	4.0	4.5	0.5	0.0	0.0	1.0	0.0	0.5
25	6.0	4.0	5.0	4.0	3.0	3.5	0.0	0.0	0.0	2.0	0.5	1.0
26	6.5	3.5	5.0	3.5	2.0	3.0	0.5	0.0	0.0	3.0	1.5	2.5
27	7.0	4.0	5.5	2.5	1.5	2.0	0.0	0.0	0.0	3.5	2.5	3.0
28	7.5	6.0	7.0	1.5	0.0	0.5	1.0	0.0	0.0	3.0	1.5	2.0
29	9.5	7.0	8.5	2.5	0.5	1.5	1.0	0.0	0.5	2.0	0.0	1.0
30	10.0	8.5	9.0	3.0	1.5	2.5	1.5	0.0	0.5	0.0	0.0	0.0
31	10.0	9.0	9.0	---	---	---	1.0	0.5	1.0	1.0	0.0	0.5
MONTH	15.5	3.5	8.5	9.5	0.0	5.0	3.5	0.0	1.5	5.0	0.0	1.5

YELLOWSTONE RIVER BASIN

06191500 YELLOWSTONE RIVER AT CORWIN SPRINGS, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.0	0.0	0.5	2.0	0.0	0.5	7.5	3.5	6.0	8.0	5.0	6.5
2	2.0	0.0	1.0	1.5	0.0	0.5	6.0	2.0	4.0	10.0	6.5	8.0
3	1.0	0.0	0.5	1.0	0.0	0.5	7.0	2.5	4.5	9.0	6.5	8.0
4	2.5	0.0	1.0	2.0	0.0	0.5	9.0	4.0	6.0	8.0	6.0	7.0
5	1.5	0.0	0.5	4.0	0.5	2.0	9.5	5.5	7.5	8.0	6.0	7.5
6	1.5	0.0	0.5	4.0	1.5	2.5	9.5	6.5	8.0	7.0	6.0	6.5
7	2.5	0.5	1.5	3.5	0.5	2.5	10.0	7.0	8.0	8.0	5.5	6.5
8	3.5	1.5	2.5	3.0	0.0	1.0	10.5	7.0	8.5	6.5	4.0	5.5
9	4.5	2.0	3.0	2.5	0.5	1.5	8.5	7.5	8.0	6.0	3.5	4.5
10	2.5	0.5	1.5	4.0	1.0	2.5	9.5	7.0	8.0	9.0	5.0	7.0
11	3.0	0.5	1.5	5.0	3.0	4.0	9.5	7.0	8.5	9.5	6.5	8.0
12	3.5	0.5	2.0	7.0	4.0	5.0	10.5	7.0	9.0	10.5	8.0	9.0
13	1.5	0.0	0.5	5.5	3.5	4.5	11.0	8.0	9.5	9.5	8.5	9.0
14	3.5	0.5	1.5	5.5	2.0	3.5	11.0	9.0	9.5	9.5	7.0	7.5
15	2.0	0.0	1.0	5.0	1.5	3.0	9.0	4.0	6.5	7.5	5.5	6.5
16	2.0	0.0	1.0	3.5	1.0	2.5	6.0	3.5	4.5	8.0	6.5	7.0
17	4.0	1.0	2.5	3.0	1.0	2.0	7.0	4.5	5.5	8.0	6.5	7.0
18	4.5	3.0	4.0	3.5	0.5	2.0	7.0	5.0	5.5	9.0	6.5	7.5
19	5.0	3.0	4.0	4.0	1.5	2.5	7.0	4.5	5.5	10.5	6.5	8.0
20	6.0	3.0	4.0	3.0	1.0	2.0	6.0	4.0	5.0	10.5	5.5	7.5
21	3.5	1.5	3.0	4.5	0.0	2.0	7.0	3.5	5.5	9.5	5.5	7.0
22	4.0	2.5	3.0	7.0	2.0	4.5	10.0	5.5	7.5	7.0	4.5	5.0
23	5.0	3.5	4.0	6.5	5.0	5.5	9.0	6.0	7.5	6.0	4.5	5.0
24	3.5	0.0	2.0	6.0	4.0	5.0	8.5	5.0	6.5	7.5	6.0	7.0
25	1.0	0.0	0.0	7.5	4.5	6.0	8.0	5.0	6.5	8.5	7.5	8.0
26	0.0	0.0	0.0	7.5	5.5	6.5	9.0	6.0	7.5	9.0	8.0	8.5
27	1.5	0.0	0.5	7.0	5.0	5.5	9.0	6.5	7.5	9.5	8.0	8.5
28	2.0	0.0	0.5	6.0	4.5	5.0	10.0	6.0	8.0	10.0	8.0	9.0
29	---	---	---	8.0	4.0	5.5	11.0	7.5	9.0	10.5	7.5	8.5
30	---	---	---	8.0	5.0	6.0	9.0	6.0	8.0	10.5	7.5	8.5
31	---	---	---	9.0	4.5	6.5	---	---	---	11.5	7.0	9.0
MONTH	6.0	0.0	1.5	9.0	0.0	3.5	11.0	2.0	7.0	11.5	3.5	7.5

		JUNE			JULY			AUGUST			SEPTEMBER	
1	11.5	7.5	9.0	15.0	14.5	15.0	18.5	16.0	17.5	17.5	15.0	16.0
2	10.5	7.5	8.0	15.0	14.5	15.0	17.0	16.0	16.5	18.0	15.0	16.5
3	9.0	6.5	7.5	15.5	14.0	14.5	17.0	15.5	16.5	18.5	15.0	17.0
4	9.5	6.5	8.0	16.5	14.0	15.0	19.0	16.0	17.5	18.5	15.5	17.0
5	11.0	8.0	9.0	16.5	16.0	16.5	19.5	17.0	18.0	18.0	15.5	16.5
6	11.0	8.5	10.0	17.0	16.0	16.5	19.5	17.0	18.0	16.0	15.0	15.5
7	11.0	8.0	9.0	17.5	16.5	17.0	20.0	17.5	18.5	16.0	14.5	15.0
8	10.5	7.5	9.0	18.5	16.5	17.5	18.0	15.5	17.0	16.0	14.5	15.0
9	9.0	6.5	7.5	18.0	17.0	17.5	16.0	14.0	15.0	15.5	13.0	14.0
10	7.0	6.0	6.5	18.0	17.0	17.5	18.0	14.5	16.0	16.0	12.5	14.5
11	8.0	6.0	7.0	18.5	17.0	18.0	17.5	16.0	16.5	16.5	13.5	15.0
12	9.5	8.0	8.5	19.5	18.0	18.5	17.5	15.5	16.5	17.0	14.5	15.5
13	11.0	9.0	9.5	20.0	19.0	19.5	18.0	14.5	16.0	16.5	14.0	15.0
14	12.0	10.5	11.0	19.5	18.5	19.0	19.0	15.5	17.0	16.5	13.5	15.0
15	12.0	11.0	11.5	20.5	19.0	19.5	19.0	16.0	17.5	16.5	13.5	15.0
16	12.5	10.5	11.5	21.0	20.0	20.5	18.5	16.0	17.0	17.0	14.0	15.5
17	12.5	10.5	11.5	20.5	19.5	20.0	18.0	15.5	16.5	15.5	14.0	15.0
18	12.0	10.0	10.5	20.5	19.5	20.0	17.5	15.0	16.0	15.5	13.0	14.0
19	10.0	8.0	9.0	20.5	19.5	19.5	18.0	15.0	16.5	15.0	12.0	13.5
20	11.5	8.5	9.5	20.0	18.5	19.0	18.0	15.0	16.5	14.5	12.5	13.5
21	12.5	10.5	11.0	19.5	18.5	19.0	17.5	15.5	16.0	13.5	11.5	12.5
22	12.5	10.5	11.5	20.0	19.0	19.5	17.5	14.5	16.0	12.5	10.0	11.0
23	13.0	11.0	12.0	20.5	18.5	19.5	16.0	14.5	15.0	13.5	10.0	11.5
24	13.0	11.0	12.0	20.0	18.5	19.0	16.5	14.0	15.5	13.5	11.5	12.5
25	14.5	12.0	13.0	20.5	18.5	19.5	17.5	14.5	16.0	13.5	11.0	12.0
26	15.0	13.0	13.5	18.5	17.0	18.0	17.0	15.0	16.0	13.0	10.5	12.0
27	15.0	13.5	14.0	17.5	16.0	16.5	16.5	15.0	16.0	11.5	10.5	11.0
28	15.5	13.5	14.5	17.0	15.5	16.5	17.0	14.5	15.5	13.0	10.0	11.5
29	16.0	15.0	15.5	19.0	16.5	17.5	16.5	14.5	15.5	13.0	10.5	12.0
30	15.5	14.5	15.0	20.0	17.5	18.5	17.5	14.0	15.5	12.5	11.0	12.0
31	---	---	---	19.5	17.0	18.5	18.0	15.5	16.5	---	---	---
MONTH	16.0	6.0	10.5	21.0	14.0	18.0	20.0	14.0	16.5	18.5	10.0	14.0

YELLOWSTONE RIVER BASIN

06192500 YELLOWSTONE RIVER NEAR LIVINGSTON, MT

LOCATION.--Lat 45°35'50", long 110°33'55" (NAD 27), in NE$^1/_4$NW$^1/_4$NW$^1/_4$ sec. 12, T.3 S., R.9 E., Park County, Hydrologic Unit 10070002, on right bank 50 ft downstream from bridge on Montana Secondary Highway 540, 2 mi downstream from Suce Creek, 4 mi south of Livingston, and at river mile 501.4.

DRAINAGE AREA.--3,551 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1897 to December 1905, August 1928 to September 1932, October 1937 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1899. WSP 1509: 1902. WSP 1629: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,542.49 ft (NGVD 29). May 2, 1897, to Dec. 31, 1905, nonrecording gage on highway bridge at different datum. Aug. 23, 1928, to Sept. 30, 1932, and Mar. 14, 1938, to Feb. 3, 1951, nonrecording gage on highway bridge at present datum.

REMARKS.--Water-discharge records good except those from December through March, which are poor. Diversions for irrigation of about 24,200 acres of which about 2,000 acres is downstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1190	1360	1050	e950	e900	e1000	1120	3130	22300	9580	3470	1910
2	1180	1370	1090	e900	e900	e950	1130	2780	24100	8890	3380	1880
3	1170	1240	1030	e850	e900	e950	1080	3280	21800	8380	3340	1850
4	1150	1200	952	e900	e900	e1000	1080	3570	17900	8000	3440	1820
5	1150	1170	969	905	902	e1050	1110	3510	15900	7630	3460	1780
6	1140	1170	999	e900	887	e1100	1160	3490	17100	7270	3190	1810
7	1180	1220	992	e900	935	e1050	1270	3230	18400	6960	3060	1970
8	1160	1390	918	e950	973	e1000	1390	3110	17300	6730	2990	2270
9	1220	1230	919	e950	952	e1050	1380	2770	15400	6460	2970	2110
10	1250	1170	914	e950	939	e1100	1430	2600	13600	6170	2880	1990
11	1210	1160	859	961	912	1180	1470	2570	12100	5890	2800	1910
12	1230	1180	888	976	967	1140	1470	2860	11200	5680	2740	1860
13	1280	1200	e900	983	894	1110	1470	3790	10800	5460	2670	1820
14	1310	1180	927	991	967	1080	1630	5660	10700	5320	2600	1780
15	1340	1170	e900	982	943	1050	2520	6530	11400	5150	2550	1740
16	1260	1160	e850	949	930	1020	2850	6750	12400	5050	2500	1740
17	1230	1150	e800	e900	976	1030	2350	6480	13600	5030	2450	1730
18	1270	1140	e850	e900	978	1020	2070	7410	14500	5050	2420	1820
19	1280	1140	e950	e950	969	1020	1920	9450	15800	4970	2350	1850
20	1280	1120	e950	e950	980	1040	1740	13500	13200	4800	2290	1800
21	1280	1100	e950	e900	989	982	1650	15800	12400	4680	2240	1770
22	1240	1180	e950	e900	979	1140	1640	13100	12600	4520	2210	1720
23	1260	1190	964	e900	979	1090	1630	9500	12300	4410	2170	1690
24	1320	1180	e900	e900	e1000	1080	1650	7800	12500	4280	2140	1670
25	1160	1150	e850	e950	e1050	1080	1580	7050	12400	4110	2100	1700
26	1070	1140	e800	e950	e1000	1090	1680	6880	12000	4060	2060	1740
27	1200	1130	e850	e950	e950	1090	1990	7340	11700	4080	2040	1670
28	1220	1010	e900	e950	e1000	1090	2180	8550	11100	4120	2030	1700
29	1250	1020	e950	e900	---	1100	2130	11100	10500	3970	2020	1700
30	1280	1110	e1000	e850	---	1090	2630	15000	10100	3700	2000	1720
31	1260	---	e1000	e850	---	1110	---	19300	---	3560	1980	---
TOTAL	38020	35330	28821	28697	26651	32882	50400	217890	427100	173960	80540	54520
MEAN	1226	1178	929.7	925.7	951.8	1061	1680	7029	14240	5612	2598	1817
MAX	1340	1390	1090	991	1050	1180	2850	19300	24100	9580	3470	2270
MIN	1070	1010	800	850	887	950	1080	2570	10100	3560	1980	1670
AC-FT	75410	70080	57170	56920	52860	65220	99970	432200	847200	345000	159800	108100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1897 - 2002, BY WATER YEAR (WY)*

MEAN	2025	1687	1388	1223	1219	1299	1961	6998	13400	7725	3648	2418
MAX	3115	2599	1984	1757	1800	1901	3852	13070	27140	14990	6000	3806
(WY)	1973	1984	1984	1984	1898	1898	1990	1897	1997	1975	1899	1968
MIN	1131	1099	930	727	763	899	1174	2751	4999	2748	1713	1281
(WY)	1989	1932	2002	1989	1989	1964	1961	1905	1987	1931	1988	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1897 - 2002*	
ANNUAL TOTAL	859779		1194811			
ANNUAL MEAN	2356		3273		3748	
HIGHEST ANNUAL MEAN					6119	1997
LOWEST ANNUAL MEAN					2395	2001
HIGHEST DAILY MEAN	13800	May 16	24100	Jun 2	36000	Jun 6 1997
LOWEST DAILY MEAN	750	Feb 9	800	Dec 17	540	Feb 4 1989
ANNUAL SEVEN-DAY MINIMUM	846	Feb 8	874	Dec 12	571	Feb 1 1989
MAXIMUM PEAK FLOW			25900	Jun 2	38000	Jun 6 1997
MAXIMUM PEAK STAGE			8.85	Jun 2	10.72	Jun 6 1997
ANNUAL RUNOFF (AC-FT)	1705000		2370000		2715000	
10 PERCENT EXCEEDS	6030		9790		9830	
50 PERCENT EXCEEDS	1220		1280		1890	
90 PERCENT EXCEEDS	916		916		1130	

*--During periods operation (May 1897 to December 1905, August 1928 to September 1932, October 1937 to current year).
e--Estimated.

06192500 YELLOWSTONE RIVER NEAR LIVINGSTON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965, 1970-94, May 1999 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: December 1999 to current year.
SUSPENDED-SEDIMENT DISCHARGE: May 1985 to September 1986.

INSTRUMENTATION.--Temperature recorder installed Nov. 23, 1999.

REMARKS.--Missing temperature data for July 7 due to equipment problems. Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 22.0°C, Aug. 1, 2, 2000; minimum, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATION (water years 1985-86): Maximum daily mean, 790 mg/L, May 28, 1986; minimum daily mean, 4 mg/L on several days in August 1985 and September 1986.
SEDIMENT LOAD: Maximum daily, 33,700 tons, June 2, 1986; minimum daily, 28 tons on several days in August and September 1985 and 1986.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 21.5°C, several days in July; minimum, 0.0°C on many days December through March.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001									
24...	0830	1310	8.0	281	1.5	5.5	.14	.183	.006
APR 2002									
03...	1645	1070	8.7	277	6.0	6.5	.22	.191	.005
MAY									
21...	1545	17000	7.8	76	18.0	9.0	1.3	.070	.003
JUL									
30...	1745	3670	8.5	166	27.0	20.0	.14	.044	.003

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001					
24...	.007	.016	81	5	17.7
APR 2002					
03...	E.005	.029	74	11	31.8
MAY					
21...	.030	1.18	69	1090	49900
JUL					
30...	.014	.046	90	23	228

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT 2001											
24...	0830	86	22.5	7.28	5.16	1	21.0	94	11.6	.8	24.6
MAY 2002											
21...	1545	28	7.14	2.37	1.25	.3	3.87	32	1.83	.2	14.2

06192500 YELLOWSTONE RIVER NEAR LIVINGSTON, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
OCT 2001											
24...	34.0	.25	652	184	30	<.1	<.8	.6	<1	<1	<1
MAY 2002											
21...	4.9	.08	2530	55	18	E.1	12.7	30.5	12	30	43

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.0	11.5	13.5	8.5	7.5	8.0	0.5	0.0	0.0	0.0	0.0	0.0
2	14.5	11.5	13.0	8.5	7.0	8.0	1.5	0.5	1.0	0.0	0.0	0.0
3	13.5	11.0	12.5	8.5	6.5	7.5	2.5	1.5	2.0	0.0	0.0	0.0
4	12.0	8.5	10.0	8.0	6.0	7.0	2.0	0.5	1.0	0.5	0.0	0.0
5	9.5	6.0	8.0	7.5	5.5	7.0	1.5	0.0	0.5	0.5	0.5	0.5
6	10.0	6.5	8.5	7.5	5.5	6.0	1.0	0.0	0.5	1.5	0.5	1.0
7	10.0	8.0	9.0	7.0	5.5	6.0	1.5	0.5	1.0	2.0	0.5	1.0
8	10.0	9.0	9.5	5.5	4.0	5.0	1.0	0.0	0.5	1.5	1.0	1.0
9	9.5	8.0	8.5	5.5	3.5	4.5	1.5	0.0	0.5	1.5	0.5	1.0
10	10.0	8.0	9.0	5.5	3.0	4.5	1.5	0.0	0.5	2.0	0.5	1.0
11	9.0	6.5	7.5	5.0	3.0	4.5	0.5	0.0	0.0	2.0	1.5	1.5
12	6.5	6.0	6.0	6.5	4.0	5.5	0.0	0.0	0.0	3.0	1.5	2.0
13	8.0	6.0	7.0	6.5	5.0	5.5	0.0	0.0	0.0	2.5	1.5	2.0
14	8.0	6.0	7.0	6.5	5.5	6.0	0.0	0.0	0.0	2.0	0.5	1.5
15	8.0	5.5	6.5	7.0	5.5	6.5	0.5	0.0	0.0	1.0	0.0	0.5
16	8.0	5.5	7.0	7.5	6.0	6.5	0.0	0.0	0.0	0.5	0.0	0.0
17	8.5	7.5	8.0	7.5	6.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0
18	7.5	6.0	6.5	6.5	4.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
19	7.5	6.5	6.5	4.0	2.5	3.5	0.5	0.0	0.0	0.0	0.0	0.0
20	9.0	7.5	8.0	4.5	3.0	4.0	0.5	0.0	0.5	0.0	0.0	0.0
21	8.5	6.5	7.5	5.5	4.5	5.0	1.0	0.0	0.5	0.0	0.0	0.0
22	8.0	7.0	7.5	6.0	4.5	5.0	1.5	0.5	1.0	0.0	0.0	0.0
23	7.5	6.0	7.0	5.5	5.0	5.0	0.5	0.0	0.0	0.0	0.0	0.0
24	6.0	5.5	5.5	5.0	4.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0
25	5.5	4.0	4.5	4.0	2.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
26	6.5	3.5	5.0	2.5	1.5	2.0	0.0	0.0	0.0	0.5	0.0	0.0
27	8.0	5.0	6.5	2.0	1.5	1.5	0.0	0.0	0.0	0.5	0.0	0.0
28	7.5	6.5	7.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	8.0	6.0	7.0	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
30	9.0	7.0	8.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
31	9.0	8.0	8.5	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0
MONTH	15.0	3.5	8.0	8.5	0.0	5.0	2.5	0.0	0.5	3.0	0.0	0.5

YELLOWSTONE RIVER BASIN

06192500 YELLOWSTONE RIVER NEAR LIVINGSTON, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

	FEBRUARY			MARCH			APRIL			MAY		
1	0.0	0.0	0.0	0.0	0.0	0.0	7.5	2.0	5.5	9.5	6.5	8.5
2	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.5	2.5	11.0	6.5	9.0
3	1.0	0.0	0.5	0.0	0.0	0.0	6.5	1.5	4.0	10.0	8.5	9.0
4	1.0	0.0	0.0	0.0	0.0	0.0	8.5	3.5	6.0	10.0	7.0	8.5
5	1.0	0.0	0.0	0.5	0.0	0.0	10.0	5.0	8.0	9.5	7.5	8.5
6	1.0	0.0	0.5	0.0	0.0	0.0	10.5	8.0	9.5	8.5	6.0	7.5
7	1.0	0.0	0.5	0.0	0.0	0.0	9.0	8.0	8.5	6.0	4.5	5.5
8	1.0	0.5	0.5	0.0	0.0	0.0	11.5	7.5	9.0	10.0	4.5	6.5
9	2.0	0.0	0.5	0.0	0.0	0.0	10.5	8.0	9.0	9.0	5.5	7.5
10	0.5	0.0	0.5	1.0	0.0	0.0	10.0	7.5	8.5	10.0	6.0	7.5
11	1.0	0.0	0.5	1.5	0.5	0.5	9.5	7.5	8.5	12.0	6.5	9.0
12	1.5	0.0	0.5	1.5	0.5	0.5	10.5	8.0	9.0	13.0	9.0	11.0
13	0.0	0.0	0.0	2.0	0.5	1.0	11.0	8.5	10.0	13.0	9.5	11.5
14	1.5	0.0	0.5	4.5	2.0	3.0	10.5	9.5	10.0	12.0	9.5	11.0
15	0.5	0.0	0.0	5.5	2.0	3.5	10.0	5.5	8.0	10.0	6.5	8.5
16	1.0	0.0	0.5	3.5	1.0	2.5	8.0	4.5	6.0	10.5	6.0	8.0
17	1.5	0.5	1.0	2.0	0.0	0.5	7.5	4.5	6.0	10.5	6.5	8.5
18	2.0	0.5	1.5	2.5	0.0	1.0	6.5	5.0	5.5	11.5	7.0	9.0
19	2.5	1.0	2.0	1.5	0.0	0.5	7.5	4.0	5.5	12.0	7.5	10.0
20	4.0	2.0	2.5	1.5	0.0	0.0	7.0	4.0	5.5	11.0	8.0	9.5
21	3.5	1.5	2.5	0.0	0.0	0.0	7.5	4.5	6.0	10.0	7.0	8.0
22	3.5	2.0	3.0	4.5	0.0	1.5	10.5	6.0	8.0	7.0	5.0	6.5
23	3.0	0.5	2.0	5.5	3.5	4.5	9.5	6.0	7.5	7.0	4.0	5.5
24	0.5	0.0	0.0	5.0	2.5	3.5	10.0	5.5	7.0	10.0	5.5	7.5
25	1.0	0.0	0.0	7.5	3.0	5.0	9.0	5.5	7.0	10.5	7.0	9.0
26	1.0	0.0	0.0	9.5	6.0	7.5	9.5	5.5	7.5	10.5	8.0	9.5
27	0.0	0.0	0.0	7.0	5.0	6.0	8.5	6.5	7.5	11.0	8.5	10.0
28	0.0	0.0	0.0	6.5	5.0	6.0	11.0	6.0	8.0	11.5	8.5	10.0
29	---	---	---	8.0	4.5	6.5	12.5	7.5	10.0	12.0	8.5	10.0
30	---	---	---	7.5	5.5	6.5	11.0	8.0	9.5	11.0	8.5	9.5
31	---	---	---	8.0	4.5	6.5	---	---	---	10.5	8.0	9.5
MONTH	4.0	0.0	0.5	9.5	0.0	2.0	12.5	0.5	7.5	13.0	4.0	8.5

	JUNE			JULY			AUGUST			SEPTEMBER		
1	11.0	9.0	10.0	18.0	14.0	16.0	19.0	15.5	17.5	17.5	14.5	16.0
2	9.5	7.5	9.0	18.0	13.5	16.0	17.5	15.5	16.5	19.0	15.0	17.0
3	8.5	7.5	8.0	17.0	14.0	15.5	17.0	15.0	16.0	19.0	15.5	17.0
4	10.0	7.5	8.5	17.5	14.0	16.0	19.5	15.5	17.0	18.5	15.0	17.0
5	11.5	7.5	9.5	19.0	15.0	16.5	20.5	16.5	18.5	18.0	15.0	16.5
6	12.5	9.0	10.5	18.0	17.0	17.5	19.5	16.5	18.5	16.0	14.5	15.0
7	11.5	9.0	10.0	---	---	---	20.0	17.0	18.5	15.0	14.0	14.5
8	11.0	8.5	9.5	20.0	16.5	18.5	19.0	16.5	17.5	16.0	13.0	14.5
9	9.0	7.5	8.5	20.0	16.0	18.0	17.5	14.5	16.0	16.5	13.0	14.5
10	8.0	6.0	7.0	19.5	16.0	18.0	18.5	14.0	16.0	16.5	12.5	14.5
11	8.5	6.5	7.5	20.5	16.5	18.5	17.5	15.0	16.5	16.5	13.0	15.0
12	11.0	7.0	9.0	21.0	17.0	19.0	17.5	14.5	16.0	17.0	13.5	15.0
13	12.5	8.5	10.5	21.5	18.0	20.0	19.0	14.5	16.5	17.0	13.5	15.0
14	14.5	9.5	12.0	21.0	18.5	20.0	19.0	15.5	17.0	17.0	13.0	15.0
15	15.0	10.5	12.5	21.0	18.0	19.5	19.5	15.0	17.0	16.5	13.5	15.0
16	14.5	11.0	12.5	21.0	18.5	20.0	18.5	15.5	17.0	16.0	13.5	15.0
17	14.0	11.0	12.0	21.5	19.0	20.5	18.0	14.0	16.0	15.0	13.5	14.0
18	12.5	10.5	11.5	21.5	19.0	20.5	18.5	14.5	16.5	14.0	12.5	13.0
19	11.5	9.0	10.0	21.0	18.5	20.0	18.5	14.5	16.5	15.5	12.5	14.0
20	12.5	8.5	10.5	20.0	18.5	19.5	17.5	14.5	16.0	14.5	12.0	13.0
21	13.5	9.0	11.5	21.0	18.0	19.5	17.5	14.5	16.0	13.0	10.5	12.0
22	13.5	11.0	12.0	20.0	17.5	19.0	17.5	14.5	16.0	13.5	9.5	11.5
23	14.0	11.0	12.0	19.5	17.5	19.0	16.5	14.0	15.5	13.5	9.5	11.5
24	14.0	11.5	13.0	21.5	18.0	19.5	17.0	13.0	15.0	13.5	11.0	12.0
25	16.0	11.5	13.5	20.5	18.5	19.5	18.0	13.5	15.5	12.5	10.0	11.5
26	16.5	12.5	14.5	18.5	17.0	18.0	17.0	14.5	16.0	12.5	9.5	11.0
27	16.5	13.0	15.0	18.0	16.0	17.0	16.0	14.5	15.5	12.0	9.5	10.5
28	16.0	13.5	15.0	18.5	15.0	16.5	17.0	14.0	15.5	12.5	9.0	10.5
29	16.5	13.5	15.0	19.5	16.0	18.0	17.0	14.0	16.0	12.5	10.0	11.5
30	17.5	14.0	16.0	20.0	17.0	18.5	18.0	14.0	16.0	12.0	10.0	11.0
31	---	---	---	20.0	17.0	18.5	17.5	15.0	16.5	---	---	---
MONTH	17.5	6.0	11.0	---	---	---	20.5	13.0	16.5	19.0	9.0	14.0

YELLOWSTONE RIVER BASIN

06195600 SHIELDS RIVER NEAR LIVINGSTON, MT

LOCATION.--Lat 45°44'18", long 110°28'45" (NAD 27), in NE$^1/_4$SE$^1/_4$NW$^1/_4$ sec.22, T.1 S., R.10 E., Park County, Hydrologic Unit 10070003, on right bank 0.2 mi downstream from private road bridge, 6.5 mi northeast of Livingston, and at river mile 2.0.
DRAINAGE AREA.--852 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to current year.
GAGE.--Water-stage recorder. Elevation of gage is 4,420 ft (NGVD 29). Oct. 1, 1978, to Aug. 12, 1980, water-stage recorder at site 0.2 mi upstream at datum 7.89 ft higher.
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 32,000 acres upstream from station. National Weather Service satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	93	85	e68	e76	e68	102	157	722	279	71	86
2	45	94	87	e72	e76	e66	67	155	1090	272	76	84
3	46	91	88	e78	75	70	77	156	1290	254	78	82
4	47	90	80	e80	81	67	88	170	1030	273	86	79
5	51	89	76	e78	78	70	99	174	773	268	87	80
6	51	88	90	e82	79	70	127	196	668	243	84	90
7	50	87	85	e85	81	e66	157	212	640	232	82	115
8	51	84	86	82	80	e68	151	201	614	235	90	117
9	55	83	89	e76	77	e70	142	187	645	218	113	111
10	55	84	79	e74	67	73	148	205	704	199	109	98
11	62	83	e75	76	74	71	185	205	671	188	95	95
12	70	84	e80	77	62	e75	168	198	576	172	89	96
13	70	86	e85	74	69	e75	164	190	534	153	86	90
14	72	86	e78	72	72	74	202	206	483	136	79	89
15	74	86	e80	e70	77	68	321	256	467	123	74	86
16	76	85	e82	e70	76	66	267	268	488	118	72	83
17	75	83	e80	e72	70	66	214	237	577	118	75	82
18	73	85	e80	e74	69	63	189	237	645	104	76	87
19	75	79	e80	e76	65	70	168	334	719	101	76	91
20	89	77	e80	79	67	64	168	669	563	103	76	93
21	90	89	e80	e70	61	59	160	1030	456	107	74	89
22	87	89	e75	e68	69	76	168	1260	441	104	72	88
23	89	88	e72	e70	74	78	186	1080	510	99	72	89
24	89	88	e75	e75	53	77	175	764	490	87	78	92
25	85	89	e75	82	e50	70	157	602	439	84	77	97
26	85	89	e75	79	e65	90	152	537	402	84	78	99
27	84	82	e75	75	e72	136	150	536	368	89	86	100
28	85	72	e75	71	e70	126	146	554	350	100	98	106
29	85	93	e75	e70	---	101	139	587	322	99	97	109
30	88	88	e70	e72	---	95	142	702	308	84	92	110
31	90	---	e65	e74	---	97	---	774	---	73	86	---
TOTAL	2189	2584	2457	2321	1985	2385	4779	13039	17985	4799	2584	2813
MEAN	70.61	86.13	79.26	74.87	70.89	76.94	159.3	420.6	599.5	154.8	83.35	93.77
MAX	90	94	90	85	81	136	321	1260	1290	279	113	117
MIN	45	72	65	68	50	59	67	155	308	73	71	79
AC-FT	4340	5130	4870	4600	3940	4730	9480	25860	35670	9520	5130	5580

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 2002, BY WATER YEAR (WY)

MEAN	150.2	133.8	109.0	103.0	124.8	177.3	369.9	815.1	771.8	323.0	134.1	133.5
MAX	275	195	145	225	363	461	627	1962	2260	1135	677	388
(WY)	1979	1984	1990	1984	1996	1997	1996	1997	1997	1993	1993	1993
MIN	51.5	73.8	73.6	55.5	59.8	76.9	145	198	152	53.6	25.6	31.2
(WY)	1989	1989	1988	1988	1988	2002	2000	1987	1985	1988	1988	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1979 - 2002	
ANNUAL TOTAL	40504		59920			
ANNUAL MEAN	111.0		164.2		279.2	
HIGHEST ANNUAL MEAN					610	1997
LOWEST ANNUAL MEAN					114	2000
HIGHEST DAILY MEAN	699	Jun 19	1290	Jun 3	4760	Jun 20 1979
LOWEST DAILY MEAN	23	Sep 5	45	Oct 1	20	Aug 21 1988
ANNUAL SEVEN-DAY MINIMUM	28	Aug 31	48	Oct 1	22	Aug 20 1988
MAXIMUM PEAK FLOW			1410	May 22	5600	Jun 20 1979
MAXIMUM PEAK STAGE			4.12	May 22	b6.80	Jun 20 1979
INSTANTANEOUS LOW FLOW			a26	Feb 25	c17	Aug 20 1988
ANNUAL RUNOFF (AC-FT)	80340		118900		202200	
10 PERCENT EXCEEDS	211		440		690	
50 PERCENT EXCEEDS	82		86		140	
90 PERCENT EXCEEDS	44		69		70	

a--Gage height, 1.61 ft, result of freezeup; may have been lower during ice-affected period..
b--Site and datum then in use.
c--Gage height, 1.44 ft.
e--Estimated.

06195600 SHIELDS RIVER NEAR LIVINGSTON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1999 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1999 to 2001 (seasonal records), October 2001 to September 2002.
INSTRUMENTATION.--Temperature recorder installed Sept. 14, 1999.
REMARKS.--Missing temperature data for July 25 and Aug. 27, 28 due to equipment problems. Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 25.0°C, July 13, 2002, July 1-3, 2001; minimum, 0.0°C on many days during winter months.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 25.0°C, July 13; minimum, 0.0°C on many days November through April.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001									
24...	1015	91	8.3	455	1.5	3.5	.23	.163	<.002
APR 2002									
04...	1045	72	8.6	388	2.0	3.5	.25	.135	E.002
MAY									
21...	1730	1110	8.0	196	13.0	12.0	1.4	.136	E.002
JUL									
31...	1300	75	8.5	468	28.0	18.5	.18	<.013	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001					
24...	<.007	.010	29	20	4.9
APR 2002					
04...	<.007	.022	88	7	1.4
MAY					
21...	.007	.67	75	523	1570
JUL					
31...	<.007	.009	43	32	6.5

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT 2001											
24...	1015	190	55.3	11.6	1.44	.9	27.6	227	5.62	.3	8.91
MAY 2002											
21...	1730	90	27.8	4.97	1.12	.3	7.14	94	1.53	.1	8.53

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT 2001											
24...	28.3	.38	67.9	276	<2	<.1	<.8	.8	<1	1	<1
MAY 2002											
21...	8.4	.16	350	117	4	E.1	11.5	17.0	9	15	35

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	15.5	9.5	12.5	7.5	6.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0
2	15.0	9.0	12.0	8.5	5.5	6.5	2.0	0.0	1.0	0.0	0.0	0.0
3	14.0	8.5	11.0	8.0	4.5	6.0	2.5	0.5	2.0	0.0	0.0	0.0
4	10.5	7.0	8.5	7.0	3.5	5.5	1.0	0.0	0.5	0.0	0.0	0.0
5	10.5	5.0	7.5	6.5	3.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0
6	11.0	5.0	8.0	5.5	3.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0
7	10.0	6.5	8.5	6.0	3.0	4.5	1.5	0.0	0.5	0.0	0.0	0.0
8	10.0	8.0	8.5	4.5	1.0	3.0	0.5	0.0	0.0	1.0	0.0	0.5
9	10.0	8.0	8.5	4.0	2.0	3.0	1.0	0.0	0.0	0.5	0.0	0.0
10	10.5	6.5	8.0	4.5	1.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0
11	7.5	6.0	6.5	4.5	1.0	3.0	0.0	0.0	0.0	1.0	0.0	0.5
12	6.5	5.0	5.5	5.5	1.5	3.5	0.0	0.0	0.0	2.0	0.0	0.5
13	10.0	5.5	7.5	5.0	2.5	3.5	0.0	0.0	0.0	1.5	0.5	0.5
14	7.5	5.0	6.5	6.0	3.5	4.5	0.0	0.0	0.0	1.0	0.0	0.5
15	8.0	2.5	5.5	6.5	3.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0
16	8.5	4.0	6.5	6.0	3.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
17	8.0	6.0	7.0	5.5	3.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0
18	6.0	3.5	5.0	5.0	2.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
19	7.0	5.5	6.5	2.5	0.0	1.5	0.5	0.0	0.0	0.0	0.0	0.0
20	9.0	6.0	7.0	3.5	0.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0
21	7.5	4.5	6.0	4.5	3.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0
22	8.0	5.0	6.5	4.5	2.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
23	7.5	5.0	6.5	4.0	2.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
24	6.0	3.5	4.5	4.0	2.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0
25	5.5	3.0	4.0	2.5	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
26	7.0	2.5	5.0	2.0	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
27	8.5	4.0	6.5	1.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
28	7.5	6.5	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	8.0	5.5	7.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	8.5	5.5	7.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
31	10.0	7.5	8.5	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0
MONTH	15.5	2.5	7.5	8.5	0.0	3.5	2.5	0.0	0.0	2.0	0.0	0.0
		FEBRUARY			MARCH			APRIL			MAY	
1	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	2.5	12.0	5.5	8.5
2	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	1.0	13.0	5.5	9.5
3	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	2.5	12.0	8.5	10.0
4	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0	4.0	12.5	6.5	9.5
5	0.0	0.0	0.0	0.5	0.0	0.0	9.0	2.0	6.0	10.0	8.0	9.0
6	0.0	0.0	0.0	0.0	0.0	0.0	9.5	5.0	7.5	8.5	6.5	7.5
7	0.0	0.0	0.0	0.0	0.0	0.0	8.5	5.5	7.0	7.5	4.0	5.5
8	0.0	0.0	0.0	0.0	0.0	0.0	9.5	4.0	6.5	9.0	2.5	5.0
9	0.0	0.0	0.0	0.0	0.0	0.0	8.0	5.0	6.5	10.0	3.5	7.0
10	0.0	0.0	0.0	0.0	0.0	0.0	10.5	5.5	7.5	9.5	6.5	8.0
11	0.0	0.0	0.0	1.0	0.0	0.5	10.0	5.0	7.5	12.5	6.0	9.5
12	0.0	0.0	0.0	2.0	0.0	0.5	10.0	6.5	8.5	15.5	8.0	11.5
13	0.5	0.0	0.0	2.0	0.0	0.5	11.5	6.0	9.0	16.0	8.5	12.5
14	0.5	0.0	0.0	3.0	0.0	1.0	10.5	8.0	9.0	14.5	10.0	12.0
15	0.0	0.0	0.0	5.0	0.0	2.0	8.0	2.5	5.0	11.5	8.0	10.0
16	0.5	0.0	0.0	4.0	0.0	1.5	8.0	2.0	4.5	12.5	7.5	9.5
17	1.0	0.0	0.5	1.5	0.0	0.0	7.5	4.0	5.5	14.0	8.0	11.0
18	2.5	0.0	1.0	2.5	0.0	0.5	6.0	2.5	4.5	15.5	9.5	12.5
19	2.5	0.0	1.0	2.5	0.0	1.0	8.0	1.5	5.0	16.5	11.5	14.0
20	4.0	0.0	1.5	1.5	0.0	0.0	7.5	2.5	5.0	14.5	11.0	13.0
21	3.5	0.0	1.0	0.5	0.0	0.0	7.5	2.5	5.5	13.0	9.5	11.0
22	4.0	1.5	2.5	3.0	0.0	1.0	12.0	5.5	8.5	10.0	5.0	6.5
23	3.0	0.0	1.5	5.5	0.5	3.0	10.0	5.5	7.5	8.5	3.5	5.5
24	0.0	0.0	0.0	4.5	1.0	2.5	8.5	3.0	5.5	12.5	6.5	9.0
25	0.0	0.0	0.0	7.0	0.5	3.5	8.5	3.0	5.5	12.5	8.0	10.0
26	0.0	0.0	0.0	8.0	3.0	5.5	9.5	3.5	6.5	12.0	9.5	10.5
27	0.0	0.0	0.0	5.5	2.0	4.0	8.5	4.5	6.5	14.5	9.5	11.5
28	0.0	0.0	0.0	4.0	1.5	3.0	11.5	4.0	7.5	14.0	10.5	12.5
29	---	---	---	7.5	1.0	3.5	13.0	5.5	9.0	14.5	11.0	12.5
30	---	---	---	8.0	3.5	5.5	10.5	7.5	9.0	14.0	10.5	12.0
31	---	---	---	6.0	2.5	4.5	---	---	---	15.0	9.5	12.0
MONTH	4.0	0.0	0.5	8.0	0.0	1.5	13.0	0.0	6.0	16.5	2.5	10.0

YELLOWSTONE RIVER BASIN

06195600 SHIELDS RIVER NEAR LIVINGSTON, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	14.5	11.0	13.0	20.0	14.5	17.5	19.5	12.0	16.0	17.5	12.0	14.5
2	13.5	9.5	11.0	20.5	13.5	17.0	16.0	12.0	14.0	19.0	12.5	15.5
3	12.5	8.5	10.5	18.5	15.0	16.5	18.0	11.5	14.5	19.0	12.5	15.5
4	13.5	8.5	11.0	21.0	14.0	17.5	20.0	12.5	16.0	19.0	13.0	16.0
5	14.0	10.0	12.5	21.5	15.0	18.0	21.5	14.0	17.5	18.0	13.0	15.0
6	16.0	11.5	13.5	18.5	15.5	17.0	20.5	14.0	17.5	14.5	12.0	13.0
7	15.5	11.0	13.5	19.5	15.0	17.0	20.0	14.5	17.0	15.0	12.5	13.5
8	14.0	10.0	12.0	22.5	15.5	19.0	16.0	12.0	14.0	15.5	11.5	13.0
9	12.0	9.5	10.0	21.0	15.0	18.0	17.0	10.5	13.5	16.5	10.5	13.5
10	10.0	8.0	9.0	22.5	14.5	18.5	19.5	12.0	15.5	17.0	10.5	13.5
11	11.5	6.5	9.0	23.5	15.5	19.5	18.5	13.5	16.0	17.5	11.5	14.5
12	13.5	8.5	11.0	24.5	16.5	20.5	18.0	12.5	15.0	17.0	12.0	14.5
13	16.0	10.0	13.0	25.0	17.5	21.5	19.5	11.5	15.5	17.5	11.0	14.5
14	17.5	11.5	14.5	24.0	18.0	21.0	20.0	13.0	16.0	17.5	11.5	14.5
15	18.0	12.5	15.5	22.5	17.0	20.0	20.0	12.5	16.0	16.5	11.5	14.0
16	18.0	13.5	16.0	21.5	17.5	19.5	17.5	12.5	15.0	16.5	12.0	14.0
17	17.0	14.0	15.5	22.5	16.5	19.5	17.5	10.0	13.5	14.5	11.5	13.0
18	16.0	12.5	14.0	22.5	16.0	19.5	18.5	11.5	15.0	13.0	10.5	12.0
19	14.0	10.0	12.0	21.0	16.5	19.0	19.0	11.5	15.0	15.0	9.0	12.0
20	15.5	10.0	13.0	19.5	15.5	18.0	18.5	12.0	15.0	13.5	11.0	12.0
21	17.5	12.5	14.5	21.5	15.0	18.5	17.5	12.5	14.5	12.5	8.5	10.5
22	16.0	14.0	14.5	20.0	14.5	17.5	18.5	11.5	15.0	12.5	6.5	10.0
23	18.0	13.0	15.0	20.5	14.5	17.5	18.0	11.5	14.5	13.5	8.0	11.0
24	19.0	13.5	16.0	22.0	14.5	17.5	17.5	11.5	14.5	14.0	9.0	11.5
25	20.5	14.5	17.5	---	---	---	19.0	11.5	15.0	12.5	9.5	11.0
26	20.5	15.5	18.5	19.0	14.0	17.0	18.5	12.0	15.0	12.0	7.5	10.0
27	20.5	16.0	18.0	16.5	14.0	15.0	---	---	---	10.0	8.0	9.0
28	19.5	15.0	17.0	19.5	12.0	15.5	---	---	---	13.0	7.5	10.0
29	17.0	14.5	16.0	21.0	14.0	17.0	17.5	12.5	15.5	12.5	8.0	10.5
30	20.0	13.0	16.5	21.5	13.5	17.5	19.0	12.5	16.0	11.5	8.5	10.0
31	---	---	---	20.5	14.0	17.0	18.0	14.0	16.0	---	---	---
MONTH	20.5	6.5	14.0	---	---	---	---	---	---	19.0	6.5	12.5

YELLOWSTONE RIVER BASIN

06200000 BOULDER RIVER AT BIG TIMBER, MT

LOCATION.--Lat 45°50'03", long 109°56'17" (NAD 27), in SE$^1/_4$NE$^1/_4$SE$^1/_4$ sec.14, T.1 N., R.14 E., Sweet Grass County, Hydrologic Unit 10070002, on left bank 150 ft upstream from Old Boulder Bridge, 1 mi east of Big Timber, and at river mile 1.6.

DRAINAGE AREA.--523 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1947 to December 1953, March 1955 to current year. Monthly discharge only for April 1947, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 4,056.39 ft (NGVD 29) (levels by U.S. Army Corps of Engineers).

REMARKS.--Water-discharge records fair except those for estimated daily discharges, which are poor. Diversions for irrigation of about 13,300 acres, of which about 250 acres is downstream from station. Several observations of water temperature and specific conductance were made during the year. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	125	e110	e60	e100	e90	e100	114	4040	2010	197	78
2	33	115	e120	e80	e100	e90	e95	111	4610	1750	183	76
3	34	110	e120	e140	e100	e110	96	104	3440	1530	180	72
4	38	111	e110	e130	e100	e120	102	105	2410	1350	200	69
5	39	108	e100	e120	e120	e100	104	102	2070	1300	198	67
6	39	108	e100	121	e120	e80	106	117	2800	1200	184	71
7	38	113	e100	129	e120	e70	110	130	3130	1090	171	89
8	38	120	e110	133	110	e60	112	124	2810	1030	181	103
9	39	108	e110	124	107	e90	110	118	2260	966	183	90
10	43	112	e90	e120	e100	e120	113	115	1770	776	168	81
11	50	109	e90	e120	e100	e110	114	114	1420	641	161	74
12	52	107	e90	117	e100	e100	109	110	1200	563	160	72
13	56	109	e100	116	e100	e100	106	114	1070	500	152	71
14	64	111	e110	e110	e100	e90	113	129	1150	480	115	69
15	80	107	e100	e100	e100	e90	153	180	1480	425	103	68
16	94	115	e100	e100	e110	e80	177	209	1970	412	102	65
17	92	120	e110	e100	e110	e80	154	208	2540	405	96	64
18	96	125	e100	e100	109	e90	165	220	3030	384	93	66
19	96	121	e100	e110	104	e80	143	356	3590	337	88	77
20	104	112	e90	e110	102	e70	133	850	2400	345	85	75
21	102	121	e90	e110	96	e80	127	1520	2070	331	81	72
22	100	125	e90	e100	104	e100	128	1510	2510	304	82	66
23	105	126	e100	e100	106	e90	124	1070	2410	284	80	63
24	107	131	e120	e120	e90	e90	122	795	2790	275	88	63
25	110	133	e130	125	e60	e100	114	633	2780	261	89	62
26	108	130	e120	117	e70	e100	110	566	2770	249	84	62
27	108	e110	e110	e110	e80	e100	112	656	2680	246	86	64
28	103	e100	e100	e100	e90	e100	107	814	2450	272	105	68
29	107	e110	e100	e90	---	e100	97	1240	2290	246	109	66
30	106	e110	e90	e90	---	e100	97	2080	2280	223	97	65
31	108	---	e80	e100	---	e100	---	3490	---	209	80	---
TOTAL	2322	3462	3190	3402	2808	2880	3553	18004	74220	20394	3981	2148
MEAN	74.90	115.4	102.9	109.7	100.3	92.90	118.4	580.8	2474	657.9	128.4	71.60
MAX	110	133	130	140	120	120	177	3490	4610	2010	200	103
MIN	33	100	80	60	60	60	95	102	1070	209	80	62
AC-FT	4610	6870	6330	6750	5570	5710	7050	35710	147200	40450	7900	4260

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2002, BY WATER YEAR (WY)*

MEAN	219.7	191.2	153.8	135.7	128.3	128.2	209.2	1141	2762	1253	240.4	190.9
MAX	417	282	214	214	197	179	390	2241	4638	4307	709	534
(WY)	1973	1998	1976	1984	1985	1979	1962	1976	1997	1975	1968	1968
MIN	74.9	108	71.8	54.7	55.2	92.9	66.7	429	894	193	21.9	27.7
(WY)	2002	1988	1988	2001	2001	2002	1961	1953	1987	1988	1961	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1948 - 2002*	
ANNUAL TOTAL	111195		140364			
ANNUAL MEAN	304.6		384.6		565.7	
HIGHEST ANNUAL MEAN					905	1975
LOWEST ANNUAL MEAN					310	2001
HIGHEST DAILY MEAN	2800	May 15	4610	Jun 2	8540	Jul 5 1975
LOWEST DAILY MEAN	14	Aug 25	33	Oct 1	12	Aug 26 1961
ANNUAL SEVEN-DAY MINIMUM	18	Aug 20	36	Oct 1	13	Aug 25 1961
MAXIMUM PEAK FLOW			5130	Jun 2	a9940	Jun 5 1997
MAXIMUM PEAK STAGE			6.65	Jun 2	9.00	Jun 5 1997
INSTANTANEOUS LOW FLOW					10	Aug 26 1961
ANNUAL RUNOFF (AC-FT)	220600		278400		409800	
10 PERCENT EXCEEDS	1160		1260		1740	
50 PERCENT EXCEEDS	97		110		181	
90 PERCENT EXCEEDS	35		71		100	

*--During period of operation (1948-53, 1956 to current year).
a--From rating curve extended above 6,000 ft^3/s.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1965, May 1999 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Seasonal records, August 1999 to current year.
INSTRUMENTATION.--Temperature recorder installed Aug. 26, 1999.
REMARKS--Unpublished records of instantaneous specific conductance and temperature data are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records).: Maximum, 24.5°C, Aug. 6, 2001; minimum, 0.0°C, Apr. 2, 3, 2002.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: For period of seasonal operation, maximum, 22.0°C, July 13; minimum, 0.0°C, Apr. 2, 3.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT									
25...	0930	105	8.6	278	3.0	2.5	.10	.032	<.002
APR									
04...	0815	100	8.3	272	-2.0	1.5	E.10	.045	<.002
MAY									
22...	0815	1660	7.3	67	6.5	5.5	.33	.077	<.002
JUL									
31...	0930	215	8.3	212	18.0	15.0	E.08	.018	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT					
25...	<.007	.004	66	12	3.4
APR					
04...	<.007	.008	67	1	.45
MAY					
22...	<.007	.052	64	50	220
JUL					
31...	<.007	.006	90	1	.59

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS (CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT											
25...	0930	130	35.6	9.92	1.66	.2	4.89	117	.82	.2	9.87
MAY											
22...	0815	30	8.18	2.28	.79	.1	1.37	29	E.28	E.1	7.04

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT											
25...	31.8	.22	46.8	165	<1	<.1	<.8	1.0	<1	<1	1
MAY											
22...	4.5	E.06	E188	E41.8	E1	<.1	2.4	5.5	1	2	4

E--Estimated.

YELLOWSTONE RIVER BASIN

06200000 BOULDER RIVER AT BIG TIMBER, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	6.0	0.5	3.5	12.0	6.5	9.0	9.5	6.0	8.0	14.5	11.5	13.0
2	5.0	0.0	1.5	15.0	6.0	10.0	9.0	6.0	7.0	15.0	11.0	13.0
3	7.0	0.0	3.0	11.5	9.0	10.5	8.5	5.5	7.0	14.0	12.0	12.5
4	10.0	1.0	5.5	15.0	5.5	10.0	10.0	6.0	7.5	16.0	11.5	14.0
5	12.0	3.5	7.5	11.5	9.0	10.0	10.5	7.0	9.0	17.0	12.5	14.5
6	13.5	6.5	10.0	9.5	6.5	8.0	10.5	8.0	9.5	15.5	13.0	14.0
7	12.0	7.0	9.5	9.5	3.5	6.0	9.5	6.5	8.5	16.5	12.0	14.0
8	13.0	6.0	9.0	9.5	2.5	5.5	9.5	6.5	8.0	18.5	13.5	16.0
9	10.0	7.0	8.5	12.5	3.5	7.5	9.0	6.5	7.0	17.5	13.5	15.5
10	13.0	7.0	9.5	11.0	7.0	9.0	8.0	5.5	6.5	18.5	13.0	16.0
11	12.0	6.0	9.0	15.5	6.5	10.5	9.5	5.0	7.0	19.5	13.5	16.5
12	12.5	7.5	10.0	17.5	9.0	13.0	11.0	7.0	9.0	20.5	14.5	17.5
13	14.0	7.5	10.5	19.0	9.5	14.0	13.5	8.0	11.0	22.0	16.0	18.5
14	14.5	9.5	11.5	17.5	11.5	14.0	14.0	9.5	12.0	21.0	16.5	18.5
15	10.0	5.5	8.0	13.0	8.5	11.0	13.5	10.0	12.0	20.5	15.0	17.5
16	10.0	3.5	6.5	14.5	8.0	11.0	13.0	9.5	11.0	19.0	16.0	17.5
17	10.5	4.5	7.0	15.5	8.0	11.5	11.5	9.5	10.5	20.0	15.0	17.5
18	8.5	3.0	5.5	17.0	9.5	13.0	10.0	8.5	9.0	21.0	15.5	18.0
19	11.0	3.0	6.5	17.0	12.0	14.5	9.0	6.5	7.5	19.5	16.0	17.5
20	9.5	3.5	6.5	15.0	11.0	12.5	10.5	7.0	9.0	18.0	15.0	17.0
21	11.0	3.5	7.5	11.5	8.0	9.5	12.0	8.5	10.0	19.5	15.0	17.0
22	12.5	6.5	9.5	8.0	4.5	6.0	11.5	9.5	10.5	20.0	15.5	17.5
23	10.5	6.0	8.5	7.0	3.0	5.0	13.0	9.0	10.5	19.5	14.5	17.0
24	7.0	3.0	5.0	11.0	5.5	8.0	11.5	9.5	10.5	21.0	14.5	17.5
25	10.5	3.5	6.5	12.0	7.5	9.5	13.0	9.5	11.5	21.0	16.5	18.5
26	11.5	4.0	7.5	13.0	9.0	10.5	13.5	10.5	12.0	19.5	14.5	17.0
27	8.5	5.0	6.5	13.5	8.5	10.5	13.0	11.0	12.0	17.0	14.0	15.5
28	13.0	3.5	7.5	12.5	9.0	11.0	13.0	11.0	12.0	18.0	12.5	15.0
29	15.0	6.0	10.0	11.5	8.5	10.0	13.5	11.0	12.0	21.0	14.5	17.5
30	11.5	8.0	9.5	10.0	7.5	8.5	14.0	10.5	12.5	21.5	15.0	18.0
31	---	---	---	9.5	6.0	8.0	---	---	---	21.5	15.0	18.0
MONTH	15.0	0.0	7.5	19.0	2.5	10.0	14.0	5.0	9.5	22.0	11.0	16.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER	
1	20.0	13.5	16.5	18.0	13.0	15.0
2	17.5	13.0	15.5	20.0	12.5	16.0
3	18.5	13.0	15.5	20.5	13.0	16.5
4	20.5	13.5	16.5	19.5	13.5	16.5
5	21.0	15.5	18.0	19.0	13.5	16.0
6	21.5	15.5	18.5	16.0	13.0	14.0
7	18.0	16.0	17.0	17.0	13.5	14.5
8	16.5	13.0	15.5	16.0	12.5	14.0
9	18.0	11.5	14.0	17.0	10.5	13.5
10	20.5	12.5	16.0	18.0	10.5	14.0
11	19.0	14.5	16.5	19.0	11.5	15.0
12	18.0	13.0	15.5	18.0	12.0	15.0
13	20.0	12.5	16.0	18.0	11.0	14.5
14	20.0	13.5	16.5	18.5	11.5	14.5
15	20.5	13.0	16.5	18.5	11.5	15.0
16	19.5	13.0	16.0	17.5	12.0	15.0
17	19.0	10.5	14.5	15.0	12.5	14.0
18	20.0	12.0	15.5	14.5	11.0	12.5
19	20.0	12.0	16.0	15.5	9.0	12.0
20	20.0	12.5	16.0	15.5	10.5	12.5
21	17.0	13.5	15.5	13.5	9.5	11.0
22	18.0	12.0	15.0	12.5	7.5	10.0
23	18.5	12.5	15.0	14.5	8.0	11.0
24	18.5	12.0	15.0	15.0	9.5	12.0
25	19.0	11.5	15.0	13.0	9.5	11.5
26	19.0	13.0	16.0	13.0	7.5	10.0
27	16.5	13.5	14.5	11.5	8.5	9.5
28	18.0	11.5	14.5	13.5	8.0	10.5
29	17.5	12.0	15.0	14.5	8.5	11.5
30	19.5	12.5	15.5	12.5	9.0	10.5
31	18.5	14.0	16.0	---	---	---
MONTH	21.5	10.5	16.0	20.5	7.5	13.0

YELLOWSTONE RIVER BASIN

06204050 WEST ROSEBUD CREEK NEAR ROSCOE, MT

LOCATION.--Lat 45°14'35", long 109°43'50" (NAD 27), in NE$^1/_4$ sec.10, T.7 S., R.16 E., Stillwater County, Hydrologic Unit 10070005, on left bank at Mystic Lake powerplant, 2.0 mi downstream from Mystic Lake, 13.5 mi southwest of Roscoe, and at river mile 26.8.

DRAINAGE AREA.--52.1 mi^2.

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

GAGE.--Water-stage recorder and rectangular weir. Datum of gage is 6,535.60 ft (NGVD 29).

REMARKS.--Records good. Flow regulated by Mystic Lake (station number 06204000). Several observations of water temperature and specific conductance were made during the year. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--37 years, 122 ft^3/s, 31.80 in/yr, 88,390 acre-ft/yr, adjusted for change in contents in Mystic Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,630 ft^3/s, July 6, 1975, gage height, 4.71 ft; minimum daily, 2.5 ft^3/s, Apr. 3, 4, 6, 7, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 727 ft^3/s, June 27, gage height, 3.04 ft; minimum, 7.4 ft^3/s, Feb. 12, gage height, 0.26 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	132	129	77	36	41	51	48	109	596	217	159
2	114	131	130	77	36	41	51	39	106	556	216	159
3	115	133	122	76	36	41	51	35	63	489	216	159
4	115	133	113	63	36	40	51	35	33	430	217	159
5	116	134	120	46	37	40	51	36	29	407	217	159
6	116	134	120	44	38	42	51	36	47	410	216	144
7	116	136	119	44	39	41	51	35	98	404	216	134
8	56	135	95	44	39	41	50	35	96	384	220	133
9	119	136	96	43	39	40	50	35	95	388	218	134
10	119	137	96	43	39	40	51	34	92	363	214	134
11	119	138	94	43	39	40	51	35	90	309	214	133
12	119	138	94	42	30	41	51	36	103	303	213	133
13	119	139	92	42	39	40	51	38	147	295	209	133
14	122	139	86	42	39	41	53	39	148	295	208	133
15	121	141	92	42	39	40	53	40	150	260	208	133
16	121	141	90	41	40	40	50	39	153	249	206	134
17	121	144	90	40	40	40	49	38	155	283	204	133
18	121	142	90	39	39	40	48	39	77	341	203	134
19	123	138	89	39	39	39	48	43	47	338	202	134
20	125	147	88	38	39	48	48	48	245	317	193	134
21	123	136	86	38	39	52	48	62	432	311	176	134
22	124	136	83	38	39	52	48	73	428	311	177	134
23	127	136	83	36	39	52	48	69	496	301	177	79
24	126	135	83	36	40	52	48	66	545	289	176	58
25	126	135	82	36	40	52	48	65	538	277	177	58
26	126	134	81	37	40	51	48	65	609	271	169	54
27	129	132	81	36	39	52	47	66	634	260	164	63
28	128	133	79	37	40	51	47	69	621	255	164	125
29	132	132	80	37	---	51	47	73	590	248	164	120
30	129	131	80	37	---	51	48	84	591	242	164	117
31	132	---	77	36	---	51	---	83	---	228	163	---
TOTAL	3711	4088	2940	1369	1074	1383	1487	1538	7567	10410	6098	3750
MEAN	119.7	136.3	94.84	44.16	38.36	44.61	49.57	49.61	252.2	335.8	196.7	125.0
MAX	132	147	130	77	40	52	53	84	634	596	220	159
MIN	56	131	77	36	30	39	47	34	29	228	163	54
AC-FT	7360	8110	5830	2720	2130	2740	2950	3050	15010	20650	12100	7440

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2002, BY WATER YEAR (WY)

MEAN	93.68	82.37	73.73	66.83	59.99	54.56	42.77	74.37	220.8	366.8	196.7	122.4
MAX	167	178	118	148	92.0	124	108	134	558	712	277	183
(WY)	1977	1986	1980	1980	1979	1979	1979	1969	1974	1975	1997	1971
MIN	33.4	31.2	28.4	25.7	28.9	21.7	3.57	16.2	76.5	158	103	38.5
(WY)	1989	1975	1979	1979	1985	1987	1967	1978	1998	1985	1988	1988

ADJUSTED FOR CHANGE IN CONTENTS IN MYSTIC LAKE

MEAN †	60.9	65.4	46.7	24.7	18.0	19.3	20.8	133	505	338	159	114
CFSM †	1.17	1.25	0.90	0.47	0.34	0.37	0.40	2.56	9.70	6.48	3.05	2.20
IN †	1.35	1.40	1.03	0.54	0.36	0.43	0.44	2.95	10.82	7.48	3.52	2.45
AC-FT†	3740	3890	2870	1520	997	1190	1240	8190	30060	20770	9770	6810

OBSERVED

CAL YR 2001	TOTAL	33780	MEAN	92.5	MAX	415	MIN	29	AC-FT	67000
WTR YR 2002	TOTAL	45420	MEAN	124	MAX	634	MIN	29	AC-FT	90080

ADJUSTED

CAL YR 2001	TOTAL	66800	MEAN	92.3	CFSM	1.77	IN	24.00	AC-FT	66800
WTR YR 2002	TOTAL	91030	MEAN	126	CFSM	2.41	IN	32.76	AC-FT	91030

†--Adjusted for change in contents in Mystic Lake.

YELLOWSTONE RIVER BASIN

06205000 STILLWATER RIVER NEAR ABSAROKEE, MT

LOCATION.--Lat 45°33'04", long 109°23'12" (NAD 27), in NE$^1/_4$NE$^1/_4$NW$^1/_4$ sec.28, T.3 S., R.19 E., Stillwater County, Hydrologic Unit 10070005, on right bank 3 mi downstream from Rosebud Creek, 3.5 mi northeast of Absarokee, 9 mi southwest of Columbus, and at river mile 9.4.

DRAINAGE AREA.--975 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1910 to September 1914 (no winter records), March 1935 to September 1995, October 1995 to current year (seasonal records only).

REVISED RECORDS.--WSP 1309: 1911(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,873.8 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1914, nonrecording gage, and Mar. 26, 1935, to Sept. 30, 1942, nonrecording gage, at bridge 2 mi upstream at different datums.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow partly regulated by Mystic Lake (station number 06204000). Diversions for irrigation of about 24,300 acres, of which 400 acres lies downstream from station. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	323	376	e280	e225	e200	e160	262	429	6400	3410	799	438
2	318	373	e300	e230	e205	e170	223	390	6440	3060	785	482
3	317	368	e300	e235	e210	e180	213	394	5160	2730	779	468
4	336	362	e290	e235	e210	e190	225	431	3590	2440	839	453
5	379	357	e280	e240	e215	e200	241	416	2990	2320	872	440
6	379	355	e290	e245	e220	e180	265	477	3770	2240	826	447
7	378	363	e290	e250	e220	e170	280	514	4270	2170	775	469
8	373	371	e300	e245	e215	e160	293	476	3720	2200	855	491
9	339	355	e290	e235	e210	e170	285	428	3350	2110	814	496
10	408	350	e270	e225	e205	e190	282	420	2620	1940	759	475
11	415	347	e270	e230	e210	e220	294	411	2070	1680	709	455
12	411	346	e275	e225	e200	e240	284	421	1690	1530	694	424
13	413	348	e280	e215	e190	e230	278	461	1550	1450	649	427
14	428	343	e275	e210	e190	e220	305	576	1600	1420	625	424
15	442	338	e260	e210	e190	e190	487	718	2020	1340	601	404
16	434	334	e270	e210	e200	e200	487	762	2620	1250	581	392
17	423	335	e280	e210	e210	e190	404	723	3270	1500	558	399
18	412	345	e270	e215	e210	e180	404	802	3790	1570	558	434
19	407	329	e275	e220	e210	e190	350	1040	4340	1510	525	438
20	404	325	e260	e225	e200	e180	323	1800	3280	1440	498	414
21	410	331	e250	e220	e190	e160	310	2710	3110	1390	466	411
22	398	335	e250	e210	e200	e220	328	2780	3500	1330	437	413
23	396	332	e250	e195	e200	256	328	1940	3450	1300	481	406
24	396	326	e250	e185	e160	230	314	1420	3660	1300	478	376
25	389	333	e255	e195	e130	225	297	1160	3850	1200	488	369
26	387	e310	e260	e190	e140	240	289	1080	3960	1130	472	373
27	391	e290	e260	e185	e150	266	288	1140	3930	1090	453	378
28	380	e270	e240	e185	e170	243	289	1320	3670	1100	473	401
29	374	e280	e210	e185	---	233	283	2010	3440	1020	504	426
30	376	e290	e215	e190	---	233	309	3300	3490	892	499	410
31	374	---	e220	e195	---	232	---	5710	---	852	488	---
TOTAL	12010	10117	8265	6670	5460	6348	9220	36659	104600	51914	19340	12833
MEAN	387.4	337.2	266.6	215.2	195.0	204.8	307.3	1183	3487	1675	623.9	427.8
MAX	442	376	300	250	220	266	487	5710	6440	3410	872	496
MIN	317	270	210	185	130	160	213	390	1550	852	437	369
AC-FT	23820	20070	16390	13230	10830	12590	18290	72710	207500	103000	38360	25450

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2002, BY WATER YEAR (WY)*

MEAN	514.2	402.6	318.2	277.0	264.6	284.8	409.3	1502	3465	2337	875.2	609.2
MAX	852	574	430	413	449	565	1185	2879	5776	6368	1639	1099
(WY)	1942	1984	1962	1942	1972	1979	1943	1976	1957	1975	1997	1941
MIN	270	227	184	116	103	162	144	661	1565	626	280	275
(WY)	1937	1936	1937	1937	1936	1936	1961	1960	1939	1936	1988	1939

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1935 - 2002*	
ANNUAL TOTAL	205713		283436			
ANNUAL MEAN	563.6		776.5		938.2	
HIGHEST ANNUAL MEAN					1468	1975
LOWEST ANNUAL MEAN					507	1936
HIGHEST DAILY MEAN	3170	Jun 25	6440	Jun 2	10900	Jun 18 1974
LOWEST DAILY MEAN	150	Feb 8	130	Feb 25	58	Apr 2 1936
ANNUAL SEVEN-DAY MINIMUM	160	Feb 8	154	Feb 24	72	Mar 29 1936
MAXIMUM PEAK FLOW			7080	Jun 2	12000	Jun 15 1967
MAXIMUM PEAK STAGE			5.67	Jun 2	7.17	Jun 15 1967
INSTANTANEOUS LOW FLOW					a58	Apr 2 1936
ANNUAL RUNOFF (AC-FT)	408000		562200		679700	
10 PERCENT EXCEEDS	1530		2180		2530	
50 PERCENT EXCEEDS	326		373		447	
90 PERCENT EXCEEDS	190		200		230	

*--During period of operation (1911-12, 1936 to current year. Seasonal records from 1996-2000).
a--Observed.
e--Estimated.

06205000 STILLWATER RIVER NEAR ABSAROKEE, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965, 1981, May 1999 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Seasonal records, May 2001 to current year.
INSTRUMENTATION.--Temperature recorder installed May 8, 2001.
REMARKS--Missing temperature record for Apr. 1-21 due to equipment problems. Unpublished records of instantaneous specific conductance and temperature data are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records).: Maximum, 31.5°C, Aug. 7, 2001; minimum observed, 0.0°C, Apr. 4, 2002.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: For period of seasonal operation, maximum, 22.0°C, July 13, 30; minimum observed, 0.0°C, Apr. 4.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT									
25...	1340	386	8.7	170	7.0	2.5	E.10	.045	<.002
APR									
04...	1000	216	8.2	170	5.5	.0	.14	.092	E.002
JUN									
03...	1200	5300	7.7	42	13.0	7.5	.19	.137	<.002
JUL									
16...	0930	1220	8.1	95	28.0	20.0	.19	.052	E.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT					
25...	<.007	.014	24	10	10.4
APR					
04...	<.007	.009	75	2	1.2
JUN					
03...	E.004	.036	68	34	487
JUL					
16...	E.004	.019	79	6	19.8

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3 (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT											
25...	1340	68	18.5	5.38	.94	.3	4.94	75	.98	.1	7.16
JUN											
03...	1200	17	4.57	1.45	.65	.1	1.08	19	E.25	<.1	4.42

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT											
25...	8.4	.12	95.5	92	<2	<.1	E.5	.7	<1	<1	2
JUN											
03...	2.7	E.04	E377	E26	<2	<.1	1.8	4.1	<1	2	5

E--Estimated.

06205000 STILLWATER RIVER NEAR ABSAROKEE, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	---	---	---	11.0	5.0	7.5	12.0	8.0	10.0	16.5	12.0	14.5
2	---	---	---	15.0	5.0	10.0	10.5	7.5	8.5	16.5	11.5	14.0
3	---	---	---	11.5	7.0	9.5	9.5	6.5	8.0	15.0	12.0	13.0
4	---	---	---	13.5	4.5	8.5	11.0	6.5	8.5	17.5	12.0	14.5
5	---	---	---	13.5	8.0	10.5	13.0	8.0	10.5	18.0	13.0	15.5
6	---	---	---	10.0	7.0	8.0	11.5	9.5	10.5	17.5	13.0	15.5
7	---	---	---	9.0	4.5	6.5	11.5	8.0	10.0	18.5	13.5	16.0
8	---	---	---	10.5	3.5	6.5	11.5	8.0	10.0	19.5	14.0	16.5
9	---	---	---	12.0	4.0	8.0	10.5	7.5	8.5	18.5	13.5	16.0
10	---	---	---	10.5	6.0	8.5	9.5	6.5	8.0	19.5	13.5	16.0
11	---	---	---	14.5	6.5	10.5	10.5	6.5	8.5	20.5	14.0	17.0
12	---	---	---	16.5	8.0	12.0	13.0	8.5	10.5	21.5	14.5	18.0
13	---	---	---	18.0	9.0	13.5	15.5	9.5	12.5	22.0	16.0	18.5
14	---	---	---	15.5	11.0	13.0	16.0	10.5	13.5	21.0	15.5	18.5
15	---	---	---	13.0	9.5	11.0	16.0	11.5	13.5	21.0	15.5	18.0
16	---	---	---	11.5	8.0	9.5	15.5	10.5	13.0	21.5	17.0	18.5
17	---	---	---	14.0	6.0	10.0	13.5	11.0	12.5	20.5	16.0	18.0
18	---	---	---	15.5	9.0	12.0	13.0	10.0	11.5	21.0	15.5	18.0
19	---	---	---	16.5	10.5	13.5	12.0	8.0	10.0	20.0	16.0	18.0
20	---	---	---	14.0	10.5	12.0	13.0	8.5	10.5	19.0	15.5	17.0
21	---	---	---	12.0	9.5	10.5	13.5	10.0	11.5	18.0	15.0	16.5
22	14.0	1.0	8.5	10.0	6.0	7.5	13.0	11.0	11.5	19.0	14.5	16.5
23	11.0	4.5	7.5	8.0	4.5	6.0	14.0	10.5	12.0	19.0	14.5	16.5
24	10.0	2.0	5.5	11.0	5.5	8.0	14.0	10.5	12.5	21.0	15.0	17.5
25	10.5	3.0	6.5	14.5	7.0	10.5	16.0	11.0	13.5	19.5	16.5	18.0
26	10.5	4.0	7.0	13.0	9.5	11.0	16.0	11.5	13.5	18.5	14.5	16.5
27	7.5	4.5	5.5	14.0	9.0	11.5	15.0	12.0	14.0	17.5	14.5	16.0
28	12.5	2.5	7.0	14.5	10.0	12.5	16.0	11.5	13.5	19.5	13.0	16.0
29	14.5	5.5	10.0	13.0	10.5	12.0	15.5	12.0	14.0	21.0	14.5	17.5
30	11.5	7.5	9.0	12.0	9.0	10.5	17.0	12.0	14.0	22.0	15.0	18.0
31	---	---	---	12.5	7.5	10.0	---	---	---	20.5	15.0	17.5
MONTH	---	---	---	18.0	3.5	10.0	17.0	6.5	11.5	22.0	11.5	17.0

		AUGUST			SEPTEMBER	
1	19.5	13.0	16.0	18.0	13.0	15.5
2	16.5	13.0	14.5	20.0	13.0	16.0
3	18.0	13.0	15.5	19.0	13.5	16.5
4	21.0	14.0	17.0	20.0	14.0	16.5
5	20.5	16.0	18.0	18.5	13.5	16.0
6	21.5	15.0	18.5	16.5	13.5	14.5
7	19.0	16.5	17.5	18.5	14.0	15.5
8	17.0	14.5	16.0	16.5	14.0	15.0
9	17.5	11.5	14.5	17.5	11.5	14.5
10	20.5	12.5	16.0	18.0	11.0	14.0
11	18.0	14.5	16.5	18.5	11.5	14.5
12	18.5	13.5	16.0	17.0	12.0	14.5
13	20.0	13.0	16.0	17.5	11.0	14.0
14	20.5	14.0	17.0	18.0	11.5	14.5
15	21.0	14.0	17.0	18.5	12.0	15.0
16	19.0	14.0	16.5	18.5	12.5	15.5
17	18.5	11.0	14.5	16.5	13.0	14.0
18	19.0	12.5	15.5	14.5	12.0	13.0
19	19.5	12.0	15.5	16.5	9.5	12.5
20	17.0	12.5	15.0	15.5	11.0	13.0
21	15.5	13.0	14.5	12.5	9.0	11.0
22	16.0	12.0	14.0	13.5	7.0	10.0
23	18.0	12.0	14.5	14.5	9.0	11.5
24	18.0	12.0	15.0	13.5	9.5	11.5
25	19.5	12.5	15.5	12.5	9.5	11.0
26	18.5	13.0	15.5	12.5	7.0	10.0
27	16.0	14.0	15.0	11.5	8.5	9.5
28	17.0	12.0	14.5	13.0	8.0	10.0
29	17.0	12.5	15.0	14.0	8.5	11.0
30	19.0	12.5	15.5	12.0	9.0	10.5
31	18.5	13.5	16.0	---	---	---
MONTH	21.5	11.0	16.0	20.0	7.0	13.0

06205450 CLARKS FORK YELLOWSTONE RIVER AT MONTANA-WYOMING STATE LINE, NEAR COOKE CITY, MT

LOCATION.--Lat 44°57'28", long 109°48'21" (NAD 27), Park County, WY, Hydrologic Unit 10070006, Shoshone National Forest, at bridge on U.S. Highway 12, 300 ft upstream from Pilot Creek, 0.9 mi downstream from Rock Creek, 1.8 mi northwest of Crazy Creek Campground, and 7.5 mi southeast of Cooke City, MT.

PERIOD OF RECORD.--August 1975 to October 1977, November 1990 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
OCT											
23..	1220	15	580	10.9	108	8.6	103	2.5	3.5	53	16.5
FEB											
07..	0850	14	595	9.2	81	7.3	107	-1.5	0.0	46	14.7
MAY											
15..	0810	241	589	11.1	101	7.3	51	4.0	1.0	24	7.18
AUG											
07..	0755	98	597	7.7	93	7.4	66	9.0	12.5	31	9.73

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
OCT											
23...	2.75	.45	.1	1.78	53	.35	<.1	4.6	5.9	.09	2.60
FEB											
07...	2.27	.35	.1	1.40	45	E.27	<.1	4.6	4.9	--	--
MAY											
15...	1.38	.36	.1	1.18	24	<.30	<.1	4.9	3.5	--	--
AUG											
07...	1.51	.34	.1	.84	29	<.30	<.1	2.96	3.4	--	--

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)
OCT											
23...	--	64	<.04	--	--	E.03	<.008	--	<.02	--	3
FEB											
07...	--	--	<.04	--	--	.09	<.008	--	<.02	--	2
MAY											
15...	--	--	<.04	--	--	.05	<.008	--	<.02	--	27
AUG											
07...	29	--	<.04	<.10	E.06	<.05	<.008	E.004	<.02	.010	8

DATE	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
OCT											
23...	E.04	.2	17	<.06	<10	.07	<.8	.03	.7	<10	<.08
FEB											
07...	<.05	E.2	15	<.06	<10	<.04	<.8	.02	.5	<10	<.08
MAY											
15...	E.04	.2	10	<.06	<10	.06	<.8	.04	1.6	30	.09
AUG											
07...	E.03	E.1	13	<.06	<10	.04	<.8	.02	1.2	E8	<.08

E--Estimated.

06205450 CLARKS FORK YELLOWSTONE RIVER AT MONTANA-WYOMING STATE LINE, NEAR COOKE CITY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT											
23...	<4	1.7	<.01	.2	<.06	<.3	<1	49.8	.12	<8	2
FEB											
07...	<4	.8	<.01	E.2	<.06	<.3	<1	41.3	.09	<8	<1
MAY											
15...	<4	2.8	E.01	<.2	.34	<.3	<1	27.4	.07	<8	2
AUG											
07...	<4	1.2	<.01	E.2	.19	<.3	<1	31.6	.06	<8	2

E--Estimated.

06207500 CLARKS FORK YELLOWSTONE RIVER NEAR BELFRY, MT

LOCATION.--Lat 45°00'37", long 109°03'53" (NAD 27), in NW$^1/_4$SW$^1/_4$NW$^1/_4$ sec.32, T.9 S., R.22 E., Carbon County, Hydrologic Unit 10070006, on left bank 0.2 mi upstream from county road bridge and Big Sand Coulee, 0.8 mi north of Wyoming-Montana State line, 9.5 mi southwest of Belfry, and at river mile 71.2.

DRAINAGE AREA.--1,154 mi^2.

PERIOD OF RECORD.--July 1921 to current year. Monthly discharge only for some periods, published in WSP 1309. Published as Clarks Fork at Chance prior to October 1956 and as Clarks Fork Yellowstone River at Chance October 1956 to September 1968.

REVISED RECORDS.--WSP 1309: 1922 (M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,986.24 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to Nov. 15, 1934, nonrecording gage, and Nov. 15, 1934, to July 26, 1951, water-stage recorder at bridge 0.4 mi downstream from different datum. July 27, 1951 to Sept. 30, 1953, water-stage recorder at present site at datum 0.98 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 11,100 acres upstream from station. U. S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	108	e220	192	e170	e170	207	596	10200	4290	635	233
2	50	157	e210	183	224	e160	200	494	10600	3910	577	231
3	50	152	e210	191	221	e180	172	589	9170	3400	538	225
4	51	144	e220	220	216	e190	193	654	6870	2870	578	195
5	51	126	e220	215	218	e220	219	688	5840	2620	609	139
6	52	135	258	208	220	e180	253	685	6490	2540	539	95
7	52	153	268	222	221	e180	342	616	7310	2360	518	98
8	46	220	250	260	224	e180	389	598	6660	2260	523	98
9	46	171	264	244	214	e190	356	490	5290	2230	498	103
10	46	175	250	221	210	e210	336	434	4010	2070	446	102
11	46	153	222	208	203	e200	332	403	3040	1770	403	103
12	46	163	200	217	206	e200	315	420	2470	1570	382	106
13	45	183	148	217	194	e200	292	559	2150	1420	362	106
14	45	182	243	208	196	201	381	1100	2190	1330	330	104
15	47	179	291	198	200	187	929	1600	2880	1250	309	110
16	50	181	225	171	195	184	719	1740	3840	1160	291	107
17	51	190	246	150	199	196	519	1570	5180	1210	275	98
18	55	226	264	167	196	177	441	1880	6350	1430	257	98
19	53	222	245	153	193	180	379	2640	6760	1460	250	99
20	56	175	248	148	189	179	327	4520	5280	1270	245	98
21	52	191	241	181	185	157	295	5470	4620	1250	240	98
22	51	235	251	204	189	239	285	5040	4750	1160	251	99
23	51	235	226	e150	200	216	248	3560	4600	1230	255	99
24	69	e230	201	e140	e180	210	253	2560	4760	1220	232	98
25	82	e220	198	211	e150	210	230	2040	5130	1100	230	99
26	85	e220	208	223	e160	215	287	1880	5210	1000	213	100
27	79	e210	218	218	e200	246	415	2010	5010	913	211	99
28	81	e210	202	216	e180	215	432	2570	4500	1050	265	101
29	90	e200	197	221	---	210	351	3780	4210	911	250	103
30	75	e210	201	e160	---	203	502	5950	4270	820	244	101
31	95	---	185	e150	---	199	---	8430	---	715	238	---
TOTAL	1801	5556	7030	6067	5553	6084	10599	65566	159640	53789	11194	3545
MEAN	58.10	185.2	226.8	195.7	198.3	196.3	353.3	2115	5321	1735	361.1	118.2
MAX	95	235	291	260	224	246	929	8430	10600	4290	635	233
MIN	45	108	148	140	150	157	172	403	2150	715	211	95
AC-FT	3570	11020	13940	12030	11010	12070	21020	130100	316600	106700	22200	7030

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 2002, BY WATER YEAR (WY)

MEAN	280.1	294.9	263.1	231.2	222.6	221.6	424.8	2042	4107	2193	615.8	314.4
MAX	725	648	379	359	329	364	1167	5704	7225	5744	1453	834
(WY)	1931	1928	1951	1997	1963	1972	1943	1928	1997	1975	1951	1941
MIN	45.5	115	110	110	100	96.3	110	839	1607	349	66.5	50.1
(WY)	1989	1989	1922	1922	1922	1922	1961	1968	1987	1988	1988	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1921 - 2002	
ANNUAL TOTAL	203089		336424			
ANNUAL MEAN	556.4		921.7		935.7	
HIGHEST ANNUAL MEAN					1485	1997
LOWEST ANNUAL MEAN					547	1977
HIGHEST DAILY MEAN	4630	May 16	10600	Jun 2	12300	Jun 9 1981
LOWEST DAILY MEAN	45	Oct 13	a45	Oct 13	33	Apr 26 1961
ANNUAL SEVEN-DAY MINIMUM	46	Oct 8	46	Oct 8	37	Oct 8 1988
MAXIMUM PEAK FLOW			11200	Jun 2	14800	Jun 9 1981
MAXIMUM PEAK STAGE			8.14	Jun 2	9.97	Jun 9 1981
INSTANTANEOUS LOW FLOW			b42	Oct 13	c32	Apr 26 1961
ANNUAL RUNOFF (AC-FT)	402800		667300		677900	
10 PERCENT EXCEEDS	1920		2940		2880	
50 PERCENT EXCEEDS	195		220		300	
90 PERCENT EXCEEDS	56		98		170	

a--Also occurred on October 14.
b--Also occurred on October 14-15.
c--Result of discharge measurement.
e--Estimated.

YELLOWSTONE RIVER BASIN

06208500 CLARKS FORK YELLOWSTONE RIVER AT EDGAR, MT

LOCATION.--Lat 45°27'58", long 108°50'35" (NAD 27), in SE$^1/_4$SE$^1/_4$SE$^1/_4$ sec.23, T.4 S., R.23 E., Carbon County, Hydrologic Unit 10070006, on right bank 400 ft downstream from county bridge, 0.5 mi east of Edgar, 6 mi upstream from Rock Creek, and at river mile 22.1.
DRAINAGE AREA.--2,032 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1921 to September 1969, October 1986 to current year.
REVISED RECORDS.--WSP 1509: 1924, 1932(M). WSP 1729: Drainage area.
GAGE.--Water-stage recorder. Elevation of gage is 3,460 ft (NGVD 29). Prior to Aug. 31, 1953, nonrecording gage at same site and datum.
REMARKS.--Water-discharge records good except those for the estimated daily discharges, which are poor. Diversions for irrigation of about 41,500 acres, of which about 840 acres lies downstream from the station. In addition, about 6,300 acres of land upstream from the station are irrigated by diversions from the adjoining Rock Creek basin. U.S. Geological Survey satellite telemeter at station. **Figures of discharge given herein have the flow of White Horse Canal subtracted.**

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	215	440	446	e330	e300	e220	294	687	7300	3350	580	140
2	215	439	408	e340	e310	e210	294	663	8240	3130	525	151
3	215	436	416	e350	e310	e230	289	612	7650	2740	504	149
4	220	427	426	e350	e320	e250	270	779	5790	2340	484	120
5	245	413	404	e340	e330	e240	290	767	4720	2030	515	105
6	275	400	396	e340	e330	e220	309	841	4660	1860	456	98
7	279	404	407	e350	e350	e220	341	801	5500	1760	375	131
8	292	421	415	e350	e340	e220	443	747	5400	1620	370	181
9	305	487	388	e350	e320	e230	461	717	4540	1530	419	348
10	323	435	400	e340	e320	e260	437	595	3750	1440	414	367
11	336	429	393	e350	e330	e260	413	576	2840	1260	355	347
12	343	407	378	e370	e320	e250	411	541	2260	1050	304	340
13	354	430	416	e340	e330	e260	388	553	1900	925	250	338
14	375	445	408	e330	e320	e240	376	712	1700	825	207	315
15	393	423	e400	e310	e310	e240	523	1260	2030	761	161	281
16	383	416	e400	e310	e320	e240	960	1470	2760	707	151	264
17	385	408	e410	e320	e320	e220	687	1490	3720	732	162	231
18	382	416	e400	e310	e320	e220	620	1530	4510	830	159	255
19	402	443	e410	e330	e310	e220	548	2080	5450	1030	163	270
20	412	431	e400	e330	e310	e200	472	3350	4670	1080	159	291
21	396	387	e400	e340	e300	e180	421	4220	3860	1090	143	315
22	385	406	e350	e330	e310	e220	398	4360	3760	1080	127	358
23	388	446	e350	e290	e250	e260	373	3460	3850	1100	116	390
24	384	436	e360	e300	e200	e280	371	2510	3780	1240	116	379
25	412	435	e370	e330	e170	292	361	1880	3960	1120	114	366
26	418	426	e380	e330	e200	291	347	1540	4050	1030	105	375
27	412	417	e380	e320	e250	296	422	1540	4030	953	105	385
28	433	420	e370	e320	e240	317	540	1780	3660	938	118	395
29	429	400	e320	e300	---	302	520	2330	3380	1090	136	402
30	449	419	e300	e290	---	298	471	3530	3340	814	157	384
31	436	---	e320	e300	---	289	---	5760	---	705	143	---
TOTAL	10891	12742	12021	10190	8340	7675	13050	53681	127060	42160	8093	8471
MEAN	351.3	424.7	387.8	328.7	297.9	247.6	435.0	1732	4235	1360	261.1	282.4
MAX	449	487	446	370	350	317	960	5760	8240	3350	580	402
MIN	215	387	300	290	170	180	270	541	1700	705	105	98
AC-FT	21600	25270	23840	20210	16540	15220	25880	106500	252000	83620	16050	16800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 2002, BY WATER YEAR (WY)*

MEAN	534.1	500.6	408.9	351.1	348.8	364.2	558.1	2108	4073	2031	616.1	477.4
MAX	1010	777	593	512	584	554	1398	5578	7256	4771	1541	1395
(WY)	1942	1928	1996	1997	1963	1943	1943	1928	1996	1943	1951	1941
MIN	298	310	217	200	180	220	123	757	1768	290	49.5	156
(WY)	1956	1936	1937	1922	1922	1924	1961	1968	1987	1988	1988	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1921 - 2002*	
ANNUAL TOTAL	226905		314374			
ANNUAL MEAN	621.7		861.3		1032	
HIGHEST ANNUAL MEAN					1623	1997
LOWEST ANNUAL MEAN					644	2001
HIGHEST DAILY MEAN	5590	Jun 14	8240	Jun 2	10600	Jun 2 1936
LOWEST DAILY MEAN	79	Aug 16	98	Sep 6	37	May 11 1961
ANNUAL SEVEN-DAY MINIMUM	84	Aug 21	114	Aug 22	43	Apr 18 1961
MAXIMUM PEAK FLOW			8720	Jun 2	11100	Jun 12 1997
MAXIMUM PEAK STAGE			8.39	Jun 2	9.30	Jun 12 1997
INSTANTANEOUS LOW FLOW					36	Apr 22 1961
ANNUAL RUNOFF (AC-FT)	450100		623600		747800	
10 PERCENT EXCEEDS	1840		2410		2850	
50 PERCENT EXCEEDS	336		387		470	
90 PERCENT EXCEEDS	138		220		271	

*--During period of operation (water years 1921-69, 1987 to current year).
e--Estimated.

06208500 CLARKS FORK YELLOWSTONE RIVER AT EDGAR, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964 to 1965, January 1999 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: April to September 2002 (seasonal records).
SUSPENDED-SEDIMENT DISCHARGE: July 1972 to June 1973.
INSTRUMENTATION.--Temperature probe installed April 3, 2002.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District Office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records): Maximum daily, 26.0°C, July 13, 2002; minimum daily, 1.5°C, Apr. 4, 2002.
SEDIMENT CONCENTRATION: Maximum daily mean, 4,180 mg/L Apr. 28, 1973; minimum daily mean, 30 mg/L Nov. 1, 1972.
SEDIMENT LOAD: Maximum daily, 30,100 tons May 20, 1973; minimum daily, 23 tons Dec. 4, 1972.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum daily, 26.0°C, July 13; minimum daily, 1.5°C, Apr 4.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV									
14...	0930	450	8.1	680	12.0	6.5	.27	.805	.004
MAR									
28...	0855	282	8.5	632	5.0	3.0	.22	.532	.004
MAY									
21...	1020	4350	8.3	120	18.5	14.0	1.3	.121	.003
JUL									
19...	0830	991	8.0	348	24.0	21.0	.43	.254	.006

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV					
14...	<.007	.037	86	72	87.5
MAR					
28...	<.007	.036	84	65	49.5
MAY					
21...	.030	1.46	83	920	10800
JUL					
19...	.008	.142	87	118	316

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
NOV											
14...	0930	300	78.8	24.5	2.08	.9	33.8	221	3.28	.3	8.97
MAY											
21...	1020	49	14.3	3.34	.54	.3	5.05	50	.43	E.1	9.03

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
NOV											
14...	163	.61	548	451	E1	<.1	<.8	2.3	<1	2	5
MAY											
21...	9.9	.10	863	73	4	.1	18.1	35.4	13	36	55

E--Estimated.

YELLOWSTONE RIVER BASIN

06208500 CLARKS FORK YELLOWSTONE RIVER AT EDGAR, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	APRIL			MAY			JUNE			JULY		
1				10.0	8.0	9.0	12.5	11.0	11.5	19.0	16.0	17.5
2				12.5	6.5	9.5	11.0	9.5	10.5	18.5	15.5	17.5
3				11.5	9.0	10.5	10.5	9.0	9.5	18.5	16.0	17.0
4	7.5	1.5	4.5	13.0	7.0	10.0	12.0	8.0	10.0	19.5	16.0	17.5
5	11.0	4.5	8.0	13.5	10.5	12.0	13.5	9.5	11.0	20.5	16.5	18.5
6	11.0	8.5	9.5	12.5	10.5	11.5	15.0	10.5	12.5	21.0	18.0	19.5
7	12.0	8.5	10.5	11.0	8.0	9.0	13.5	11.0	12.0	22.0	18.0	20.0
8	12.0	8.5	10.0	9.0	6.0	7.5	12.0	10.0	10.5	23.0	18.5	21.0
9	11.5	9.0	10.5	11.5	6.5	9.0	10.5	9.0	9.5	22.0	18.5	20.5
10	11.5	9.0	10.5	12.0	8.0	10.5	10.5	8.5	9.5	22.5	18.0	20.0
11	13.0	9.0	11.0	15.5	10.5	12.5	11.5	8.5	10.0	24.0	18.0	21.0
12	14.0	10.5	12.0	17.0	12.0	14.5	13.5	10.5	11.5	25.0	19.0	22.0
13	14.5	10.5	12.5	18.0	13.0	15.5	16.0	11.0	13.5	26.0	21.0	23.5
14	14.0	12.0	13.0	17.5	14.5	16.0	18.0	13.0	15.5	25.5	21.5	23.5
15	12.5	7.0	9.5	16.0	12.5	14.0	18.5	14.5	16.5	24.5	21.5	23.0
16	9.5	6.0	7.5	13.0	10.0	11.5	17.0	15.0	16.5	24.5	21.0	22.5
17	10.0	7.0	8.5	14.5	9.0	11.5	16.5	14.5	15.5	24.5	20.5	22.5
18	9.0	6.0	7.5	16.0	11.0	13.5	16.0	13.5	14.5	25.0	20.5	23.0
19	8.0	5.0	6.5	16.0	13.0	14.5	14.5	11.5	13.0	24.0	21.0	23.0
20	6.5	4.0	5.0	15.5	13.5	14.5	15.0	11.0	12.5	23.0	20.0	22.0
21	10.0	3.0	6.0	14.0	11.0	12.5	15.0	12.0	13.5	22.5	19.0	20.5
22	14.0	8.0	11.0	11.5	7.5	9.0	14.5	12.0	13.5	21.0	17.5	19.5
23	13.0	8.5	11.0	8.0	6.5	7.0	15.0	12.5	13.5	21.5	18.5	20.0
24	9.5	6.0	8.0	10.0	6.5	8.0	16.0	13.0	14.5	23.0	18.0	20.5
25	11.0	6.0	8.5	14.0	9.0	11.0	18.0	14.0	16.0	22.5	20.5	21.5
26	9.5	6.5	8.0	14.5	12.0	13.0	18.5	15.0	16.5	21.5	18.0	20.0
27	8.5	6.0	7.0	16.5	11.0	13.5	18.0	15.0	16.5	21.0	19.0	20.0
28	10.0	5.5	8.0	16.0	13.0	14.5	18.0	14.5	16.0	21.5	16.5	19.0
29	14.0	8.0	11.0	14.5	13.0	14.0	17.5	15.0	16.5	23.0	18.5	20.5
30	12.5	9.5	11.0	14.5	12.5	13.5	19.5	15.5	17.5	24.0	19.5	21.5
31	---	---	---	13.5	11.0	12.5	---	---	---	23.5	20.0	21.5
MONTH	14.5	1.5	9.0	18.0	6.0	12.0	19.5	8.0	13.5	26.0	15.5	20.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
	AUGUST			SEPTEMBER		
1	21.0	17.0	19.0	20.0	16.0	18.0
2	19.5	16.5	17.5	21.5	16.0	18.5
3	19.0	15.0	17.0	21.5	16.5	19.0
4	21.0	16.5	18.5	21.0	17.0	19.0
5	23.0	19.0	20.5	20.5	16.5	18.5
6	24.0	18.5	21.5	18.5	16.5	17.0
7	22.5	20.0	21.0	20.0	15.5	17.5
8	21.0	17.5	19.0	19.5	16.5	18.0
9	19.0	15.0	17.0	19.5	15.5	17.5
10	21.5	15.0	18.0	19.5	15.0	17.0
11	21.0	17.5	19.5	19.5	15.0	17.0
12	21.0	16.5	18.5	20.0	15.5	17.5
13	22.0	16.5	19.0	19.5	15.5	17.5
14	22.5	17.5	19.5	19.5	15.5	17.5
15	22.5	16.5	19.5	19.0	15.0	17.5
16	21.5	17.0	19.0	18.5	15.0	17.0
17	20.0	14.0	17.0	17.5	15.5	16.5
18	20.5	15.0	18.0	15.5	14.0	15.0
19	21.0	15.0	18.0	16.5	12.0	14.5
20	19.0	16.0	17.0	15.5	13.0	14.0
21	18.5	15.0	17.0	14.0	11.5	12.5
22	19.5	15.0	17.0	14.0	9.5	11.5
23	21.0	16.0	18.5	15.0	10.5	12.5
24	21.0	16.5	18.5	14.5	11.5	13.0
25	21.5	16.0	19.0	13.0	11.0	12.0
26	21.0	17.0	19.0	13.5	9.5	11.5
27	19.0	17.0	18.0	12.5	10.0	11.0
28	20.5	15.5	18.0	14.0	9.5	11.5
29	20.0	16.5	18.0	15.0	11.0	13.0
30	21.0	15.5	18.0	15.0	12.5	13.5
31	20.0	17.0	18.5	---	---	---
MONTH	24.0	14.0	18.5	21.5	9.5	15.5

YELLOWSTONE RIVER BASIN

06209500 ROCK CREEK NEAR RED LODGE, MT

LOCATION (REVISED).--Lat 45°05'11", long 109°19'46" (NAD 27), in NW$^1/_4$NE$^1/_4$SW$^1/_4$ sec.36, T.8 S., R.19 E., Carbon County, Hydrologic Unit 10070006, on left bank 40 ft downstream from county bridge, 6.7 mi south of Red Lodge, and at river mile 49.1.
DRAINAGE AREA.--105 mi^2 .

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to December 1932, May 1934 to September 1982, May 1985 to September 1986, January 2000 to current year. Monthly discharge only for May 1934, published in WSP 1309.
REVISED RECORDS.--WSP 1729: Drainage area. WDR MT-00-1: Drainage area.
GAGE.--Water-stage recorder. Elevation of gage is 6,400 ft (NGVD 29). Prior to October 1986, water-stage recorder at datum 6,099.42 ft, levels by U.S. Army Corps of Engineers, at previous site 3.1 mi downstream. Streamflows are equivalent.
REMARKS.--Water-discharge records good except those for the estimated daily discharges, which are poor. Flow partly regulated by Glacier Lake. No diversions upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	49	e35	e19	e16	e17	20	32	864	570	254	176
2	74	48	e35	e19	e18	e20	e18	32	854	532	240	169
3	72	47	e38	e20	e20	e22	e19	35	709	493	241	165
4	69	46	e35	e20	e21	e25	e20	33	529	454	251	162
5	66	46	e32	e20	e22	e22	21	35	514	522	242	158
6	64	47	e35	e20	23	e20	22	35	620	545	226	158
7	62	51	e35	e21	22	e18	22	34	609	532	216	172
8	61	45	e35	e22	22	e17	22	32	505	553	223	171
9	61	45	e32	e23	22	e18	21	31	427	564	198	156
10	59	44	e32	e22	21	e22	22	31	339	496	178	147
11	58	43	e30	25	22	21	23	30	283	445	171	141
12	56	44	e32	24	22	20	23	32	255	411	186	136
13	57	43	e35	24	e21	20	25	35	249	400	226	129
14	57	43	e30	24	e20	20	35	45	297	393	218	122
15	56	42	e25	e20	e18	e20	36	58	363	376	219	116
16	55	41	e24	e18	e20	e19	29	64	448	388	210	108
17	55	41	e30	e18	21	e18	26	65	530	393	205	106
18	53	40	e32	e20	21	e18	25	87	630	451	199	106
19	54	e38	e32	e21	20	e18	25	163	610	401	192	98
20	55	e35	e30	e22	20	e16	24	322	467	393	188	92
21	52	40	e28	e23	20	e18	25	494	464	424	195	87
22	52	40	e25	e20	21	e20	24	349	473	433	218	82
23	54	39	e22	e18	20	20	25	213	487	459	209	79
24	51	38	e22	e20	e18	20	24	165	577	416	204	77
25	52	e37	e23	e25	e16	20	24	150	647	377	200	76
26	51	e35	e24	e22	e17	20	25	166	607	339	197	75
27	51	e35	e22	e20	e20	20	27	187	565	319	217	73
28	50	e32	e20	e20	e18	19	26	243	524	333	201	72
29	50	e35	e18	e18	---	19	29	398	517	295	193	70
30	49	e35	e16	e16	---	20	36	705	562	279	187	69
31	50	---	e18	e14	---	20	---	845	---	266	181	---
TOTAL	1781	1244	882	638	562	607	743	5146	15525	13252	6485	3548
MEAN	57.45	41.47	28.45	20.58	20.07	19.58	24.77	166.0	517.5	427.5	209.2	118.3
MAX	75	51	38	25	23	25	36	845	864	570	254	176
MIN	49	32	16	14	16	16	18	30	249	266	171	69
AC-FT	3530	2470	1750	1270	1110	1200	1470	10210	30790	26290	12860	7040

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 2002, BY WATER YEAR (WY)*

MEAN	82.52	55.32	41.65	34.14	30.89	29.60	40.02	219.9	595.8	493.7	257.7	140.6
MAX	124	77.7	56.1	45.1	42.4	39.7	99.2	460	1129	1088	427	219
(WY)	1968	1962	1962	1942	1953	1972	1943	1958	1957	1975	1951	1971
MIN	50.1	39.7	26.6	20.6	19.6	19.6	24.4	87.6	273	220	153	88.6
(WY)	1956	1961	1955	2002	2000	2002	1961	1953	1939	2001	2001	1960

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1932 - 2002*	
ANNUAL TOTAL	35299		50413			
ANNUAL MEAN	96.71		138.1		171.9	
HIGHEST ANNUAL MEAN					251	1943
LOWEST ANNUAL MEAN					97.3	2001
HIGHEST DAILY MEAN	500	Jun 25	864	Jun 1	2370	Jun 5 1957
LOWEST DAILY MEAN	16	Dec 30	14	Jan 31	14	Nov 29 1954
ANNUAL SEVEN-DAY MINIMUM	20	Dec 25	17	Jan 27	17	Jan 27 2002
MAXIMUM PEAK FLOW			a1130	Jun 1	c3110	Jun 4 1957
MAXIMUM PEAK STAGE			b7.97	Dec 16	b7.97	Dec 16 2002
ANNUAL RUNOFF (AC-FT)	70020		99990		124600	
10 PERCENT EXCEEDS	247		452		490	
50 PERCENT EXCEEDS	48		43		63	
90 PERCENT EXCEEDS	22		20		29	

*--During periods of operation (April 1932 to December 1932, May 1934 to September 1982, May 1985 to September 1986, January 2000 to current year).
a--Gage height, 6.85 ft.
b--Backwater from ice.
c--Gage height, 4.78 ft, previous site and datum.
e--Estimated.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: May 2001 to current year.

INSTRUMENTATION.--Temperature probe installed May 10, 2001.

REMARKS.--Missing temperature record for June 22 and 23 due to equipment problems. Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum daily, 16.0°C July 27, 2001 and Aug. 5-7, 2001; minimum daily, 0.0°C, many days during winter period.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum daily, 14.5°C, July 12 and 24; minimum daily, 0.0°C, many days October through May.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	10.0	6.0	8.0	4.0	2.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0
2	8.5	5.5	7.5	3.5	1.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0
3	7.5	5.0	6.5	3.0	1.5	2.0	0.0	0.0	0.0	0.5	0.0	0.0
4	6.0	3.0	4.5	2.5	1.0	2.0	0.0	0.0	0.0	0.5	0.0	0.5
5	4.5	1.0	3.0	4.5	2.0	3.0	0.0	0.0	0.0	0.5	0.0	0.5
6	6.0	2.0	4.0	4.5	2.0	3.5	0.0	0.0	0.0	1.0	0.5	0.5
7	7.0	4.0	5.5	4.0	0.5	2.5	0.0	0.0	0.0	1.5	0.5	1.0
8	6.5	4.5	5.5	1.0	0.0	0.5	0.0	0.0	0.0	1.5	1.0	1.0
9	5.0	2.5	4.0	3.0	0.0	1.5	0.0	0.0	0.0	1.0	0.5	1.0
10	3.5	0.5	2.5	1.5	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0
11	4.5	2.5	3.0	1.5	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.5
12	2.5	0.5	2.0	2.5	0.5	1.5	0.0	0.0	0.0	1.0	0.0	0.5
13	4.5	2.0	3.0	3.0	1.0	2.0	0.0	0.0	0.0	1.0	0.0	0.5
14	3.0	1.5	2.5	3.5	2.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0
15	2.5	0.0	1.5	3.0	1.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0
16	5.0	1.0	3.0	3.0	2.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0
17	5.5	3.5	4.5	4.0	2.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
18	3.5	1.5	2.5	3.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
19	4.5	2.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	5.0	3.5	4.0	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
21	4.0	1.5	3.0	2.5	0.5	1.5	0.5	0.0	0.5	0.0	0.0	0.0
22	4.0	2.5	3.5	2.0	1.0	1.5	0.5	0.0	0.0	0.0	0.0	0.0
23	4.0	1.5	3.0	2.0	0.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0
24	1.5	0.0	0.5	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
25	1.5	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	3.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	4.5	1.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	4.0	2.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
29	5.0	2.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	5.5	3.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	5.0	4.0	4.5	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0
MONTH	10.0	0.0	3.5	4.5	0.0	1.5	0.5	0.0	0.0	1.5	0.0	0.0

YELLOWSTONE RIVER BASIN

06209500 ROCK CREEK NEAR RED LODGE, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	1.0	6.0	0.5	3.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	8.5	0.5	4.5
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	1.5	3.5
4	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.5	8.0	0.0	3.5
5	0.5	0.0	0.0	0.0	0.0	0.0	4.0	0.5	2.0	6.5	2.0	4.5
6	0.5	0.0	0.5	0.0	0.0	0.0	3.0	1.5	2.0	4.0	1.0	2.0
7	0.5	0.0	0.5	0.0	0.0	0.0	4.0	1.5	2.0	4.5	1.0	3.0
8	1.0	0.5	0.5	0.0	0.0	0.0	4.5	1.0	2.5	6.0	0.0	2.5
9	1.0	0.0	0.5	0.0	0.0	0.0	3.5	1.5	2.5	5.0	0.0	2.5
10	0.5	0.0	0.5	0.5	0.0	0.5	5.0	1.5	3.0	4.5	1.0	3.0
11	0.5	0.0	0.5	1.0	0.5	0.5	5.5	1.0	3.0	8.5	2.0	4.5
12	0.5	0.0	0.0	1.0	0.0	1.0	5.0	1.5	3.0	8.5	2.5	5.5
13	0.0	0.0	0.0	1.0	0.5	0.5	6.5	2.0	4.0	11.0	3.0	7.0
14	0.5	0.0	0.0	1.0	0.0	0.5	7.5	3.5	5.0	8.5	5.0	7.0
15	0.0	0.0	0.0	1.0	0.0	0.0	3.5	0.5	2.0	7.5	3.0	5.5
16	0.5	0.0	0.0	0.0	0.0	0.0	4.0	0.5	2.0	6.5	2.5	4.5
17	1.0	0.5	0.5	0.0	0.0	0.0	3.5	0.0	1.5	9.0	2.5	5.5
18	1.5	1.0	1.0	0.0	0.0	0.0	3.0	0.5	1.5	9.0	3.0	6.0
19	1.0	0.5	0.5	0.0	0.0	0.0	3.0	0.0	1.0	10.5	3.5	6.0
20	1.0	0.5	0.5	0.5	0.0	0.0	0.5	0.0	0.0	8.0	3.0	5.0
21	1.0	0.0	0.5	0.0	0.0	0.0	4.5	0.0	2.0	6.0	2.5	4.0
22	1.5	0.5	1.0	1.5	0.0	0.5	8.0	1.5	4.5	4.0	2.0	3.0
23	1.0	0.0	1.0	1.5	0.5	1.0	4.5	0.5	2.5	3.5	0.5	2.0
24	0.0	0.0	0.0	1.0	0.5	1.0	5.0	0.0	2.0	7.5	1.5	4.0
25	0.0	0.0	0.0	1.5	0.0	0.5	5.5	0.0	2.5	9.0	2.0	5.0
26	0.0	0.0	0.0	2.5	0.5	1.0	4.5	0.5	2.5	7.5	3.5	5.0
27	0.0	0.0	0.0	1.5	1.0	1.0	2.0	1.0	1.5	8.0	3.0	5.5
28	0.0	0.0	0.0	2.0	0.5	1.0	7.0	0.5	3.5	7.5	3.0	5.5
29	---	---	---	2.0	0.5	1.0	8.5	1.5	5.0	8.0	3.5	5.5
30	---	---	---	2.5	1.0	1.5	5.0	1.0	3.0	7.0	4.0	5.0
31	---	---	---	2.5	0.5	1.5	---	---	---	8.5	3.0	5.5
MONTH	1.5	0.0	0.5	2.5	0.0	0.5	8.5	0.0	2.0	11.0	0.0	4.5

		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.5	3.5	5.5	12.5	7.0	9.5	13.0	7.0	10.0	11.5	7.5	9.5
2	5.5	4.0	4.5	12.5	6.5	9.5	12.5	8.0	10.0	13.0	7.5	10.0
3	7.5	3.0	5.0	11.0	7.0	9.0	12.0	8.5	10.0	13.0	8.5	10.5
4	8.5	2.5	5.0	13.0	7.5	10.0	14.0	9.0	11.0	13.0	8.5	10.5
5	9.5	3.5	6.0	13.0	7.5	10.0	13.5	9.0	11.0	12.5	8.0	10.0
6	9.5	4.5	6.5	11.5	8.0	9.5	14.0	8.5	11.0	11.0	8.5	9.5
7	9.0	3.5	6.0	12.0	8.0	10.0	13.0	9.5	11.0	12.0	8.5	10.0
8	7.5	4.0	5.5	14.0	8.5	10.5	11.5	8.0	10.0	10.0	8.0	9.0
9	5.0	3.0	4.0	13.0	7.5	10.0	12.0	6.0	8.5	10.5	6.5	8.5
10	6.0	2.5	4.0	13.5	7.0	10.0	13.5	7.0	10.0	11.5	6.0	8.5
11	7.0	2.5	4.5	14.0	7.5	10.5	11.5	8.0	9.5	11.5	7.0	9.0
12	9.0	4.0	6.0	14.5	8.0	11.0	11.5	8.0	9.5	11.5	7.0	9.0
13	11.0	4.0	7.0	14.0	9.5	11.0	13.5	7.5	10.0	11.5	6.0	8.5
14	11.5	4.5	7.5	13.5	9.0	11.0	14.0	8.5	10.5	11.5	6.5	9.0
15	10.0	5.0	7.5	13.5	9.0	11.0	13.5	8.5	10.5	11.5	7.0	9.0
16	11.5	5.0	8.0	12.0	10.0	11.0	13.5	8.0	10.5	12.0	7.5	9.5
17	11.0	5.5	8.0	12.5	9.5	11.0	12.5	6.5	9.0	10.5	8.0	9.0
18	10.0	6.0	7.5	14.0	9.0	11.0	12.5	7.5	9.5	9.0	7.0	8.0
19	9.0	4.0	6.0	14.0	9.5	11.5	13.5	7.0	9.5	10.0	4.5	7.0
20	10.5	4.0	7.0	13.5	9.5	11.0	11.5	7.5	9.5	8.5	6.5	7.5
21	10.5	5.5	7.5	11.0	9.0	10.0	10.0	7.5	8.5	7.0	4.0	5.5
22	---	6.0	---	13.5	9.0	11.0	11.0	7.5	9.0	8.0	3.0	5.5
23	---	---	---	12.5	9.0	11.0	11.0	7.0	9.0	8.0	4.0	6.5
24	11.0	6.0	8.0	14.5	9.0	11.5	11.5	7.5	9.5	8.0	5.0	6.5
25	12.5	6.5	9.0	12.5	9.5	11.0	12.5	7.0	9.5	6.5	5.0	5.5
26	11.5	6.5	9.0	12.5	8.5	10.5	12.0	7.5	9.5	7.0	3.5	5.5
27	11.0	7.0	9.0	11.0	8.5	9.5	10.5	8.0	9.5	6.0	4.5	5.0
28	12.0	7.0	9.0	13.0	7.5	10.0	11.5	7.5	9.5	7.5	3.5	5.5
29	12.5	7.5	9.5	14.0	8.0	10.5	11.0	7.5	9.0	8.0	5.0	6.5
30	13.0	7.0	9.5	14.0	8.5	11.0	12.5	7.5	10.0	7.0	4.0	5.5
31	---	---	---	14.0	8.5	11.0	11.0	8.0	9.5	---	---	---
MONTH	---	---	---	14.5	6.5	10.5	14.0	6.0	10.0	13.0	3.0	8.0

06211000 RED LODGE CREEK ABOVE COONEY RESERVOIR, NEAR BOYD, MT

LOCATION.--Lat 45°26'16", long 109°15'11" (NAD 27), in NE$^1/_4$SE$^1/_4$SE$^1/_4$ sec.33, T.4 S., R.20 E., Carbon County, Hydrologic Unit 10070006, on right bank 0.6 mi upstream from Cooney Reservoir, 9.5 mi west of Boyd, and at river mile 15.0.

DRAINAGE AREA.--143 mi^2.

PERIOD OF RECORD.--May 1937 to current year (no winter records most years).

REVISED RECORDS.--WSP 1729: Drainage area. WSP 2116: 1937(M), 1942(M), 1943(P), 1944(M), 1948(M), 1952(M), 1957(P), 1962(M), 1963(M).

GAGE.--Water-stage recorder. Datum of gage is 4,248.0 ft (NGVD 29).

REMARKS.--Seasonal records fair. Some return flow from lands irrigated by water diverted from Rock Creek and East Rosebud Creek basins. Diversions for irrigation of about 5,100 acres upstream from station. U. S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				e160	105	92	68	13	64	14		
2				e150	98	81	61	12	65	24		
3				e130	76	82	65	18	57	25		
4				e140	99	90	88	12	59	39		
5				135	63	73	70	10	44	38		
6				183	64	80	66	9.2	49	28		
7				191	143	141	59	17	73	24		
8				130	116	150	85	48	78	22		
9				98	64	253	81	59	88	25		
10				61	50	236	83	44	89	22		
11				54	44	186	82	33	73	17		
12				51	32	154	47	30	55	30		
13				48	27	128	34	33	45	30		
14				80	28	118	32	28	41	26		
15				90	34	114	25	19	30	27		
16				59	30	120	29	20	25	29		
17				45	28	130	55	19	23	26		
18				57	24	129	72	27	37	26		
19				36	26	86	40	26	53	25		
20				34	40	45	40	25	59	23		
21				29	51	23	25	41	59	22		
22				64	69	25	26	45	46	e24		
23				77	43	38	21	55	41	e26		
24				45	33	47	27	44	42	e28		
25				45	20	29	18	46	41	e30		
26				36	13	29	15	42	40	32		
27				31	15	31	29	37	24	29		
28				28	21	36	39	94	19	31		
29				28	24	40	24	71	14	34		
30				29	27	59	18	64	11	30		
31				---	130	---	15	69	---	34		
TOTAL				2344	1637	2845	1439	1110.2	1444	840		
MEAN				78.13	52.81	94.83	46.42	35.81	48.13	27.10		
MAX				191	143	253	88	94	89	39		
MIN				28	13	23	15	9.2	11	14		
AC-FT				4650	3250	5640	2850	2200	2860	1670		

STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1937 - 2002*

MEAN	15.44	27.45	36.51	76.55	156.9	190.9	90.07	38.33	46.52	46.00	33.35	19.34
MAX	18.8	35.0	62.9	234	616	575	297	90.2	106	119	69.5	33.6
(WY)	1964	1962	1962	1973	1975	1967	1975	1993	1941	1942	1942	1958
MIN	12.1	18.9	17.4	12.7	10.8	15.3	4.90	4.71	4.20	17.5	16.5	14.5
(WY)	1963	1964	1964	1961	1985	1954	1949	1946	1949	1954	1955	1946

SUMMARY STATISTICS	FOR 2002 SEASON			SEASONS 1937 - 2002*		
ANNUAL MEAN				58.45		
HIGHEST ANNUAL MEAN				67.1		1963
LOWEST ANNUAL MEAN				49.8		1964
HIGHEST DAILY MEAN	253	Jun	9	2000	Jun 15	1967
LOWEST DAILY MEAN	9.2	Aug	6	0.00	Aug 1	1949
ANNUAL SEVEN-DAY MINIMUM				0.00	Aug 9	1949
MAXIMUM PEAK FLOW	290	Jun	9	b2260	Jun 15	1967
MAXIMUM PEAK STAGE	2.86	Jun	9	7.00	Jun 15	1967
INSTANTANEOUS LOW FLOW	a5.2	Aug	4	c0.00	Jul 31	1988
ANNUAL RUNOFF (AC-FT)				42340		
10 PERCENT EXCEEDS				170		
50 PERCENT EXCEEDS				30		
90 PERCENT EXCEEDS				15		

*--No winter period most years.
a--Gage height, 1.61 ft.
b--From rating curve extended above 1,700 ft^3/s on basis of contracted-opening of peak flow.
c--Also many days in 1949.
e--Estimated.

YELLOWSTONE RIVER BASIN

06211500 WILLOW CREEK NEAR BOYD, MT

LOCATION.--Lat 45°25'20", long 109°13'47" (NAD 27), in SW$^1/_4$SW$^1/_4$SW$^1/_4$ sec.2, T.5 S., R.20 E., Carbon County, Hydrologic Unit 10070006, on left bank 0.5 mi upstream from Cooney Reservoir, 8 mi west of Boyd, and at river mile 2.1.
DRAINAGE AREA.--53.3 mi^2.
PERIOD OF RECORD.--June 1937 to current year (no winter records except 1963-64).
REVISED RECORDS.--WSP 1729: Drainage area. WSP 2116: 1957, 1962. WDR MT-87-1: 1986.
GAGE.--Water-stage recorder. Elevation of gage is 4,260 ft (NGVD 29). Prior to Apr. 23, 1948, at site 0.5 mi downstream at different datum.
REMARKS.--Records good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 1,800 acres upstream from station. Some return flow from lands irrigated by water diverted from Rock Creek basin. U. S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were obtained during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				e12	22	14	47	39	27	18		
2				e12	21	16	41	41	25	24		
3				e15	24	14	40	40	25	26		
4				e20	23	16	52	42	22	38		
5				e25	24	15	46	44	21	28		
6				e30	23	14	46	40	21	26		
7				e35	34	12	50	36	26	26		
8				e30	26	11	50	48	28	26		
9				e25	22	44	49	57	30	25		
10				e25	22	55	49	50	26	24		
11				e26	21	36	41	46	26	25		
12				e25	20	27	24	45	25	28		
13				e25	18	24	31	40	26	26		
14				e25	18	22	33	34	24	23		
15				e20	18	18	30	29	24	22		
16				18	17	19	36	26	21	21		
17				16	17	22	39	22	22	20		
18				18	15	27	42	25	29	20		
19				15	16	27	42	21	27	19		
20				15	17	28	43	19	26	20		
21				13	16	32	46	23	25	22		
22				16	18	38	47	24	25	23		
23				21	17	55	44	24	24	24		
24				16	17	46	46	21	23	22		
25				15	16	44	44	19	20	22		
26				14	15	46	50	18	21	22		
27				14	15	44	49	16	20	21		
28				13	15	42	53	23	20	21		
29				13	12	43	49	23	20	21		
30				16	15	46	45	29	19	21		
31				---	19	---	43	28	---	21		
TOTAL				583	593	897	1347	992	718	725		
MEAN				19.43	19.13	29.90	43.45	32.00	23.93	23.39		
MAX				35	34	55	53	57	30	38		
MIN				12	12	11	24	16	19	18		
AC-FT				1160	1180	1780	2670	1970	1420	1440		

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1964 AND SEASONS 1938 - 1962, 1965 - 2002*

MEAN	8.000	12.10	15.30	33.71	47.99	55.68	56.02	40.29	37.40	30.35	21.97	17.03
MAX	8.27	17.2	22.5	88.2	215	170	123	75.1	64.3	50.0	31.6	26.6
(WY)	1963	1962	1962	1973	1975	1967	1978	1972	1965	1972	1974	1958
MIN	7.73	5.76	5.89	6.29	3.08	2.05	3.20	11.8	6.02	12.7	14.7	10.6
(WY)	1964	1964	1964	1961	1969	1961	1960	1961	1960	1940	1963	1963

SUMMARY STATISTICS	FOR 2002 SEASON			FOR SEASONS 1938 - 2002*		
HIGHEST DAILY MEAN	57	Aug	9	1150	Jun 15	1967
LOWEST DAILY MEAN	11	Jun	8	0.00	May 29	1969
MAXIMUM PEAK FLOW	81	Jun	9	a1720	Jun 15	1967
MAXIMUM PEAK STAGE	3.01	Jun	9	b7.24	May 29	1942
INSTANTANEOUS LOW FLOW				0.00	May 29	1969

*--Seasonal records except 1963 and 1964 water years.
a--Gage height, 7.08 ft, from rating curve extended above 400 ft^3/s on basis of slope-area measurement of peak flow.
b--Backwater from Cooney Reservoir, site and datum then in use.
e--Estimated.

06212500 RED LODGE CREEK BELOW COONEY RESERVOIR, NEAR BOYD, MT

LOCATION.--Lat 45°26'59", long 109°11'06" (NAD 27), in NE$^1/_4$NW$^1/_4$NW$^1/_4$ sec.31, T.4 S., R.21 E., Carbon County, Hydrologic Unit 10070006, on right bank 250 ft upstream from Cottonwood Creek, 1.5 mi downstream from Cooney Dam, 6 mi west of Boyd, and at river mile 10.5.
DRAINAGE AREA.--210 mi^2.
PERIOD OF RECORD.--September 1937 to current year; seasonal records water years 1997-99.
REVISED RECORDS.--WSP 1309: 1942(M), 1944(M). WSP 2116: 1957(M).
GAGE.--Water-stage recorder. Datum of gage is 4,139.12 ft (NGVD 29).
REMARKS.--Records good except those for estimated daily discharges, which are poor. Some return flow from lands irrigated by water diverted from Rock Creek and East Rosebud Creek basins. Flow completely regulated by Cooney Reservoir (station number 06212000). Diversions for irrigation of about 6,900 acres upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	21	20	e18	19	e16	17	18	24	66	151	166
2	44	21	20	e19	19	e15	17	16	24	67	151	166
3	25	21	20	19	19	e16	17	17	24	83	151	164
4	25	22	19	19	19	e17	17	17	23	84	152	164
5	25	22	e20	19	19	17	17	17	36	85	153	163
6	25	22	19	19	19	17	17	17	47	88	153	162
7	25	22	19	19	19	17	17	18	47	89	153	162
8	25	22	e19	19	19	17	18	18	47	90	155	160
9	25	21	e20	19	19	17	18	18	49	90	156	158
10	25	22	e20	19	19	17	18	18	48	90	156	149
11	26	22	e20	19	19	17	18	18	47	95	155	143
12	26	22	e21	19	19	17	18	18	47	111	156	141
13	26	22	e21	19	20	17	18	19	51	121	156	139
14	26	22	e19	19	20	17	17	19	55	120	156	133
15	26	22	e20	19	20	17	16	19	55	130	168	114
16	25	21	e19	19	20	17	17	19	55	131	215	108
17	21	21	19	19	20	17	18	19	55	132	195	91
18	21	21	19	19	19	17	19	20	56	137	194	90
19	20	21	19	19	19	17	19	20	56	152	193	90
20	21	21	19	19	18	17	19	20	57	150	193	90
21	21	21	19	19	17	17	19	20	57	149	193	90
22	21	21	e18	19	17	17	19	20	56	150	193	90
23	21	21	e18	e18	17	17	18	20	55	145	193	88
24	20	21	e19	19	17	17	18	21	57	132	181	79
25	21	21	e19	19	e16	17	18	21	56	132	169	73
26	21	20	19	19	e15	17	18	22	55	132	169	73
27	22	20	19	19	e16	17	18	19	56	148	170	73
28	21	20	19	19	e17	17	18	20	67	151	171	73
29	21	20	19	19	---	17	18	21	66	151	169	72
30	21	20	e18	e18	---	17	18	20	65	152	167	65
31	21	---	e17	e17	---	17	---	23	---	152	167	---
TOTAL	767	636	596	584	516	523	534	592	1493	3705	5254	3529
MEAN	24.74	21.20	19.23	18.84	18.43	16.87	17.80	19.10	49.77	119.5	169.5	117.6
MAX	54	22	21	19	20	17	19	23	67	152	215	166
MIN	20	20	17	17	15	15	16	16	23	66	151	65
AC-FT	1520	1260	1180	1160	1020	1040	1060	1170	2960	7350	10420	7000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2002, BY WATER YEAR (WY)*

MEAN	78.98	64.65	36.94	28.17	28.75	42.52	81.43	177.3	225.1	172.0	140.7	112.3
MAX	234	212	121	94.6	139	231	253	801	685	383	220	197
(WY)	1943	1943	1972	1968	1962	1972	1973	1975	1957	1975	1991	1941
MIN	2.42	3.53	3.50	1.98	2.20	2.43	3.16	5.11	48.6	57.1	60.1	20.3
(WY)	1962	1961	1953	1964	1964	1964	1960	1961	1949	1954	1938	1961

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1938 - 2002*	
ANNUAL TOTAL	22870		18729			
ANNUAL MEAN	62.66		51.31		99.65	
HIGHEST ANNUAL MEAN					226	1975
LOWEST ANNUAL MEAN					24.3	1961
HIGHEST DAILY MEAN	271	Aug 14	215	Aug 16	2800	Jun 17 1957
LOWEST DAILY MEAN	11	Jun 17	15	Feb 26	0.00	Oct 7 1975
ANNUAL SEVEN-DAY MINIMUM	16	Jan 23	16	Feb 25	0.51	Oct 25 1989
MAXIMUM PEAK FLOW			220	Aug 16	3470	Jun 15 1967
MAXIMUM PEAK STAGE			3.19	Aug 16	10.17	Jun 15 1967
INSTANTANEOUS LOW FLOW					a0.00	Oct 6 1948
ANNUAL RUNOFF (AC-FT)	45360		37150		72190	
10 PERCENT EXCEEDS	153		152		219	
50 PERCENT EXCEEDS	22		21		64	
90 PERCENT EXCEEDS	17		17		9.2	

*--During period of operation (water years 1938 to current year, seasonal record 1997-99).
a--Also occurred October 1975.
e--Estimated.

YELLOWSTONE RIVER BASIN

06214500 YELLOWSTONE RIVER AT BILLINGS, MT

LOCATION.--Lat 45°48'00", long 108°28'00" (NAD 27), in SE$^1/_4$SE$^1/_4$SE$^1/_4$ sec.27, T.1 N., R.26 E., Yellowstone County, Hydrologic Unit 10070007, on right bank 0.3 mi downstream from bridge on U.S. Highway 87, 1 mi northeast of Billings, 10 mi upstream from Pryor Creek, and at river mile 360.3.

DRAINAGE AREA.--11,795 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1904 to December 1905 (gage heights only January to March, December 1905), August 1928 to current year. Monthly discharge only for some periods, published in WSP 1309. Published as "near Billings" 1904-5.

REVISED RECORDS.--WDR MT 1968: 1967 (M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,080 ft (NGVD 29). May 1904 to December 1905, nonrecording gage at bridge 0.3 ft upstream at different datum. Aug. 24, 1928, to June 30, 1932, nonrecording gage at bridge 0.3 mi upstream at datum 2.0 ft higher. July 1, 1932, to Oct. 12, 1937, water-stage recorder at old diversion dam 3.3 mi upstream at different datum. Oct. 13, 1937, to Jan. 9, 1963 and Dec. 2, 1967 to Sept. 12, 1990, water-stage recorder 0.3 mi upstream at datum 3,081.36 ft. Jan. 10, 1963 to Dec. 2, 1967, water-stage recorder at City of Billings Water Department intake, 2.1 mi upstream at datum 3,069.9 ft.

REMARKS.--Water-discharge records good except those for estimated daily discharges and discharges below 2,000 ft^3/s, which are poor. Diversions for irrigation of about 350,000 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1510	2490	2140	1330	1410	1510	1820	3130	35200	17300	4130	2190
2	1540	2480	2110	1290	1500	1570	1830	4360	39900	16000	3880	2150
3	1510	2570	2230	1150	1560	1530	1780	4010	41100	14500	3840	2070
4	1530	2520	2200	1590	1620	1660	1770	4160	32400	13200	3850	2020
5	1580	2460	2020	1960	1730	1820	1790	5140	25300	12200	4000	1940
6	1660	2390	1850	1880	1730	1650	1860	4880	23000	11400	4060	1940
7	1700	2360	1970	1870	1780	1340	1940	5540	27000	10800	3620	2170
8	1710	2380	2000	2190	1840	1030	2130	5130	27900	10300	3570	2270
9	1790	2500	1980	2330	1850	1080	2310	4730	25900	9760	3720	2620
10	1800	2550	1900	2050	1800	1380	2260	4340	22500	9270	3680	2900
11	1880	2400	1750	1910	1780	1890	2280	3910	19000	8570	3500	2690
12	1940	2360	1790	1870	1760	2160	2280	3770	16100	7810	3230	2520
13	1990	2350	1720	1890	1630	2410	2320	3790	14300	7270	2940	2460
14	2130	2390	e1700	1820	1720	2330	2260	4570	13400	6900	2630	2370
15	2430	2370	e1600	1750	1690	2040	2350	6730	13700	6600	2380	2340
16	2560	2310	e1700	1550	1720	1970	3810	8100	15700	6320	2280	2270
17	2520	2300	1750	1360	1810	1840	4430	8540	18700	6540	2250	2250
18	2390	2320	1850	1400	1830	1720	4260	8110	22100	6620	2280	2320
19	2380	2340	1820	1290	1960	1730	3620	9160	26000	6720	2280	2410
20	2510	2290	1840	1470	1920	1660	3140	12800	25900	6680	2200	2460
21	2540	2240	1800	1500	1800	1240	2840	19500	20800	6600	2160	2520
22	2480	2210	1790	1650	1850	1210	2650	23800	19900	6470	2130	2530
23	2480	2310	1770	1670	1840	1830	2550	20300	21000	6170	2080	2530
24	2410	2340	1670	1460	1640	2160	2500	14900	20900	6200	2080	2460
25	2410	2370	1620	1610	1130	2150	2580	11700	21800	5850	2100	2490
26	2510	2410	1570	1840	e850	2210	2380	9900	21600	5510	2090	2430
27	2420	2290	1580	1730	1010	2160	2370	9510	21100	5290	2020	2530
28	2410	2100	1570	1450	1540	1990	2590	10100	20000	5530	2070	2630
29	2370	2040	1340	e1000	---	1870	2980	12100	18600	5560	2160	2670
30	2430	1920	1170	e900	---	1820	2740	16800	17800	5100	2230	2690
31	2450	---	1300	e1100	---	1810	---	26400	---	4500	2210	---
TOTAL	65970	70360	55100	49860	46300	54770	76420	289910	688600	257540	87650	71840
MEAN	2128	2345	1777	1608	1654	1767	2547	9352	22950	8308	2827	2395
MAX	2560	2570	2230	2330	1960	2410	4430	26400	41100	17300	4130	2900
MIN	1510	1920	1170	900	850	1030	1770	3130	13400	4500	2020	1940
AC-FT	130900	139600	109300	98900	91840	108600	151600	575000	1366000	510800	173900	142500

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

MEAN	4021	3562	2797	2479	2655	3019	4128	12710	25350	13590	5176	4053
MAX	6803	5163	4451	3834	4382	5478	8799	24070	53910	37180	9776	7301
(WY)	1942	1984	1976	1984	1997	1979	1943	1997	1997	1975	1997	1968
MIN	2128	2283	1579	1363	1559	1767	1438	5635	9849	3410	1462	1527
(WY)	2002	1932	1933	1940	1932	2002	1961	1953	1934	1934	2001	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1929 - 2002	
ANNUAL TOTAL	1314830		1814320			
ANNUAL MEAN	3602		4971		6969	
HIGHEST ANNUAL MEAN					12100	1997
LOWEST ANNUAL MEAN					3763	2001
HIGHEST DAILY MEAN	20200	Jun 14	41100	Jun 3	80100	Jun 12 1997
LOWEST DAILY MEAN	1070	Sep 5	850	Feb 26	450	Dec 12 1932
ANNUAL SEVEN-DAY MINIMUM	1130	Aug 30	1270	Jan 28	794	Dec 10 1932
MAXIMUM PEAK FLOW			42600	Jun 3	82000	Jun 12 1997
MAXIMUM PEAK STAGE			11.31	Jun 3	15.00	Jun 12 1997
INSTANTANEOUS LOW FLOW					430	Dec 12 1932
ANNUAL RUNOFF (AC-FT)	2608000		3599000		5049000	
10 PERCENT EXCEEDS	9960		14400		17700	
50 PERCENT EXCEEDS	2030		2320		3710	
90 PERCENT EXCEEDS	1460		1570		2150	

e--Estimated.

06214500 YELLOWSTONE RIVER AT BILLINGS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963-93, January 1999 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: May 2001 to current year.
SUSPENDED-SEDIMENT DISCHARGE: Water years 1977-81.

INSTRUMENTATION.--Temperature probe installed May 14, 2001.

REMARKS.--Missing temperature data for May 10-13 and Sept. 26 and 30 due to equipment problems. Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records): Maximum daily, 27.0°C, several days in August 2001; minimum daily, 1.5°C, Apr. 2, 3, 2002.
SEDIMENT CONCENTRATION (water years 1977-81): Maximum daily mean, 4,260 mg/L, May 18, 1978; minimum daily mean, 1 mg/L, Oct. 27, 30, 1976, Jan. 11, 12, 1978.
SEDIMENT LOAD (water years 1977-81): Maximum daily, 493,000 tons, May 19, 1978; minimum daily, 11 tons, Jan. 12, 1978.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum daily, 25.5°C, July 13, 14; minimum daily, 1.5°C, Apr. 2, 3.

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	6.5	3.5	5.5	11.5	9.5	10.5	14.0	12.5	13.0	20.0	17.5	18.5
2	5.0	1.5	3.0	12.5	8.5	10.5	13.0	11.5	12.0	19.5	17.5	18.5
3	5.5	1.5	3.5	12.0	10.0	11.5	11.5	10.0	11.0	19.0	17.5	18.0
4	7.0	3.0	5.0	12.5	9.0	10.5	12.5	10.5	11.5	19.5	16.5	18.0
5	9.5	5.5	7.5	12.0	11.0	11.5	14.5	11.5	12.5	21.0	18.5	19.5
6	10.0	8.5	9.0	12.0	11.0	11.5	15.0	13.0	14.0	21.5	19.0	20.0
7	11.5	8.5	10.0	11.0	8.0	9.0	14.5	13.0	14.0	21.5	19.5	20.5
8	11.5	8.5	10.0	8.5	7.0	8.0	14.0	12.5	13.0	22.5	19.5	21.0
9	11.0	9.5	10.0	9.5	7.0	8.5	12.5	11.0	11.5	22.0	19.5	21.0
10	12.0	9.5	11.0	---	---	---	11.5	10.0	11.0	22.0	19.0	20.5
11	12.5	9.5	11.0	---	---	---	11.5	9.5	10.5	23.5	19.5	21.5
12	13.0	11.5	12.0	---	---	---	12.5	11.0	11.5	24.0	21.0	22.5
13	14.0	11.0	12.5	---	---	---	15.0	11.5	13.0	25.5	22.0	23.5
14	15.0	12.5	13.5	16.0	15.0	15.5	17.0	14.0	15.0	25.5	22.5	24.5
15	13.5	7.5	10.5	16.0	14.0	15.0	17.5	15.5	16.5	25.0	23.0	24.0
16	10.0	7.0	8.5	14.5	12.0	12.5	18.5	16.0	17.0	24.5	22.0	23.5
17	10.0	8.0	9.0	13.5	10.0	12.0	18.0	16.5	17.5	24.5	22.0	23.0
18	9.5	6.0	7.5	15.5	12.0	13.5	17.0	15.5	16.0	24.5	21.5	23.5
19	8.5	6.0	7.5	17.0	13.5	15.0	15.5	13.5	14.5	25.0	23.0	24.0
20	8.0	6.5	7.0	17.0	14.5	16.0	15.0	12.0	13.5	24.0	22.0	23.0
21	9.5	5.5	7.5	16.0	14.0	14.5	15.0	13.0	14.5	22.5	20.5	21.5
22	12.5	8.5	10.5	14.0	8.5	11.0	15.5	14.5	15.0	21.5	19.5	20.5
23	12.0	9.0	11.0	8.5	7.5	8.0	16.0	14.5	15.0	21.5	19.5	20.5
24	9.5	8.0	8.5	10.5	7.5	8.5	17.0	15.0	16.0	22.5	19.5	21.0
25	9.5	7.0	8.5	13.0	10.0	11.5	18.5	15.5	17.0	23.0	21.0	22.0
26	9.5	7.5	8.5	14.5	12.5	13.5	19.0	17.0	18.0	23.0	20.0	21.5
27	8.5	7.0	7.5	16.0	12.5	14.5	19.5	17.5	18.5	22.0	20.0	21.0
28	10.0	6.5	8.5	16.0	13.5	15.0	19.0	17.0	18.0	20.5	18.5	19.5
29	12.5	9.0	10.5	16.5	14.5	15.5	18.5	17.5	18.0	22.0	19.0	20.5
30	11.5	10.5	11.0	15.5	13.5	14.5	19.5	16.5	18.0	23.5	19.5	21.5
31	---	---	---	15.0	13.0	14.0	---	---	---	23.5	21.0	22.0
MONTH	15.0	1.5	9.0	---	---	---	19.5	9.5	14.5	25.5	16.5	21.5

YELLOWSTONE RIVER BASIN

06214500 YELLOWSTONE RIVER AT BILLINGS, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
	AUGUST			SEPTEMBER		
1	21.0	18.5	20.0	19.5	17.0	18.5
2	19.5	18.0	18.5	19.5	17.5	18.5
3	19.0	17.0	18.0	20.5	17.5	19.0
4	20.5	17.5	19.0	20.5	18.0	19.5
5	22.0	19.5	20.5	21.5	18.0	20.0
6	23.0	20.0	21.5	20.5	18.5	19.5
7	23.0	21.5	22.0	20.0	18.0	19.0
8	22.0	18.5	20.0	20.0	18.5	19.0
9	18.5	16.5	17.5	19.5	17.5	18.5
10	20.0	16.5	18.5	19.0	16.5	18.0
11	20.5	19.0	19.5	19.0	16.5	18.0
12	20.5	17.5	19.0	19.5	17.0	18.5
13	21.0	18.0	19.5	19.5	17.0	18.5
14	21.0	18.5	19.5	19.5	17.0	18.5
15	21.5	18.0	20.0	20.0	17.5	18.5
16	20.5	18.5	19.5	19.5	17.5	18.5
17	19.5	16.5	18.0	18.5	17.0	18.0
18	19.5	16.5	18.0	17.0	15.5	16.5
19	20.0	16.5	18.5	17.0	14.5	15.5
20	19.0	17.5	18.5	16.0	14.5	15.0
21	19.0	17.5	18.0	14.5	13.0	14.0
22	19.0	17.0	18.0	14.0	11.5	13.0
23	19.0	17.0	18.0	15.0	12.0	13.5
24	19.0	17.0	18.0	14.0	12.5	13.5
25	20.5	17.5	18.5	13.5	12.0	12.5
26	20.0	18.0	19.0	---	---	---
27	19.5	18.0	18.5	13.0	11.5	12.5
28	20.0	17.0	18.5	13.0	11.0	12.0
29	20.0	17.5	19.0	14.5	12.0	13.0
30	20.0	16.5	18.5	---	---	---
31	19.5	17.5	18.5	---	---	---
MONTH	23.0	16.5	19.0	---	---	---

06216000 PRYOR CREEK AT PRYOR, MT

LOCATION.--Lat 45°26'06", long 108°32'01" (NAD 27), in NE$^1/_4$NW$^1/_4$NE$^1/_4$ sec.5, T.5 S., R.26 E., Big Horn County, Hydrologic Unit 10070008, on left bank 60 ft upstream from county bridge, 0.5 mi north of Pryor, 1.4 mi downstream from Lost Creek, and at river mile 82.7.

DRAINAGE AREA.--117 mi^2.

PERIOD OF RECORD.--June 1921 to September 1924 (no winter records), November 1966 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area. WDR MT-87-1: 1982-83 (M), 1986 (M).

GAGE.--Water-stage recorder. Datum of gage is 4,007.35 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to Oct. 14, 1966, nonrecording gage at approximately same site at different datum.

REMARKS.--Records good. Diversions for irrigation of about 1,100 acres upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	20	19	19	19	18	18	19	17	9.3	5.9	7.9
2	19	20	19	18	19	18	18	19	18	9.8	6.2	7.2
3	19	20	19	19	19	18	17	18	18	8.6	6.7	8.1
4	19	19	19	19	19	18	17	19	17	12	7.3	8.5
5	19	19	19	19	19	19	18	19	16	10	7.6	7.6
6	19	20	19	19	19	19	18	19	15	8.4	7.7	7.6
7	19	20	19	19	19	18	18	19	13	6.9	7.4	9.7
8	19	20	19	20	19	19	19	19	14	6.1	8.2	13
9	20	20	19	19	19	19	18	18	15	7.3	9.6	11
10	20	20	19	19	19	18	18	18	16	7.4	11	8.9
11	19	20	19	19	19	18	18	19	15	5.8	12	9.5
12	19	20	19	19	19	19	18	18	15	5.9	8.8	9.7
13	19	20	19	19	19	19	18	18	14	5.3	7.9	9.2
14	20	20	19	19	19	19	17	17	13	5.0	6.7	9.7
15	20	20	20	19	19	18	18	18	13	4.7	6.4	11
16	20	20	20	18	19	18	20	17	13	5.6	6.2	11
17	19	20	20	19	18	18	19	17	13	7.1	6.4	14
18	19	20	20	19	18	18	23	17	13	5.9	6.6	18
19	19	20	19	19	18	18	21	17	13	5.6	6.9	16
20	21	20	19	19	18	17	19	17	14	6.0	6.8	17
21	20	20	19	19	18	17	20	16	14	6.0	6.9	17
22	20	20	19	19	18	17	21	19	13	6.1	8.1	16
23	20	21	19	18	18	18	21	19	13	7.0	7.0	16
24	19	20	19	19	18	18	21	18	13	6.9	7.0	17
25	19	20	19	19	18	18	19	17	13	5.9	7.8	17
26	20	20	19	19	18	18	19	17	13	5.6	7.5	17
27	20	20	19	19	18	18	19	17	12	6.1	7.3	16
28	20	20	18	18	18	18	20	17	9.4	7.0	9.0	14
29	20	20	18	18	---	18	19	16	10	6.1	9.0	14
30	21	19	18	18	---	18	18	16	9.4	6.6	8.1	13
31	20	---	19	19	---	17	---	17	---	6.4	7.3	---
TOTAL	606	598	590	584	520	561	567	551	414.8	212.4	237.3	371.6
MEAN	19.55	19.93	19.03	18.84	18.57	18.10	18.90	17.77	13.83	6.852	7.655	12.39
MAX	21	21	20	20	19	19	23	19	18	12	12	18
MIN	19	19	18	18	18	17	17	16	9.4	4.7	5.9	7.2
AC-FT	1200	1190	1170	1160	1030	1110	1120	1090	823	421	471	737

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2002, BY WATER YEAR (WY)

MEAN	32.14	31.71	30.90	29.55	30.48	32.41	32.69	55.56	41.64	23.91	21.54	27.42
MAX	62.9	62.0	69.7	54.3	55.7	70.9	58.8	251	158	69.3	49.5	61.0
(WY)	1976	1976	1976	1976	1976	1979	1976	1978	1975	1975	1975	1978
MIN	18.5	19.4	19.0	18.8	18.6	18.1	17.7	17.8	13.8	6.85	7.65	12.4
(WY)	1991	2001	2002	2002	2002	2002	1968	2002	2001	2002	2002	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1968 - 2002	
ANNUAL TOTAL	6755.2		5813.1			
ANNUAL MEAN	18.51		15.93		32.50	
HIGHEST ANNUAL MEAN					66.3	1975
LOWEST ANNUAL MEAN					15.9	2002
HIGHEST DAILY MEAN	31	Jun 14	23	Apr 18	1700	May 19 1978
LOWEST DAILY MEAN	8.9	Jun 2	4.7	Jul 15	3.2	Aug 1 1988
ANNUAL SEVEN-DAY MINIMUM	10	Jul 26	5.6	Jul 13	5.6	Jul 13 2002
MAXIMUM PEAK FLOW			28	Sep 23	a2280	May 19 1978
MAXIMUM PEAK STAGE			3.35	Sep 23	b8.88	May 19 1978
INSTANTANEOUS LOW FLOW					1.8	Jul 31 1988
ANNUAL RUNOFF (AC-FT)	13400		11530		23550	
10 PERCENT EXCEEDS	23		20		49	
50 PERCENT EXCEEDS	20		18		28	
90 PERCENT EXCEEDS	11		7.2		17	

a--From rating curve extended above 410 ft^3/s on basis of contracted-opening measurement.
b--From floodmark.

YELLOWSTONE RIVER BASIN

06279500 BIGHORN RIVER AT KANE, WY

LOCATION.--Lat 44°45'31", long 108°10'51" (NAD 27), in NW$^1/_4$NE$^1/_4$ SW$^1/_4$ sec.9, T.55 N., R.94 W., Big Horn County, Hydrologic Unit 10080010, on right bank 180 ft upstream from Bighorn Canyon National Recreation Area boundary, 0.5 mi upstream from normal high-water line of Bighorn Lake at elevation 3,660 ft, 1.3 mi upstream from Five Springs Creek, and 5.9 mi south of Kane.

DRAINAGE AREA.--15,765 mi^2. Area at sites used prior to May 17, 1956, 15,846 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1928 to current year.

REVISED RECORDS.--WSP 1309: 1929(M). WSP 1509: 1929. WSP 1709: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,660 ft (NGVD 29). Aug. 29, 1928, to Apr. 25, 1932, nonrecording gage, and Apr. 25, 1932, to May 16, 1956, water-stage recorder at site 12.5 mi downstream at different datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Some regulation by Boysen Reservoir (station 06258900) since October 1951. Diversions for irrigation of about 376,000 acres upstream from station. U.S. Army Corps of Engineers data collection platform with satellite telemetry at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1923, 14.8 ft, Sept. 30, 1923, site and datum in use April 1932 to May 1956.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	582	784	e760	e600	e720	e800	848	569	4320	574	409	743
2	624	780	e760	e560	e740	e700	816	557	5640	546	368	716
3	679	785	e780	e500	e740	e620	791	742	4210	549	371	700
4	624	791	e800	e600	e740	e740	767	586	3310	564	417	661
5	643	777	e760	e660	e750	e800	761	541	2270	551	448	579
6	699	773	e700	e620	e740	e900	754	530	1900	515	458	508
7	758	784	e720	e660	e760	e800	746	496	2000	840	413	474
8	734	787	e720	e700	e800	e700	740	517	2170	750	383	492
9	721	792	e720	e760	e760	e600	736	519	2100	674	390	583
10	716	794	e740	e700	e740	675	733	539	2120	556	408	643
11	716	800	e720	e680	e740	780	731	515	2220	520	398	622
12	727	815	e700	e660	e740	884	714	500	1640	471	408	638
13	734	813	e680	e660	e760	955	704	504	1310	429	435	646
14	756	812	e560	e660	e740	981	700	511	1150	395	408	654
15	797	815	e500	e660	e740	933	700	493	1120	384	417	659
16	801	820	e450	e660	e740	941	663	454	1190	403	398	646
17	783	820	e560	e660	e760	917	650	445	1230	399	389	677
18	771	835	661	e660	e760	875	677	425	1270	436	417	706
19	764	881	716	e700	e760	828	628	452	1270	457	417	889
20	762	898	646	e700	e760	910	645	476	1220	472	427	914
21	766	865	e560	e700	e780	859	652	581	1080	1100	407	801
22	769	869	e520	e700	e780	814	635	1370	984	795	393	778
23	775	873	e500	e660	e780	866	561	1730	1060	930	403	751
24	788	893	e540	e700	e780	896	511	1260	1340	923	429	722
25	785	905	e560	e720	e820	968	583	967	986	824	479	721
26	775	912	e560	e720	e700	955	563	807	885	681	486	725
27	778	893	e560	e720	e600	1040	588	746	782	596	467	689
28	790	e820	e580	e720	e700	1080	623	765	707	595	463	696
29	789	e700	e600	e700	---	1020	676	796	680	580	626	760
30	775	e740	e600	e680	---	959	634	1140	615	531	903	629
31	778	---	e600	e700	---	882	---	2520	---	468	823	---
TOTAL	22959	24626	19833	20780	20930	26678	20530	23053	52779	18508	14058	20422
MEAN	740.6	820.9	639.8	670.3	747.5	860.6	684.3	743.6	1759	597.0	453.5	680.7
MAX	801	912	800	760	820	1080	848	2520	5640	1100	903	914
MIN	582	700	450	500	600	600	511	425	615	384	368	474
AC-FT	45540	48850	39340	41220	41510	52920	40720	45730	104700	36710	27880	40510

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2002, BY WATER YEAR (WY)

MEAN	1803	1673	1458	1368	1537	1823	1808	3171	5802	3145	1444	1525
MAX	3994	2871	2506	2871	3164	3171	3454	7505	14680	11650	6388	3673
(WY)	1983	1984	1983	1972	1983	1972	1943	1947	1944	1967	1930	1973
MIN	524	737	627	580	550	740	684	744	1032	501	305	386
(WY)	1936	1961	1961	1937	1933	1989	2002	2002	1934	1961	1940	1935

06279500 BIGHORN RIVER AT KANE, WY--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1930 - 2002*	
ANNUAL TOTAL	342727		285156			
ANNUAL MEAN	939.0		781.2		2213	
HIGHEST ANNUAL MEAN					3524	1947
LOWEST ANNUAL MEAN					781	2002
HIGHEST DAILY MEAN	2600	May 15	5640	Jun 2	24800	Jun 15 1935
LOWEST DAILY MEAN	431	Aug 8	368	Aug 2	179	Jul 22 1934
ANNUAL SEVEN-DAY MINIMUM	484	Aug 6	404	Aug 8	184	Jul 18 1934
MAXIMUM PEAK FLOW			7910	Jun 2	a25200	Jun 16 1935
MAXIMUM PEAK STAGE			5.23	Jun 2	a11.10	Jun 16 1935
ANNUAL RUNOFF (AC-FT)	679800		565600		1603000	
10 PERCENT EXCEEDS	1280		967		3980	
50 PERCENT EXCEEDS	873		720		1640	
90 PERCENT EXCEEDS	560		461		775	

*--August 1928 to September 1929 not included in computations, monthly only for selected months.
a--Site and datum then in use.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1947-1977, 1999 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
OCT											
22...	1615	765	661	10.8	112	8.3	1130	11.5	10.5	<.04	.19
FEB											
05...	1000	734	676	10.7	83	7.7	1120	-5.0	0.0	.14	.55
MAY											
13...	1510	531	673	10.8	126	8.5	1140	28.5	16.5	<.04	.48
AUG											
05...	1940	469	667	10.0	134	8.3	1180	27.0	23.0	<.04	.51

DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT						
22...	E.004	<.02	35	37	164	339
FEB						
05...	E.005	<.02	62	75	41	81.3
MAY						
13...	.016	<.02	--	E17k	134	192
AUG						
05...	E.006	<.02	E19k	32	42	53.2

DATE	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
AUG											
05...	340	77.6	34.4	4.74	3	124	165	20.0	.6	4.49	410

E--Estimated.
k--Counts outside acceptable range (Non-ideal colony count).

YELLOWSTONE RIVER BASIN

06279500 BIGHORN RIVER AT KANE, WY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)
AUG 05...	1.09	1020	802	777	.34	.75	.008	.067	<20	<.04	2.8

DATE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)	ALPHA BHC DIS-SOLVED (UG/L) (34253)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)
AUG 05...	<10	<.08	3.4	<1	1	<.006	<.006	E.004	<.005	.011	<.010

DATE	BUTYL-ATE, WATER, DISS, REC (UG/L) (04028)	CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933)	CYANA-ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)
AUG 05...	<.002	<.041	E.013	<.005	<.018	<.003	E.008	<.005	<.005	<.02	<.004

DATE	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS-SOLVED (UG/L) (39341)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA-THION, DIS-SOLVED (UG/L) (39532)	METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO-LACHLOR WATER DISSOLV (UG/L) (39415)	METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)
AUG 05...	<.009	<.005	<.003	<.004	<.035	E.007	<.050	<.006	E.005	<.006	<.002

DATE	NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	P,P' DDE DISSOLV (UG/L) (34653)	PARA-THION, DIS-SOLVED (UG/L) (39542)	PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO-METON, WATER, DISS, RECGF, (UG/L) (04037)	PRON-AMIDE WATER FLTRD 0.7 U REC (UG/L) (82676)	PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)
AUG 05...	<.007	<.003	<.010	<.004	<.022	<.006	<.011	E.01	<.007	<.010	<.011

DATE	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
AUG 05...	<.02	<.005	E.01	<.034	<.02	<.005	<.002	<.009

E--Estimated.

YELLOWSTONE RIVER BASIN

06285100 SHOSHONE RIVER NEAR LOVELL, WY

LOCATION.--Lat 44°50'19", long 108°26'04" (NAD 27), in NW$^1/_4$ NE$^1/_4$ NE$^1/_4$ sec.17, T.56 N., R.96 W., Big Horn County, Hydrologic Unit 10080014, on left bank 20 ft upstream from bridge on County Road 9 and 1.5 mi west of Lovell.

DRAINAGE AREA.--2,350 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,850 ft (NGVD 29). Prior to Oct. 1, 1976, at site 500 ft downstream, at datum 2.00 ft higher. Oct. 1, 1976 to Sept. 30, 1980, at site 500 ft downstream, at datum 1.00 ft higher. Oct. 1, 1981 to Nov. 13, 1986, at site 500 ft downstream at same datum.

REMARKS.--Water-discharge records fair except those for Nov. 21 to Dec. 18 and those for estimated daily discharges, which are poor. Flow regulated by Buffalo Bill Reservoir. (See station 06281500.) Natural flow of stream affected by storage reservoirs, power development, diversions upstream from station for irrigation of about 143,000 acres, of which about 8,000 acres are downstream from station, and return flow from irrigated areas. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	348	359	e360	e270	e400	e320	319	373	330	339	324	499
2	316	342	e350	e260	e340	e300	290	434	376	282	330	512
3	302	332	e360	e270	e300	e310	288	364	446	247	400	478
4	322	328	e380	e270	e290	e320	289	351	409	253	456	367
5	380	329	e380	e280	e290	e400	286	357	411	272	496	336
6	443	325	e370	e280	e300	e340	289	337	394	213	430	333
7	516	327	e360	e290	e310	e300	293	355	355	299	395	387
8	475	324	e350	e300	e320	e280	279	300	364	350	404	576
9	471	328	e350	e290	e310	e260	281	315	420	275	389	656
10	477	317	e350	e280	e300	e250	256	289	522	217	393	608
11	410	313	e340	e270	e300	e260	240	256	459	229	406	592
12	424	319	e340	266	e300	e270	228	240	484	198	459	572
13	501	341	e340	267	e310	e290	225	226	457	180	426	566
14	473	355	e340	265	e340	288	221	239	423	231	383	554
15	474	372	e340	e260	e320	283	218	300	382	279	376	542
16	471	432	e340	e260	e320	297	240	288	394	213	332	583
17	467	443	e350	e250	e310	309	246	251	428	250	320	486
18	439	430	e360	e250	310	e310	246	242	385	237	389	444
19	427	418	e350	e260	306	e330	228	283	358	286	410	478
20	433	422	e340	e270	299	e350	217	334	355	344	377	451
21	430	428	e330	e290	290	e330	225	338	387	396	372	471
22	427	430	e330	e280	271	e360	208	370	401	488	365	482
23	413	422	e310	e260	e260	e400	200	407	419	433	405	518
24	397	409	e310	e280	e260	e370	159	415	442	427	423	517
25	380	412	e300	e300	e250	e350	318	394	405	361	453	511
26	378	397	e300	e330	e270	e380	408	371	393	364	482	531
27	375	381	e290	e300	e300	427	577	417	366	354	448	548
28	370	e370	e280	e280	e360	420	474	407	375	381	427	584
29	358	e370	e280	e270	---	367	406	382	351	410	454	583
30	356	e360	e270	e250	---	336	385	378	335	340	528	570
31	355	---	e270	e300	---	318	---	345	---	331	498	---
TOTAL	12808	11135	10320	8548	8536	10125	8539	10358	12026	9479	12750	15335
MEAN	413.2	371.2	332.9	275.7	304.9	326.6	284.6	334.1	400.9	305.8	411.3	511.2
MAX	516	443	380	330	400	427	577	434	522	488	528	656
MIN	302	313	270	250	250	250	159	226	330	180	320	333
AC-FT	25400	22090	20470	16950	16930	20080	16940	20550	23850	18800	25290	30420

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2002, BY WATER YEAR (WY)

MEAN	762.5	712.9	645.9	578.9	601.9	673.3	803.3	881.1	1862	1743	732.4	771.9
MAX	1251	1146	1168	1065	1139	1951	3353	2925	4935	4686	1305	1354
(WY)	1972	1969	1969	1973	1973	1997	1997	1996	1981	1982	1982	1991
MIN	369	297	306	226	228	243	248	193	203	149	207	245
(WY)	1989	1986	1995	1991	1989	1995	1981	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1967 - 2002	
ANNUAL TOTAL	160795		129959			
ANNUAL MEAN	440.5		356.1		898.1	
HIGHEST ANNUAL MEAN					1659	1997
LOWEST ANNUAL MEAN					356	2002
HIGHEST DAILY MEAN	5710	Jun 14	656	Sep 9	15200	Jun 10 1981
LOWEST DAILY MEAN	179	Jul 7	159	Apr 24	27	May 31 1977
ANNUAL SEVEN-DAY MINIMUM	223	Jul 3	212	Apr 18	48	May 30 1977
MAXIMUM PEAK FLOW			a810	Sep 8	c16400	Jun 10 1981
MAXIMUM PEAK STAGE			b9.36	Feb 1	11.27	Jun 13 2001
ANNUAL RUNOFF (AC-FT)	318900		257800		650600	
10 PERCENT EXCEEDS	560		474		1460	
50 PERCENT EXCEEDS	392		350		660	
90 PERCENT EXCEEDS	270		256		323	

a--Gage height, 5.26 ft.
b--Backwater from ice.
c--Gage height, 9.16 ft, site then in use, at present datum.
e--Estimated.

YELLOWSTONE RIVER BASIN

06285100 SHOSHONE RIVER NEAR LOVELL, WY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967-97, October 1999 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1966 to September 1983.
WATER TEMPERATURE: October 1966 to September 1983.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)
OCT									
22...	1845	426	660	12.3	126	8.3	999	12.0	10.0
MAR									
18...	1450	306	664	12.5	108	8.3	1040	3.0	3.5
MAY									
13...	1915	185	665	10.7	128	8.8	728	21.0	17.0
AUG									
06...	0730	474	664	7.6	90	7.9	706	24.0	16.5

DATE	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT						
22...	<.04	1.26	E.007	<.02	44	49
MAR						
18...	E.02	.98	.008	<.02	E7k	E8k
MAY						
13...	<.04	1.97	.049	.05	130	260
AUG						
06...	<.04	2.17	.019	.05	E500k	>2000

DATE	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
AUG										
06...	200	52.3	16.5	2.70	2	55.1	199	5.80	13.8	152

DATE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
AUG							
06...	.58	547	427	.36	E.05	.45	E5

E--Estimated.
k--Counts outside acceptable range (Non-ideal colony count).

06286400 BIGHORN LAKE NEAR ST. XAVIER, MT

LOCATION.--Lat 45°18'27", long 107°57'26" (NAD 27), in SW$^1/_4$SE$^1/_4$ sec.18, T.6 S., R.30 E., Big Horn County, Hydrologic Unit 10080010, in block 13 of Yellowtail Dam on Bighorn River, 1.3 mi upstream from Grapevine Creek, 15.5 mi southwest of St. Xavier, and at river mile 86.6.

DRAINAGE AREA.--19,626 mi^2.

PERIOD OF RECORD.--November 1965 to current year (monthend contents only). Prior to October 1969, published as "Yellowtail Reservoir." Records of daily elevations and contents on file at the U. S. Geological Survey office in Helena, Montana.

GAGE.--Water-stage recorder in powerhouse control room. Datum of gage is 3296.5 (NGVD 29) (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by thin concrete-arch dam; construction began in 1961; completed in 1967. Storage began Nov. 3, 1965. Usable capacity, 1,312,000 acre-ft, between elevation 3,296.50 ft, river outlet invert, and 3,657.00 ft, top of flood control. Elevation of spillway crest, 3,593.00 ft. Normal maximum operating level, 1,097,000 acre-ft, elevation, 3,640.00 ft. Minimum operating level, 483,400 acre-ft, elevation, 3,547.00 ft. Dead storage, 16,010 acre-ft, below elevation 3,296.50 ft. All elevations are referenced to the National Geodetic Vertical Datum of 1929. Figures given herein represent usable contents. Water is used for power production, flood control, irrigation, and recreation.

COOPERATION.--Elevations and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,346,000 acre-ft, July 6, 1967, elevation, 3,656.43 ft; minimum since first filling, 607,200 acre-ft, Sept. 9, 2002, elevation 3,576.15 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 757,000 acre-ft, Nov. 10, elevation, 3,605.02 ft; minimum, 607,200 acre-ft, Sept. 9, elevation, 3,576.15 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR SEPTEMBER 2001 TO SEPTEMBER 2002

Date	Elevation (feet)	Contents (acre-feet)	Change in Contents (acre-feet)
Sept. 30	3,602.82	744,400	--
Oct. 31	3,604.87	756,100	+11,700
Nov. 30	3,604.35	753,100	-3,000
Dec. 31	3,599.47	725,700	-27,400
CALENDAR YEAR 2001			-155,300
Jan. 31	3,594.91	701,100	-24,600
Feb. 28	3,588.82	669,500	-31,600
Mar. 31	3,587.80	664,300	-5,200
Apr. 30	3,586.33	656,900	-7,400
May 31	3,583.44	642,600	-14,300
June 30	3,593.47	693,500	+50,900
July 31	3,585.73	654,000	-39,500
Aug. 31	3,577.25	612,400	-41,600
Sept. 30	3,578.61	619,000	+6,600
WATER YEAR 2002			-125,400

YELLOWSTONE RIVER BASIN

06287000 BIGHORN RIVER NEAR ST. XAVIER, MT

LOCATION.--Lat 45°19'00", long 107°55'05" (NAD 27), in NW$^1/_4$NW$^1/_4$NE$^1/_4$ sec.16, T.6 S., R.31 E., Big Horn County, Hydrologic Unit 10080015, on right bank 800 ft downstream from Yellowtail dam, 1,500 ft downstream from Lime Kiln Creek, 14 mi southwest of St. Xavier, and at river mile 83.9.

DRAINAGE AREA.--19,667 mi^2. Area at site used prior to Apr. 16, 1963, 19,626 mi^2.

PERIOD OF RECORD.--October 1934 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,158.38 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to Apr. 16, 1963, and June 13, 1964, to Mar. 31, 1965, water-stage recorder at site 1.2 mi upstream at different datum. Apr. 1, 1965, to July 31, 1966, water-stage recorder at site 1,300 ft downstream at present datum.

REMARKS.--Records fair. **Figures of discharge given herein are sum of river flow and flow of Bighorn Canal**. Some regulation by 14 reservoirs in Wyoming with combined capacity of 1,400,000 acre-ft and complete regulation by Bighorn Lake (see preceding page) since Nov. 3, 1965. Diversions for irrigation of about 375,000 acres upstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1560	1370	1510	1670	1630	1560	1510	1770	1860	1630	1910	1900
2	1550	1350	1510	1670	1640	1560	1510	1750	1860	1640	1910	1890
3	1540	1350	1510	1680	1660	1570	1510	1740	1850	1680	1920	1900
4	1520	1330	1510	1500	1670	1570	1520	1750	1850	1680	1910	1900
5	1510	1310	1510	1510	1680	1590	1520	1750	1880	1680	1900	1900
6	1500	1290	1510	1510	1710	1600	1520	1750	1890	1690	1910	1890
7	1490	1280	1510	1510	1720	1600	1520	1760	1910	1690	1900	1880
8	1460	1360	1520	1510	1750	1610	1520	1800	1920	1800	1890	1870
9	1450	1350	1510	1510	1770	1620	1520	1770	1920	2000	1870	1820
10	1380	1330	1510	1510	1780	1620	1530	1730	1930	2010	1870	1720
11	1250	1320	1520	1510	1800	1630	1530	1730	1900	2010	1870	1680
12	1250	1300	1530	1500	1810	1630	1530	1740	1890	2000	1860	1670
13	1240	1290	1520	1520	1840	1640	1520	1740	1880	2000	1860	1670
14	1230	1280	1520	1510	1850	1640	1510	1760	1880	2010	1870	1660
15	1210	1270	1530	1530	1870	1650	1510	1790	1870	2010	1850	1650
16	1200	1450	1530	1520	1880	1650	1520	1820	1860	1990	1850	1630
17	1190	1510	1520	1510	1900	1670	1520	1850	1860	1860	1850	1630
18	1170	1500	1530	1500	1920	1660	1520	1860	1860	1890	1870	1630
19	1160	1490	1510	1500	1950	1520	1530	1850	1860	1970	1860	1620
20	1270	1500	1520	1500	1970	1530	1530	1870	1850	1970	1850	1610
21	1250	1490	1530	1500	1970	1540	1540	1880	1840	1970	1860	1610
22	1240	1510	1540	1510	1520	1530	1540	1840	1830	1980	1850	1610
23	1230	1500	1550	1520	1530	1540	1660	1760	1830	1970	1850	1600
24	1220	1510	1570	1530	1540	1540	1640	1760	1790	1980	1840	1590
25	1470	1510	1580	1530	1540	1540	1590	1800	1760	1950	1840	1530
26	1470	1510	1610	1530	1540	1490	1590	1790	1760	1930	1870	1510
27	1440	1510	1610	1550	1550	1500	1580	1800	1730	1920	1910	1500
28	1440	1510	1630	1560	1560	1500	1590	1850	1620	1930	1900	1490
29	1430	1510	1630	1580	---	1500	1630	1920	1610	1930	1900	1490
30	1400	1510	1640	1590	---	1500	1730	1900	1620	1930	1900	1470
31	1380	---	1660	1620	---	1510	---	1870	---	1930	1900	---
TOTAL	42100	42300	47890	47700	48550	48810	46490	55750	54970	58630	58200	50520
MEAN	1358	1410	1545	1539	1734	1575	1550	1798	1832	1891	1877	1684
MAX	1560	1510	1660	1680	1970	1670	1730	1920	1930	2010	1920	1900
MIN	1160	1270	1510	1500	1520	1490	1510	1730	1610	1630	1840	1470
AC-FT	83510	83900	94990	94610	96300	96810	92210	110600	109000	116300	115400	100200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2002, BY WATER YEAR (WY)

MEAN	2956	2911	2723	2591	2659	2910	2895	3839	7061	5523	2885	2728
MAX	5142	5151	4999	5267	4384	4809	6675	8744	17900	18890	6784	4544
(WY)	1972	1983	1968	1968	1976	1976	1972	1947	1935	1967	1997	1973
MIN	1224	856	1095	1090	888	327	678	900	1078	1144	1260	1074
(WY)	1978	1966	1935	1935	1936	1966	1966	1966	1966	1960	1966	1966

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1935 - 2002	
ANNUAL TOTAL	711930		601910			
ANNUAL MEAN	1950		1649		3475	
HIGHEST ANNUAL MEAN					5059	1947
LOWEST ANNUAL MEAN					1565	1966
HIGHEST DAILY MEAN	2420	Jul 30	2010	Jul 10	37400	Jun 16 1935
LOWEST DAILY MEAN	1160	Oct 19	1160	Oct 19	112	Apr 2 1967
ANNUAL SEVEN-DAY MINIMUM	1200	Oct 13	1200	Oct 13	195	Mar 25 1966
MAXIMUM PEAK FLOW			2030	Feb 19	37400	Jun 16 1935
MAXIMUM PEAK STAGE			60.03	Feb 19		
INSTANTANEOUS LOW FLOW					49	Mar 29 1966
ANNUAL RUNOFF (AC-FT)	1412000		1194000		2517000	
10 PERCENT EXCEEDS	2340		1900		5790	
50 PERCENT EXCEEDS	2020		1620		2840	
90 PERCENT EXCEEDS	1450		1450		1570	

06287000 BIGHORN RIVER NEAR ST. XAVIER, MT--Continued

SUMMARY STATISTICS	WATER YEARS 1935 - 1961*		WATER YEARS 1967 - 2002**	
ANNUAL MEAN	3426		3493	
HIGHEST ANNUAL MEAN	5059	1947	4839	1999
LOWEST ANNUAL MEAN	1706	1961	1650	2002
HIGHEST DAILY MEAN	37400	Jun 16 1935	24800	Jul 6 1967
LOWEST DAILY MEAN	300	Dec 20 1951	112	Apr 2 1967
ANNUAL SEVEN-DAY MINIMUM	656	Dec 25 1934	518	Mar 25 1970
MAXIMUM PEAK FLOW	37400	Jun 16 1935	25300	Jul 5 1967
MAXIMUM LOW FLOW	228	Dec 9 1937	a112	Apr 2 1967
ANNUAL RUNOFF (AC-FT)	2482000		2531000	
10 PERCENT EXCEEDS	6440		5540	
50 PERCENT EXCEEDS	2450		3120	
90 PERCENT EXCEEDS	1370		1840	

*--Prior to construction of Yellowtail Dam.
**--After completion of Yellowtail Dam.
a--Result of discharge measurement.

YELLOWSTONE RIVER BASIN

06289000 LITTLE BIGHORN RIVER AT STATE LINE, NEAR WYOLA, MT

LOCATION.--Lat 45°00'25", long 107°36'52" (NAD 27), in SW$^1/_4$NW$^1/_4$ sec.36, T.9 S., R.33 E., Bighorn County, Hydrologic Unit 10080016, on right bank 20 ft downstream from county bridge, 0.5 mi north of Wyoming-Montana State line, 1 mi downstream from West Fork, 13 mi southwest of Wyola, and at river mile 115.2.

DRAINAGE AREA.--193 mi^2.

PERIOD OF RECORD.--March 1939 to current year. Prior to October 1940, published as Little Horn River at State Line, near Wyola.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,350 ft (NGVD 29).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Diversions for irrigation of 163 acres upstream from station. Several observations of water temperature and specific conductance were made during the year

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	59	53	43	48	44	e50	57	e400	e120	74	66
2	57	56	53	39	51	46	41	53	e500	e110	74	66
3	58	57	54	50	49	53	43	57	e400	e110	73	65
4	61	55	54	62	e50	64	48	57	e350	e110	74	64
5	58	56	50	56	e50	65	49	61	e310	e110	75	63
6	60	57	52	54	e50	57	49	63	e300	e110	74	64
7	61	60	e50	52	51	51	50	61	e290	e110	75	66
8	60	50	e50	52	51	44	49	69	e270	e110	78	68
9	59	57	e50	51	50	49	48	61	e270	e100	75	74
10	58	55	e50	51	49	55	49	62	e250	e100	73	67
11	63	56	e45	50	54	52	50	61	e230	99	72	66
12	63	55	44	50	55	51	50	60	e200	97	72	64
13	68	55	48	50	53	50	51	62	e190	95	71	64
14	67	55	e50	50	56	51	62	80	e180	93	70	63
15	63	55	54	48	53	48	72	91	e180	93	72	63
16	64	54	50	41	55	48	63	94	e180	94	72	61
17	66	54	e50	43	55	47	58	93	e180	94	72	62
18	61	55	e50	42	55	46	56	112	e180	94	72	74
19	62	49	51	42	55	48	51	e150	e170	93	71	70
20	62	55	49	47	55	45	50	e200	e160	91	70	67
21	59	56	e45	52	54	40	51	e335	e150	91	71	65
22	60	56	50	55	54	51	51	290	e160	91	72	63
23	60	57	42	45	55	49	53	208	e170	93	72	63
24	58	55	39	52	49	47	51	177	e160	92	70	63
25	55	56	e38	55	35	e48	50	159	e150	e80	70	63
26	60	55	e37	e50	36	e49	51	146	e150	e80	69	63
27	60	46	e35	e45	e40	e50	52	143	e140	e75	69	63
28	60	45	e37	e40	e45	e50	51	e150	e140	e75	69	63
29	60	56	e38	43	---	e52	51	e200	e130	79	68	61
30	60	56	38	33	---	e54	56	e250	e120	76	67	61
31	60	---	45	45	---	e55	---	e300	---	74	66	---
TOTAL	1880	1643	1451	1488	1413	1559	1556	3962	6660	2939	2222	1945
MEAN	60.65	54.77	46.81	48.00	50.46	50.29	51.87	127.8	222.0	94.81	71.68	64.83
MAX	68	60	54	62	56	65	72	335	500	120	78	74
MIN	55	45	35	33	35	40	41	53	120	74	66	61
AC-FT	3730	3260	2880	2950	2800	3090	3090	7860	13210	5830	4410	3860

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

MEAN	86.79	75.74	68.02	62.94	61.70	61.77	84.86	323.5	518.2	219.7	123.1	97.95
MAX	120	104	91.2	84.9	88.0	86.4	172	533	1125	689	228	151
(WY)	1976	1942	1976	1946	1946	1946	1946	1977	1975	1975	1975	1975
MIN	60.6	54.8	46.8	43.6	47.8	48.6	50.7	127	145	94.8	69.8	63.6
(WY)	2002	2002	2002	1963	1990	1961	1961	1953	2001	2002	1961	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002	
ANNUAL TOTAL	31088.0		28718			
ANNUAL MEAN	85.17		78.68		148.8	
HIGHEST ANNUAL MEAN					253	1975
LOWEST ANNUAL MEAN					78.7	2002
HIGHEST DAILY MEAN	451	May 15	500	Jun 2	2340	Jun 4 1944
LOWEST DAILY MEAN	35	Dec 27	33	Jan 30	18	Feb 2 1989
ANNUAL SEVEN-DAY MINIMUM	37	Dec 24	37	Dec 24	27	Dec 18 1983
MAXIMUM PEAK FLOW				unknown	a2730	Jun 3 1944
MAXIMUM PEAK STAGE				unknown	b5.93	Jun 9 1944
INSTANTANEOUS LOW FLOW			27	Apr 3	18	Feb 2 1989
ANNUAL RUNOFF (AC-FT)	61660		56960		107800	
10 PERCENT EXCEEDS	148		150		335	
50 PERCENT EXCEEDS	65		58		83	
90 PERCENT EXCEEDS	54		46		56	

a--Gage height, 4.97 ft, from rating curve extended above 1,400 ft^3/s.
b--Result of log jam.
e--Estimated.

YELLOWSTONE RIVER BASIN

06289600 WEST PASS CREEK NEAR PARKMAN, WY

LOCATION.--Lat 44°59'16", long 107°28'56" (NAD 27), in NE$^1/_4$NE$^1/_4$SE$^1/_4$ sec.21, T.58 N., R.88 W., Sheridan County, Hydrologic Unit 10080016, on right bank, anchored to concrete headwall of culvert on county road and 7.6 mi northwest of Parkman.

DRAINAGE AREA.--15.4 mi^2.

PERIOD OF RECORD.--October 1982 to current year (no winter records water years 1985-87).

GAGE.--Water-stage recorder. Elevation of gage is 4,220 ft (NGVD 29). Prior to Apr. 2, 1985, at site 100 ft north (on abandoned channel) at datum 4.28 ft lower. Apr. 2, 1985 to Mar. 27, 1986, at site 300 ft upstream at datum 0.95 ft higher. Apr. 2, 1985 to Sept. 30, 1998, at same site at datum 1.00 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Natural flow of stream affected by diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	4.5	e5.0	e3.1	e5.6	e1.6	e7.0	12	25	6.9	5.3	4.8
2	4.1	4.5	5.1	e6.0	e6.0	e1.7	e5.4	11	25	6.8	5.1	4.8
3	4.3	4.2	5.1	e5.0	e5.0	e2.5	e5.8	9.9	22	6.7	5.2	4.8
4	4.9	4.2	5.0	e4.8	e5.0	e8.0	e6.0	9.9	19	6.8	5.0	4.9
5	4.6	4.2	e4.9	e4.8	e5.0	e6.0	9.9	9.5	18	6.7	4.9	5.1
6	4.5	4.1	e4.9	e4.8	e4.9	e5.2	14	10	17	6.6	4.9	5.2
7	4.5	4.3	5.0	e4.7	e4.8	e5.0	11	10	16	6.4	5.1	5.2
8	4.5	4.1	4.9	e4.8	4.8	e5.4	10	11	16	6.2	5.2	6.0
9	4.5	4.1	5.1	e4.7	e4.2	e7.0	8.1	12	15	6.1	4.9	5.7
10	4.6	4.2	e5.0	4.7	e5.0	e6.4	8.3	12	15	6.0	4.6	5.2
11	4.9	4.1	e5.0	4.7	5.2	e6.0	7.6	13	15	6.0	4.6	5.1
12	5.0	4.1	e4.8	e4.7	e4.9	e8.0	7.3	12	14	6.0	4.8	5.2
13	4.8	4.0	e4.6	e4.7	e5.0	e6.6	7.4	13	13	6.0	4.5	5.2
14	5.0	4.0	e4.8	e4.6	5.0	e6.2	7.3	13	13	5.9	4.2	5.3
15	5.0	4.0	e5.0	e4.4	e4.9	e5.8	7.9	13	12	5.9	4.3	5.5
16	4.8	4.0	e4.8	e4.3	e5.0	e5.8	7.8	14	12	5.9	4.1	5.4
17	4.7	3.9	5.2	e4.4	e5.2	e5.8	7.7	14	11	6.0	4.3	5.7
18	4.7	4.2	e5.1	e4.7	e5.2	e5.8	8.4	15	10	6.0	4.3	6.5
19	4.6	4.0	e5.0	e4.8	5.3	e5.8	8.5	17	10	6.0	4.4	5.6
20	4.7	4.3	e4.9	e4.8	5.2	e5.6	8.8	17	9.6	6.1	4.3	5.6
21	4.7	4.8	e4.8	e4.8	5.3	e5.8	9.8	21	9.4	6.2	4.6	5.6
22	4.6	5.1	e4.6	e4.8	e5.4	e6.4	9.2	33	9.1	6.0	4.4	5.2
23	4.6	5.2	e4.4	e4.9	e5.0	e6.0	8.8	27	8.9	6.7	4.5	5.0
24	4.5	5.0	e4.7	e5.0	e4.4	6.2	8.8	23	8.6	6.0	4.5	5.2
25	4.6	5.0	e4.8	e5.0	e5.0	e5.6	8.4	20	8.4	5.9	4.5	5.4
26	4.5	5.0	e4.8	e4.8	e6.0	e6.0	8.2	19	8.0	6.0	4.5	5.8
27	4.5	4.8	e4.8	e4.6	e5.0	e6.6	8.5	18	7.8	5.9	4.6	6.0
28	4.5	e4.6	e4.8	e4.0	e4.0	e6.4	8.4	18	7.6	5.7	4.6	6.1
29	4.5	e5.0	e4.7	e3.5	---	e6.2	7.9	20	7.2	5.6	4.5	6.1
30	4.5	e5.0	e4.7	e4.4	---	e6.0	9.0	23	7.0	5.6	4.7	6.1
31	4.5	---	e4.2	e4.8	---	e6.8	---	25	---	5.4	4.7	---
TOTAL	142.8	132.5	150.5	144.1	141.3	178.2	251.2	495.3	389.6	190.0	144.1	163.3
MEAN	4.606	4.417	4.855	4.648	5.046	5.748	8.373	15.98	12.99	6.129	4.648	5.443
MAX	5.0	5.2	5.2	6.0	6.0	8.0	14	33	25	6.9	5.3	6.5
MIN	4.1	3.9	4.2	3.1	4.0	1.6	5.4	9.5	7.0	5.4	4.1	4.8
AC-FT	283	263	299	286	280	353	498	982	773	377	286	324

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2002, BY WATER YEAR (WY)*

MEAN	7.711	7.378	6.545	6.341	6.161	7.379	13.14	32.68	24.39	12.76	8.714	7.746
MAX	9.95	9.30	9.02	8.10	7.98	10.5	25.2	79.9	60.6	26.9	14.9	11.6
(WY)	1996	1996	1996	1996	1996	1997	1994	1995	1995	1995	1995	1995
MIN	4.61	4.42	4.85	4.25	4.02	5.64	7.31	13.0	7.82	5.21	4.58	4.63
(WY)	2002	2002	2002	1988	1989	1991	2001	1985	1985	1985	2001	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1983 - 2002*	
ANNUAL TOTAL	2304.1		2522.9			
ANNUAL MEAN	6.313		6.912		12.28	
HIGHEST ANNUAL MEAN					21.2	1995
LOWEST ANNUAL MEAN					6.81	2001
HIGHEST DAILY MEAN	19	May 17	33	May 22	291	May 9 1995
LOWEST DAILY MEAN	3.9	Nov 17	1.6	Mar 1	a0.00	Dec 25 1998
ANNUAL SEVEN-DAY MINIMUM	4.0	Nov 11	3.7	Feb 25	0.81	Feb 3 1989
MAXIMUM PEAK FLOW			36	May 22	340	May 9 1995
MAXIMUM PEAK STAGE			2.27	May 22	b4.76	Apr 28 1984
ANNUAL RUNOFF (AC-FT)	4570		5000		8900	
10 PERCENT EXCEEDS	9.4		12		23	
50 PERCENT EXCEEDS	5.3		5.2		8.0	
90 PERCENT EXCEEDS	4.5		4.3		5.5	

*--For period of operation.
a--Result of channel blockage or diversion upstream.
b--Backwater from ice, site and datum then in use.
e-Estimated.

YELLOWSTONE RIVER BASIN

06289820 EAST PASS CREEK NEAR DAYTON, WY

LOCATION.--Lat 44°59'23", long 107°25'20" (NAD 27), in SE$^1/_4$SE$^1/_4$NE$^1/_4$ sec.24, T.58 N., R.88 W., Sheridan County, Hydrologic Unit 10080016, on right bank 0.4 mi downstream from bridge on county road 144, 5.0 mi northwest of Parkman, and 11.2 mi northwest of Dayton.

DRAINAGE AREA.--21.7 mi^2.

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,405 ft (NGVD 29). October 1982 to August 1995 at site 270 ft upstream at different datum. August 1995 to April 1996 at site 0.3 mi downstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Several small reservoirs upstream from station, combined capacity, 415 acre-ft, for irrigation. Diversions for irrigation of about 2,900 acres upstream from station. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	6.0	6.8	7.9	e8.0	e6.0	e7.6	10	22	7.0	4.6	3.5
2	4.5	5.9	6.9	e6.4	7.8	e6.8	e7.0	10	22	7.0	4.5	3.4
3	4.7	6.4	7.3	8.4	7.7	e7.0	e7.4	10	18	7.1	4.4	3.4
4	5.3	7.1	7.8	8.4	7.7	e8.0	e8.0	11	15	7.1	4.4	3.3
5	5.1	7.1	7.7	7.7	e7.2	e7.0	8.6	11	13	7.1	4.2	3.2
6	5.1	7.1	8.6	7.4	6.8	e6.6	11	12	10	6.9	3.7	3.3
7	5.1	7.4	8.3	7.6	6.7	e6.6	12	12	9.4	6.9	4.0	3.9
8	5.0	7.1	8.1	8.5	e6.8	e6.2	12	12	9.0	6.8	4.3	4.5
9	5.1	7.1	8.0	7.8	e6.6	e8.0	11	11	9.0	6.5	3.7	4.2
10	5.0	6.9	e7.4	7.6	e6.8	e7.6	10	11	8.8	6.6	3.6	1.7
11	5.2	6.9	e7.2	7.4	7.1	e7.4	10	11	8.7	6.6	3.5	2.0
12	5.3	6.9	e7.0	7.2	e6.6	e9.0	9.6	10	8.2	6.2	3.4	2.0
13	5.3	6.9	e7.2	7.5	e6.4	e8.6	9.5	10	7.7	5.8	3.4	2.0
14	5.5	6.9	e7.4	7.3	e6.6	e8.2	9.5	11	7.4	5.8	3.2	1.5
15	5.6	6.7	e7.6	e6.4	e6.4	e7.8	9.8	13	7.2	6.0	3.4	1.4
16	5.4	6.6	e7.2	e6.2	e6.6	e7.6	9.9	12	6.9	6.6	3.4	2.8
17	5.3	6.8	8.2	e6.4	6.8	e7.6	9.7	12	7.4	6.8	3.6	4.9
18	5.6	6.9	e7.9	e6.4	6.9	e7.2	10	12	10	6.9	3.1	6.4
19	6.0	6.7	e7.6	e6.6	6.9	e7.0	9.4	14	9.8	6.8	3.1	5.6
20	6.1	6.7	e7.4	7.8	e6.6	e8.0	9.4	20	9.7	7.0	3.5	5.2
21	6.1	6.8	e7.4	7.8	e6.4	e7.6	9.3	24	9.5	6.9	4.4	5.2
22	5.9	6.7	e7.2	7.6	6.8	e7.8	9.5	31	9.4	6.8	4.0	5.1
23	5.7	6.9	e7.0	e6.0	7.1	e7.6	9.5	26	9.2	7.0	4.1	4.9
24	5.8	6.9	e7.0	e6.4	e7.2	e7.2	9.3	22	8.9	6.5	4.1	4.9
25	5.7	6.9	e7.4	e7.2	e5.6	e7.0	9.0	18	8.8	6.2	4.0	5.1
26	5.7	6.8	8.0	e6.8	e7.0	7.3	9.0	17	8.4	6.2	3.9	5.0
27	5.8	6.5	7.6	e6.6	e8.0	7.8	9.3	18	7.6	6.2	4.0	4.9
28	5.7	e6.2	6.7	e6.0	e7.0	7.7	9.1	19	7.6	6.5	4.0	4.9
29	6.2	7.0	6.2	e5.4	---	7.6	9.0	23	7.2	5.1	3.9	4.8
30	6.1	7.0	5.7	e5.6	---	7.5	8.9	27	7.2	3.7	3.3	4.7
31	6.1	---	6.8	e7.0	---	7.7	---	25	---	4.4	3.3	---
TOTAL	169.6	203.8	228.6	219.3	194.1	231.0	283.3	485	303.0	199.0	118.0	117.7
MEAN	5.471	6.793	7.374	7.074	6.932	7.452	9.443	15.65	10.10	6.419	3.806	3.923
MAX	6.2	7.4	8.6	8.5	8.0	9.0	12	31	22	7.1	4.6	6.4
MIN	4.5	5.9	5.7	5.4	5.6	6.0	7.0	10	6.9	3.7	3.1	1.4
AC-FT	336	404	453	435	385	458	562	962	601	395	234	233

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2002, BY WATER YEAR (WY)

MEAN	8.784	8.892	8.418	8.565	8.512	9.787	16.41	42.79	34.95	12.92	7.224	7.205
MAX	13.9	11.4	10.5	10.5	10.6	14.2	32.4	90.8	82.8	32.9	14.8	14.8
(WY)	1996	1996	1996	1996	1996	1997	1994	1995	1995	1992	1993	1995
MIN	5.45	6.71	6.69	6.96	6.78	7.29	9.30	15.2	6.65	5.06	2.73	3.92
(WY)	2002	2002	1988	1988	1989	1990	1992	1985	1985	1985	1988	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1983 - 2002	
ANNUAL TOTAL	3049.4		2752.4			
ANNUAL MEAN	8.355		7.541		14.56	
HIGHEST ANNUAL MEAN					23.6	1984
LOWEST ANNUAL MEAN					7.54	2002
HIGHEST DAILY MEAN	34	May 15	31	May 22	304	May 9 1995
LOWEST DAILY MEAN	3.0	Aug 16,17	1.4	Sep 15	1.4	Sep 15 2002
ANNUAL SEVEN-DAY MINIMUM	3.2	Aug 13	1.9	Sep 10	1.9	Sep 10 2002
MAXIMUM PEAK FLOW			33	May 22	a511	May 9 1995
MAXIMUM PEAK STAGE			5.93	May 22	b9.00	Feb 6 1996
INSTANTANEOUS LOW FLOW					1.7	Aug 6 1988
ANNUAL RUNOFF (AC-FT)	6050		5460		10550	
10 PERCENT EXCEEDS	12		10		28	
50 PERCENT EXCEEDS	7.4		7.0		9.2	
90 PERCENT EXCEEDS	4.7		4.0		6.0	

a--Gage height, 4.47 ft, site and datum then in use, from rating curve extended above 221 ft^3/s.
b--Ice jam, site and datum then in use.
e--Estimated.

YELLOWSTONE RIVER BASIN

06290000 PASS CREEK NEAR WYOLA, MT

LOCATION.--Lat 45°03'23", long 107°21'19" (NAD 27), in NE$^1/_4$NE$^1/_4$SE$^1/_4$ sec.13, T.9 S., R.35 E., Big Horn County, Hydrologic Unit 10080016, on right bank 125 ft downstream from bridge on U.S. Highway 87, 2.0 mi downstream from Twin Creek, 5.5 mi south of Wyola, and at river mile 10.2.

DRAINAGE AREA.--111 mi^2. Drainage area at site used prior to Sept. 30, 1956, 119 mi^2.

PERIOD OF RECORD.--June 1935 to September 1956 (no winter records prior to 1939), October 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,920 ft (NGVD 29). Dec. 21, 1950, to Sept. 30, 1956, water-stage recorder, and June 4, 1935, to Dec. 20, 1950, nonrecording gage at site 0.3 mi upstream at different datum. Flow is equivalent.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Diversions for irrigation of about 2,500 acres upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e8.0	e10	e8.5	e6.0	e7.0	e8.0	e20	32	53	9.7	2.7	0.00
2	e8.0	e10	e8.0	e6.0	e8.0	e8.0	e30	38	54	12	2.0	0.00
3	e8.0	e9.5	e8.0	e7.0	e8.0	e8.5	e40	32	53	11	1.6	0.00
4	e7.0	e9.5	e7.5	e7.0	e9.0	e9.0	e50	28	45	9.4	3.5	0.00
5	e8.0	e10	e7.0	e7.0	e9.0	e8.5	e70	26	40	9.3	4.9	0.00
6	e9.0	e11	e7.0	e7.5	e10	e8.0	e80	24	34	9.4	4.4	0.00
7	e10	e11	e6.0	e8.0	e10	e7.5	e90	23	30	10	3.8	0.00
8	e15	e10	e6.0	e8.0	e10	e7.5	74	25	27	e10	7.5	0.09
9	e13	e11	e6.0	e7.5	e10	e7.0	54	24	27	e8.0	8.7	1.9
10	e12	e12	e6.0	e7.5	e10	e8.0	40	23	30	e7.0	8.1	1.2
11	e12	e11	e6.0	e7.5	e10	e9.0	34	23	25	e7.0	5.7	0.65
12	e13	e10	e6.0	e8.0	e10	e8.5	29	22	22	e6.5	5.1	0.34
13	e13	e10	e5.5	e7.5	e11	e8.5	25	21	20	e6.5	4.2	3.4
14	e12	e9.5	e5.5	e7.5	e11	e8.0	23	22	20	e6.0	2.8	7.2
15	e13	e10	e5.0	e7.0	e12	e8.0	22	23	18	e6.0	2.9	9.2
16	e15	e10	e5.5	e7.0	e12	e8.0	22	23	16	e6.0	3.4	14
17	e15	e9.0	e6.0	e6.5	e13	e8.0	20	23	15	e6.0	2.5	16
18	e14	e8.0	e6.0	e6.5	e13	e8.0	22	24	17	e5.5	0.86	23
19	e15	e9.0	e5.5	e6.0	e12	e8.0	21	26	18	e5.5	0.42	27
20	e16	e10	e4.5	e6.5	e10	e7.5	21	30	15	e5.5	0.15	22
21	e13	e10	e4.5	e6.0	e9.5	e7.0	22	e30	18	e5.0	1.5	20
22	e12	e10	e4.5	e6.0	e9.5	e7.5	26	e70	19	e5.0	3.6	20
23	e10	e9.0	e4.0	e6.5	e9.0	e8.0	23	66	20	e6.0	5.9	18
24	e10	e10	e4.0	e6.5	e9.0	e9.0	24	54	19	e7.0	4.6	13
25	e10	e9.0	e4.0	e7.0	e8.0	e10	21	47	18	e8.0	2.9	13
26	e10	e8.0	e4.5	e6.5	e8.5	e10	20	42	18	e8.0	1.5	14
27	e9.5	e7.0	e4.5	e6.0	e9.0	e10	20	41	17	e8.0	1.4	14
28	e9.5	e7.0	e5.0	e5.0	e8.5	e10	20	39	13	e7.0	0.71	14
29	e9.5	e8.0	e5.0	e5.0	---	e10	19	41	11	e6.0	0.75	13
30	e10	e8.0	e6.0	e6.0	---	e15	18	49	9.5	6.3	0.55	12
31	e10	---	e6.0	e7.0	---	e15	---	57	---	3.8	0.07	---
TOTAL	349.5	286.5	177.5	209.0	276.0	273.0	1000	1048	741.5	226.4	98.71	276.98
MEAN	11.27	9.550	5.726	6.742	9.857	8.806	33.33	33.81	24.72	7.303	3.184	9.233
MAX	16	12	8.5	8.0	13	15	90	70	54	12	8.7	27
MIN	7.0	7.0	4.0	5.0	7.0	7.0	18	21	9.5	3.8	0.07	0.00
AC-FT	693	568	352	415	547	541	1980	2080	1470	449	196	549

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2002, BY WATER YEAR (WY)*

MEAN	17.62	18.58	16.85	18.07	25.47	38.60	51.86	100.4	88.31	29.71	13.21	13.53
MAX	27.8	27.9	33.6	32.3	57.8	115	106	324	375	92.6	38.5	29.1
(WY)	1945	1946	1943	1984	1948	1947	1994	1984	1944	1944	1944	1944
MIN	5.73	9.55	5.73	6.55	9.86	8.81	20.3	31.1	16.6	5.91	1.86	1.67
(WY)	1955	2002	2002	2001	2002	2002	1992	1985	1985	1985	1940	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1939 - 2002*	
ANNUAL TOTAL	7097.60		4963.09			
ANNUAL MEAN	19.45		13.60		36.02	
HIGHEST ANNUAL MEAN					76.8	1944
LOWEST ANNUAL MEAN					13.6	2002
HIGHEST DAILY MEAN	250	May 15	90	Apr 7	1120	Jun 20 1947
LOWEST DAILY MEAN	0.40	Sep 11	0.00	Sep 1	0.00	Sep 1 2002
ANNUAL SEVEN-DAY MINIMUM	0.51	Sep 10	0.00	Sep 1	0.00	Sep 1 2002
MAXIMUM PEAK FLOW			a90	Apr 7	c1150	Jun 4 1944
MAXIMUM PEAK STAGE			b4.45	Apr 5	6.96	May 9 1995
INSTANTANEOUS LOW FLOW			0.00	Aug 20	0.00	Aug 3 1935
ANNUAL RUNOFF (AC-FT)	14080		9840		26090	
10 PERCENT EXCEEDS	45		27		77	
50 PERCENT EXCEEDS	10		9.3		21	
90 PERCENT EXCEEDS	1.8		4.0		8.0	

*--During period of operation (1939-56), 1983 to current year).
a--About.
b--May have been higher during period of no gage-height record April 5.
c--Gage height, 4.83 ft, from rating curve extended above 400 ft^3/s.
e--Estimated.

06290500 LITTLE BIGHORN RIVER BELOW PASS CREEK, NEAR WYOLA, MT

LOCATION.--Lat 45°10'38", long 107°23'36" (NAD 27), in W1/2SW$^1/_4$ sec.35, T.7 S., R.35 E., Big Horn County, Hydrologic Unit 10080016, on right bank 3.5 mi north of Wyola, 6 mi downstream from Pass Creek, and at river mile 92.3.

DRAINAGE AREA.--428 mi^2.

PERIOD OF RECORD.--March 1939 to December 1958, August 1959 to September 1975, October 1976 to current year. Prior to October 1940, published as Little Horn River below Pass Creek, near Wyola.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,600 ft (NGVD 29).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Diversions for irrigation of about 8,300 acres upstream from station. Several observations of water temperature and specific conductance were made during the year. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	80	e70	e45	e60	e50	e70	94	e560	141	e39	e32
2	50	81	e70	e50	e60	e60	e70	107	535	130	e38	e32
3	51	81	e70	e50	e60	e65	e70	105	518	116	e38	e31
4	57	80	e70	e55	e60	e70	73	104	423	114	e37	e31
5	63	81	e65	e55	e60	e70	84	98	379	110	e37	e32
6	65	82	e70	e60	e60	e65	98	96	362	102	e36	e33
7	64	82	e70	e60	e60	e60	119	96	356	101	e36	e34
8	71	84	e70	e65	e60	e55	131	97	334	101	e37	e36
9	71	82	e70	e65	e55	e60	120	97	320	90	e36	e39
10	72	84	e65	e70	e50	e60	101	88	317	83	e35	e38
11	71	82	e65	e65	e60	e60	94	89	286	81	e35	e37
12	74	82	e60	e65	e60	e65	88	90	251	76	e34	e37
13	76	83	e60	e60	e60	e65	87	90	226	67	e34	e37
14	83	83	e60	e55	e60	e65	86	89	220	64	e33	e37
15	82	82	e65	e55	e60	e70	88	93	212	59	e34	e37
16	80	82	e60	e55	e60	e65	91	99	204	57	e34	e38
17	78	82	e60	e60	e60	e65	91	104	206	58	e35	e43
18	76	83	e60	e60	e60	e60	90	106	207	57	e35	42
19	76	81	e60	e60	e60	e55	90	111	206	57	e35	41
20	84	80	e60	e65	e60	e50	90	143	193	56	e34	42
21	84	84	e55	e60	e60	e55	87	e280	184	53	e34	41
22	82	84	e55	e70	e60	e60	88	e390	185	56	e35	41
23	82	86	e55	e60	e55	e60	89	332	197	61	e35	44
24	82	85	e50	e65	e55	e60	88	253	193	62	e34	44
25	79	e80	e50	e70	e50	e60	86	208	188	51	e34	44
26	79	e70	e45	e65	e45	e65	81	197	181	48	e33	45
27	81	e60	e45	e60	e50	e65	81	197	174	46	e33	45
28	81	e65	e45	e55	e55	e65	82	200	167	47	e32	48
29	79	e70	e40	e50	---	e65	81	e270	160	43	e32	54
30	79	e70	e40	e55	---	e70	81	e370	154	40	e32	57
31	79	---	e40	e55	---	e70	---	e490	---	e39	e32	---
TOTAL	2281	2391	1820	1840	1615	1930	2675	5183	8098	2266	1078	1192
MEAN	73.58	79.70	58.71	59.35	57.68	62.26	89.17	167.2	269.9	73.10	34.77	39.73
MAX	84	86	70	70	60	70	131	490	560	141	39	57
MIN	50	60	40	45	45	50	70	88	154	39	32	31
AC-FT	4520	4740	3610	3650	3200	3830	5310	10280	16060	4490	2140	2360

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)*

MEAN	122.4	118.8	106.3	104.7	115.4	139.4	183.6	463.9	639.9	233.8	112.7	108.9
MAX	163	153	162	165	232	281	327	1318	1395	758	237	186
(WY)	1942	1971	1965	1975	1972	1972	1970	1978	1975	1975	1975	1968
MIN	73.6	77.3	58.7	55.4	57.7	62.3	63.1	146	167	57.4	23.8	39.7
(WY)	2002	1986	2002	1950	2002	2002	1961	1953	1985	1960	1961	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002*	
ANNUAL TOTAL	37947		32369			
ANNUAL MEAN	104.0		88.68		203.5	
HIGHEST ANNUAL MEAN					381	1978
LOWEST ANNUAL MEAN					88.7	2002
HIGHEST DAILY MEAN	454	May 16	560	Jun 1	6090	May 19 1978
LOWEST DAILY MEAN	24	Aug 16	31	Sep 3	13	Aug 4 1961
ANNUAL SEVEN-DAY MINIMUM	25	Aug 14	32	Aug 29	14	Aug 3 1961
MAXIMUM PEAK FLOW			625	Jun 1	b8010	May 19 1978
MAXIMUM PEAK STAGE			3.50	Jun 1	10.02	May 19 1978
INSTANTANEOUS LOW FLOW			a31	Sep 3	c12	Aug 5 1961
ANNUAL RUNOFF (AC-FT)	75270		64200		147400	
10 PERCENT EXCEEDS	190		182		428	
50 PERCENT EXCEEDS	84		65		125	
90 PERCENT EXCEEDS	40		37		80	

*--During period of operation (1940-58, 1960-75, 1977 to current year).
a--About.
b--From rating curve extended above 2,000 ft^3/s on basis of slope-area measurement of peak flow.
c--Gage height, 0.89 ft.
e--Estimated.

06291500 LODGE GRASS CREEK ABOVE WILLOW CREEK DIVERSION, NEAR WYOLA, MT

LOCATION.--Lat 45°07'39", long 107°36'01" (NAD 27), in SE$^1/_4$NE$^1/_4$NE$^1/_4$ sec.24, T.8 S., R.33 E., Big Horn County, Hydrologic Unit 10080016, on left bank 0.2 mi upstream from Willow Creek diversion canal, 1.1 mi downstream from Spring Creek, 10 mi west of Wyola, 17 mi southwest of Lodge Grass, and at river mile 43.0.

DRAINAGE AREA.--80.7 mi^2.

PERIOD OF RECORD.--March 1939 to September 1974, October 1982 to current year.

REVISED RECORDS.--WSP 1559: 1944-47. WSP 1629: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,170 ft (NGVD 29). March 1939 to September 1974 recording gage 0.1 mi upstream at different datum. Flows are equivalent.

REMARKS.--Records good except those for May 21 to June 27, which are fair, and those for estimated daily discharges, which are poor. Diversions for irrigation of about 400 acres upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e10	e17	e15	e15	e13	e17	e14	e22	129	40	12	6.5
2	e10	e18	e13	e14	e14	e18	e12	e20	128	38	13	6.1
3	e10	e17	e13	e16	e14	e20	e13	e21	120	37	13	5.9
4	e12	e16	e14	e14	e14	e20	e14	e21	87	36	11	4.7
5	e11	e16	e14	e13	e14	e19	e15	e25	84	36	11	4.5
6	e13	e16	e16	e12	e14	e19	e15	e26	87	34	10	5.5
7	e14	e14	e15	e12	e14	e18	e15	e25	88	34	11	6.5
8	e14	e13	e15	e12	e14	e16	e15	e27	84	32	13	9.1
9	e13	e14	e15	e12	e14	e17	e15	e25	80	30	14	8.9
10	e15	e15	e15	e12	e14	e16	e17	e25	77	29	12	6.9
11	e17	e15	e13	e12	e15	e15	e17	e25	71	27	10	5.6
12	e20	e15	e12	e12	e16	e15	e17	e25	67	26	11	5.4
13	e20	e13	e14	e12	e15	e15	e19	e27	64	25	10	5.4
14	e19	e13	e15	e12	e16	e14	e20	e30	63	22	9.1	6.1
15	e18	e13	e17	e11	e17	e14	e25	e35	63	21	9.7	6.3
16	e20	e13	e15	e10	e17	e14	e22	e40	63	20	9.6	6.0
17	e20	e13	e15	e10	e17	e14	e20	e40	63	21	10	7.4
18	e21	e13	e15	e10	e17	e14	e20	e45	64	21	10	11
19	e20	e11	e15	e11	e17	e14	e18	e60	62	20	9.3	9.1
20	e20	e13	e15	e12	e17	e12	e17	e80	59	19	9.0	7.5
21	e19	e14	e14	e13	e17	e11	e17	119	57	18	9.8	7.5
22	e18	e14	e17	e12	e17	e13	e18	114	56	18	11	7.4
23	e18	e14	e16	e13	e17	e14	e19	80	55	20	9.9	7.5
24	e18	e16	e15	e14	e15	e13	e18	70	54	18	9.9	7.4
25	e16	e15	e14	e14	e13	e12	e17	64	53	16	8.8	8.8
26	e18	e13	e13	e13	e14	e13	e18	63	51	16	8.4	8.2
27	e19	e12	e12	e12	e15	e13	e19	61	49	16	9.4	6.2
28	e19	e12	e13	e10	e17	e13	e18	66	47	16	9.2	6.3
29	e19	e14	e14	e11	---	e13	e18	80	45	14	8.2	5.7
30	e19	e15	e14	e10	---	e14	e20	108	44	13	7.3	4.5
31	e18	---	e16	e12	---	e15	---	129	---	12	7.1	---
TOTAL	518	427	449	378	428	465	522	1598	2114	745	316.7	203.9
MEAN	16.71	14.23	14.48	12.19	15.29	15.00	17.40	51.55	70.47	24.03	10.22	6.797
MAX	21	18	17	16	17	20	25	129	129	40	14	11
MIN	10	11	12	10	13	11	12	20	44	12	7.1	4.5
AC-FT	1030	847	891	750	849	922	1040	3170	4190	1480	628	404

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)*

MEAN	21.24	19.00	16.84	16.58	16.85	20.24	31.70	118.0	196.2	63.35	28.03	22.37
MAX	35.5	28.0	25.0	30.3	32.0	36.9	71.4	257	445	176	50.7	40.1
(WY)	1942	1943	1969	1974	1972	1972	1994	1984	1964	1964	1968	1964
MIN	11.5	10.7	8.58	4.87	9.00	10.4	11.2	36.2	52.6	20.1	10.2	6.80
(WY)	1961	1961	1950	1950	1940	1961	2001	1950	2001	1961	2002	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002*		
ANNUAL TOTAL	8157.9		8164.6				
ANNUAL MEAN	22.35		22.37		47.54		
HIGHEST ANNUAL MEAN					85.6		1970
LOWEST ANNUAL MEAN					21.8		1961
HIGHEST DAILY MEAN	190	May 16	129	May 31	908	Jun 9	1964
LOWEST DAILY MEAN	2.7	Apr 6	4.5	Sep 5	2.7	Apr 6	2001
ANNUAL SEVEN-DAY MINIMUM	3.0	Apr 13	5.7	Sep 1	3.0	Apr 13	2001
MAXIMUM PEAK FLOW			a159	May 31	c1130	Jun 9	1964
MAXIMUM PEAK STAGE			b4.62	Dec 20	6.14	Jun 9	1964
ANNUAL RUNOFF (AC-FT)	16180		16190		34440		
10 PERCENT EXCEEDS	50		54		114		
50 PERCENT EXCEEDS	15		15		22		
90 PERCENT EXCEEDS	9.2		9.2		13		

*--During period of operation (1940-74, 1983 to current year).
a--Gage height, 3.31 ft.
b--Backwater from beaver dam and ice.
c--From rating curve extended above 600 ft^3/s.
e--Estimated.

YELLOWSTONE RIVER BASIN

06294000 LITTLE BIGHORN RIVER NEAR HARDIN, MT

LOCATION.--Lat 45°44'09", long 107°33'24" (NAD 27), in SE$^1/_4$NE$^1/_4$NE$^1/_4$ sec.19, T.1 S., R.34 E., Big Horn County, Hydrologic Unit 10080016, on left bank 50 ft downstream from bridge on Sarpy Road, 0.2 mi upstream from terminal wasteway of Agency Canal, 0.6 mi upstream from mouth, and 2.3 mi east of Hardin.

DRAINAGE AREA.--1,294 mi^2.

PERIOD OF RECORD.--June 1953 to current year.

REVISED RECORDS.--WDR MT-86-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 2,882.29 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to Oct. 7, 1953, nonrecording gage at site 0.4 mi downstream. Oct. 7, 1953 to May 6, 1963, water-stage recorder at site 0.3 mi downstream. May 6, 1963 to Nov. 6, 1963, nonrecording gage at site 0.4 mi downstream. All at different datums. Nov. 7, 1963 to Aug. 15, 1976, water-stage recorder at site 35 ft downstream at present datum. Aug. 15, 1976 to Sept. 30, 1979, water-stage recorders were located on each bank downstream from Sarpy Road bridge and were used depending on control conditions.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow partly regulated by Willow Creek Reservoir (capacity 23,000 acre-ft). Diversions for irrigation of 20,980 acres upstream from station. Figures of discharge given herein include flow of terminal wasteway of Agency Canal. U. S. Geological Survey satellite telemeter at station. Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	81	e70	e60	e60	e45	e75	97	375	49	36	21
2	18	80	e80	e65	e65	e45	e70	101	434	48	25	13
3	20	81	e90	e70	e70	e50	e80	135	453	24	13	13
4	28	82	e80	e75	e75	e60	e90	141	439	15	8.3	7.5
5	29	83	e80	e75	e80	e60	e100	133	363	10	6.4	4.5
6	34	82	e80	e70	e80	e65	126	128	309	8.4	8.4	8.0
7	48	83	e75	e70	e80	e60	137	121	290	6.9	13	9.0
8	52	85	e75	e70	e80	e60	208	123	271	5.8	22	22
9	52	85	e70	e70	e80	e60	205	120	268	4.6	49	15
10	56	87	e70	e75	e80	e60	192	122	282	3.1	53	5.4
11	58	86	e65	e80	e75	e55	160	117	269	2.4	79	10
12	62	89	e60	e85	e80	e60	133	111	238	3.8	96	16
13	62	88	e60	e85	e80	e70	129	107	210	2.6	103	15
14	68	88	e70	e80	e80	e70	121	100	197	3.8	82	12
15	68	88	e65	e75	e80	e70	112	95	181	5.2	59	12
16	74	90	e60	e70	e80	e80	109	93	166	4.4	43	12
17	77	89	e60	e65	e80	e80	115	97	155	38	40	12
18	74	88	e70	e60	e75	e75	129	102	137	56	56	11
19	74	87	e70	e65	e75	e75	127	101	130	27	60	9.9
20	75	89	e65	e70	e70	e80	127	105	129	39	58	9.6
21	76	89	e60	e75	e70	e80	126	119	125	48	67	15
22	e76	87	e60	e80	e70	e80	120	243	131	60	54	38
23	e76	92	e55	e80	e65	e80	111	347	130	56	31	42
24	e76	95	e60	e80	e60	e85	111	352	123	49	17	37
25	e71	e80	e60	e80	e50	e90	112	278	125	64	8.3	38
26	e75	e70	e55	e70	e40	e90	109	233	112	80	16	46
27	e75	e60	e55	e65	e45	e90	110	212	105	73	15	49
28	e75	e60	e55	e65	e45	e85	110	208	84	75	17	53
29	e75	e65	e50	e60	---	e85	103	208	60	85	13	53
30	e75	e70	e55	e70	---	e80	94	224	56	63	15	66
31	81	---	e55	e70	---	e80	---	279	---	39	16	---
TOTAL	1882	2479	2035	2230	1970	2205	3651	4952	6347	1049.0	1179.4	674.9
MEAN	60.71	82.63	65.65	71.94	70.36	71.13	121.7	159.7	211.6	33.84	38.05	22.50
MAX	81	95	90	85	80	90	208	352	453	85	103	66
MIN	18	60	50	60	40	45	70	93	56	2.4	6.4	4.5
AC-FT	3730	4920	4040	4420	3910	4370	7240	9820	12590	2080	2340	1340

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 2002, BY WATER YEAR (WY)

MEAN	155.3	153.6	136.0	141.6	202.2	313.5	316.0	613.6	826.9	267.0	119.6	128.0
MAX	276	248	223	366	610	987	748	2852	1981	1333	382	267
(WY)	1979	1979	1979	1975	1971	1972	1965	1978	1968	1975	1975	1978
MIN	60.7	82.6	65.6	71.6	70.3	71.1	54.8	71.9	117	8.50	2.46	19.1
(WY)	2002	2002	2002	1988	1989	2002	1961	1961	1961	1961	1961	1960

YELLOWSTONE RIVER BASIN

06294000 LITTLE BIGHORN RIVER NEAR HARDIN, MT

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1954 - 2002	
ANNUAL TOTAL	38525.3		30654.3			
ANNUAL MEAN	105.5		83.98		280.9	
HIGHEST ANNUAL MEAN					676	1975
LOWEST ANNUAL MEAN					70.4	1961
HIGHEST DAILY MEAN	421	Apr 11	453	Jun 3	15800	May 20 1978
LOWEST DAILY MEAN	6.9	Aug 26	2.4	Jul 11	0.30	Aug 5 1961
ANNUAL SEVEN-DAY MINIMUM	13	Aug 24	3.6	Jul 10	0.40	Aug 3 1961
MAXIMUM PEAK FLOW			512	Jun 3	a22600	May 19 1978
MAXIMUM PEAK STAGE			3.48	Jun 3	b11.78	Mar 20 1960
INSTANTANEOUS LOW FLOW					c0.20	Aug 7 1961
ANNUAL RUNOFF (AC-FT)	76410		60800		203500	
10 PERCENT EXCEEDS	216		133		609	
50 PERCENT EXCEEDS	89		75		164	
90 PERCENT EXCEEDS	26		15		75	

a--Gage height, 11.20 ft.
b--Site and datum then in use.
c--Result of discharge measurement.
e--Estimated.

YELLOWSTONE RIVER BASIN

06294500 BIGHORN RIVER ABOVE TULLOCK CREEK, NEAR BIGHORN, MT

LOCATION.--Lat 46°07'29", long 107°28'06" (NAD 27), in SE$^1/_4$SE$^1/_4$NE$^1/_4$ sec.3, T.4 N., R.34 E., Treasure County, Hydrologic Unit 10080015, on right bank 1.9 mi upstream from Tullock Creek, 3.6 mi southwest of Bighorn, 4.5 mi southeast of Custer, and at river mile 3.0.

DRAINAGE AREA.--22,414 mi^2. Area at site used Oct. 7, 1955, to Sept. 30, 1981, 22,885 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1981 to current year. Previously published as "06294700 Bighorn River at Bighorn, MT" 1956-81, and as "near Custer" 1945-55. Flows are equivalent at all sites.

GAGE.--Water-stage recorder. Elevation of gage is 2,700 ft (NGVD 29). May 11, 1945 to Dec. 6, 1945, nonrecording gage, and Dec. 7, 1945 to Oct. 6, 1955, water-stage recorder 1.7 mi upstream at different datum. Oct. 7, 1955 to Sept. 30, 1981, at site 2.3 mi downstream at different datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow regulated by Bighorn Lake beginning November 1965 (usable capacity, 1,312,000 acre-ft). Major regulation prior to November 1965 by 14 reservoirs in Wyoming and 1 in Montana with combined usable capacity of about 1,400,000 acre-ft. Diversion for irrigation of about 445,200 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1310	1360	1550	e1700	e1700	e1600	1470	1550	1810	1110	1470	1790
2	1290	1350	1560	e1700	e1700	e1600	1460	1640	1990	1060	1540	1810
3	1280	1340	1590	e1700	e1700	e1600	1450	1640	2050	953	1580	1780
4	1290	1350	1580	1740	e1750	e1600	1470	1670	2010	963	1570	1760
5	1310	1330	1570	1530	e1750	e1600	1460	1660	1870	1000	1650	1740
6	1300	1320	1570	1500	e1800	e1600	1460	1660	1720	961	1600	1720
7	1340	1310	1580	1500	e1800	e1500	1470	1680	1630	984	1560	1760
8	1330	1300	1560	1550	e1850	e1450	1530	1700	1600	976	1580	1850
9	1300	1380	1590	1570	1870	e1500	1580	1720	1660	973	1620	1890
10	1290	1390	1600	1560	1880	e1650	1470	1720	1720	1150	1600	1820
11	1320	1380	1570	1560	1900	e1650	1540	1640	1650	1180	1580	1790
12	1230	1380	1560	1570	1910	e1650	1460	1600	1560	1230	1570	1670
13	1220	1370	1550	1570	1920	e1650	1420	1590	1500	1250	1470	1640
14	1180	1370	e1550	1590	1930	1670	1440	1530	1480	1270	1460	1610
15	1190	1350	e1500	1590	1920	1640	1420	1490	1460	1340	1490	1590
16	1160	1340	e1550	1620	1930	1650	1480	1460	1460	1290	1500	1580
17	1160	1480	1610	1610	1930	1660	1440	1410	1460	1390	1550	1540
18	1140	1560	1620	e1600	1940	1640	1540	1450	1440	1590	1590	1560
19	1120	1550	1620	e1650	1960	1610	1550	1430	1450	1440	1610	1590
20	1120	1540	1590	1640	1980	1450	1490	1400	1470	1390	1520	1530
21	1210	1550	e1550	1640	1990	1130	1550	1390	1490	1450	1510	1500
22	1200	1540	e1550	1680	1980	e1400	1530	1650	1570	1530	1560	1500
23	1200	1560	e1600	1680	1550	e1450	1520	2140	1670	1540	1580	1480
24	1180	1560	e1600	e1700	e1500	e1450	1510	2020	1610	1520	1770	1440
25	1170	e1500	e1650	e1700	e1400	1480	1620	1890	1540	1490	1970	1260
26	1370	e1450	e1650	e1500	e1500	1460	1520	1810	1450	1530	1690	1240
27	1420	e1500	e1500	e1550	e1550	1440	1520	1780	1390	1520	1570	1180
28	1400	1520	e1600	e1600	e1550	1450	1540	1720	1330	1550	1630	1160
29	1390	1510	e1650	e1650	---	1440	1510	1670	1170	1480	1650	1160
30	1390	1540	e1700	e1650	---	1470	1490	1680	1100	1430	1670	1150
31	1380	---	e1700	e1650	---	1460	---	1780	---	1440	1720	---
TOTAL	39190	42980	49220	50050	50140	47600	44910	51170	47310	39980	49430	47090
MEAN	1264	1433	1588	1615	1791	1535	1497	1651	1577	1290	1595	1570
MAX	1420	1560	1700	1740	1990	1670	1620	2140	2050	1590	1970	1890
MIN	1120	1300	1500	1500	1400	1130	1420	1390	1100	953	1460	1150
AC-FT	77730	85250	97630	99270	99450	94410	89080	101500	93840	79300	98040	93400

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2002, BY WATER YEAR (WY)

MEAN	3253	3318	3157	3043	3213	3713	3566	4412	6994	5356	2863	2856
MAX	5546	5599	4907	5478	5314	6580	7881	9102	15180	19090	6972	4952
(WY)	1972	1974	1968	1968	1971	1972	1997	1947	1948	1967	1997	1973
MIN	1264	1223	1280	1382	1791	908	1063	1304	1050	707	868	1009
(WY)	2002	1978	1961	1961	2002	1966	1966	1966	1966	1960	1961	1966

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1945 - 2002	
ANNUAL TOTAL	714720		559070			
ANNUAL MEAN	1958		1532		3795	
HIGHEST ANNUAL MEAN					5594	1997
LOWEST ANNUAL MEAN					1532	2002
HIGHEST DAILY MEAN	3100	Apr 11	2140	May 23	50000	May 20 1978
LOWEST DAILY MEAN	1120	Oct 19	953	Jul 3	400	Apr 4 1967
ANNUAL SEVEN-DAY MINIMUM	1150	Oct 14	973	Jul 3	528	May 6 1961
MAXIMUM PEAK FLOW			a2450	Aug 25	c59200	May 20 1978
MAXIMUM PEAK STAGE			b8.00	Mar 3	14.15	May 20 1978
INSTANTANEOUS LOW FLOW					d275	Nov 15 1959
ANNUAL RUNOFF (AC-FT)	1418000		1109000		2749000	
10 PERCENT EXCEEDS	2520		1770		6320	
50 PERCENT EXCEEDS	1960		1550		3200	
90 PERCENT EXCEEDS	1350		1270		1770	

06294500 BIGHORN RIVER ABOVE TULLOCK CREEK, NEAR BIGHORN, MT--Continued

SUMMARY STATISTICS	WATER YEARS 1946-1961*		WATER YEARS 1967 - 2002**	
ANNUAL MEAN	3358		3870	
HIGHEST ANNUAL MEAN	5501	1947	5594	1997
LOWEST ANNUAL MEAN	1623	1961	1532	2002
HIGHEST DAILY MEAN	25700	Jun 23 1947	50000	May 20 1978
LOWEST DAILY MEAN	462	May 12 1961	400	Apr 4 1967
ANNUAL SEVEN-DAY MINIMUM	528	May 6 1961	843	Nov 18 1977
MAXIMUM PEAK FLOW	f26200	Jun 24 1947	c59200	May 20 1978
MAXIMUM PEAK STAGE	b10.65	May 20 1947	14.15	May 20 1978
INSTANTANEOUS LOW FLOW	d275	Nov 15 1959	d275	Nov 15 1959
ANNUAL RUNOFF (AC-FT)	2578000		2804000	
10 PERCENT EXCEEDS	6200		6270	
50 PERCENT EXCEEDS	2810		3420	
90 PERCENT EXCEEDS	1500		1930	

*--Prior to construction of Yellowtail Dam.
**--After completion of Yellowtail Dam.
a--Gage height, 1.59 ft.
b--Backwater from ice.
c--Gage height, 14.50 ft, at different site and datum.
d--About, result of freezeup.
e--Estimated.
f--Gage height, 8.79 ft, at different site and datum.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1999 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: April 2000 to current year (seasonal records).

INSTRUMENTATION.--Temperature recorder installed Aug. 27, 1999.

REMARKS.--Missing temperature data for Apr. 1-23 and July 19-22 due to equipment problems. Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records): Maximum, 40.0°C, July 8, 2002; minimum, 3.5°C, Apr. 3, 2000.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of operation, maximum, 40.0°C, July 8; minimum, 4.0°C, Apr. 24.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV									
20...	1000	1540	8.8	986	3.0	3.5	.35	.549	.003
APR									
29...	1115	1500	8.8	1080	15.0	8.0	.42	.472	.005
JUN									
25...	1030	1510	8.4	1070	24.0	19.0	.41	.515	.010
AUG									
07...	0945	1560	8.4	1070	22.5	19.5	.47	.480	.004

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV					
20...	<.007	.013	88	48	200
APR					
29...	<.007	.055	97	83	336
JUN					
25...	<.007	.043	93	81	330
AUG					
07...	<.007	.070	97	91	383

YELLOWSTONE RIVER BASIN

06294500 BIGHORN RIVER ABOVE TULLOCK CREEK, NEAR BIGHORN, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
NOV											
20...	1000	340	82.5	31.3	4.59	2	85.1	202	12.4	.6	4.43
JUN											
25...	1030	380	93.2	35.2	4.79	2	98.7	204	14.5	.4	2.92

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
NOV											
20...	338	.93	2840	683	E1	<.1	<.8	3.3	1	2	5
JUN											
25...	345	.98	2930	719	E1	<.1	<.8	4.8	<1	4	5

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	---	---	---	13.0	9.0	10.5	19.5	17.5	18.5	26.5	14.0	19.5
2	---	---	---	13.0	8.5	10.5	18.0	16.0	17.0	33.0	11.0	20.5
3	---	---	---	11.5	9.0	10.5	17.0	15.0	16.0	31.0	13.0	21.5
4	---	---	---	12.5	7.5	10.0	18.0	14.0	16.0	36.5	14.0	24.5
5	---	---	---	12.0	10.0	11.0	19.5	16.0	17.5	31.5	16.0	23.5
6	---	---	---	12.0	10.0	11.0	21.0	17.0	19.0	38.5	17.0	26.5
7	---	---	---	10.5	8.0	9.0	21.0	17.0	19.0	34.0	18.0	25.0
8	---	---	---	8.0	6.5	7.5	18.5	15.5	17.0	40.0	19.0	27.5
9	---	---	---	10.0	6.0	8.0	15.5	13.5	14.5	34.0	13.0	23.0
10	---	---	---	10.5	8.0	9.5	15.0	12.5	13.5	25.5	19.0	22.0
11	---	---	---	14.0	9.0	11.5	15.5	12.0	13.5	26.5	19.5	23.0
12	---	---	---	15.5	11.0	13.0	16.0	13.5	14.5	27.5	21.0	24.0
13	---	---	---	17.0	12.0	14.5	19.0	13.5	16.0	27.0	21.0	24.0
14	---	---	---	17.0	13.5	15.0	21.0	15.5	18.0	27.0	21.5	24.5
15	---	---	---	17.0	13.0	14.5	22.0	17.0	19.5	27.0	22.5	24.5
16	---	---	---	14.5	11.5	13.0	22.5	18.0	20.0	27.0	22.5	24.0
17	---	---	---	15.5	10.0	12.5	23.5	19.0	21.0	26.0	22.0	23.5
18	---	---	---	17.5	12.0	14.5	22.5	19.5	20.5	25.5	22.0	23.5
19	---	---	---	19.5	14.0	16.5	20.0	17.5	19.0	---	---	---
20	---	---	---	20.5	15.5	18.0	21.5	16.5	19.0	---	---	---
21	---	---	---	22.0	17.0	18.5	22.0	17.5	19.5	---	---	---
22	---	---	---	18.0	11.0	15.0	20.0	18.0	19.5	---	---	---
23	---	---	---	11.0	8.5	9.5	20.5	17.0	18.5	20.5	18.0	19.0
24	9.0	4.0	7.0	11.5	7.5	9.5	21.0	17.0	19.0	22.0	18.0	20.0
25	8.0	6.0	7.0	15.0	10.5	12.5	23.5	18.5	20.5	22.5	19.5	20.5
26	9.0	6.0	7.5	16.0	13.5	14.5	25.0	19.5	22.0	22.0	18.5	20.0
27	7.5	6.0	6.5	18.0	14.0	16.0	26.0	21.0	23.5	19.5	18.0	18.5
28	10.0	5.5	7.5	18.5	15.0	17.0	26.5	21.0	23.5	20.5	16.5	18.5
29	12.0	7.5	9.5	20.0	16.0	18.0	25.5	20.5	22.5	22.0	17.5	19.5
30	11.5	9.5	10.5	20.0	17.5	19.0	30.5	15.0	21.0	22.5	18.5	20.5
31	---	---	---	21.5	17.5	19.5	---	---	---	22.5	19.0	20.5
MONTH	---	---	---	22.0	6.0	13.0	30.5	12.0	18.5	---	---	---

YELLOWSTONE RIVER BASIN

06294500 BIGHORN RIVER ABOVE TULLOCK CREEK, NEAR BIGHORN, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002--Continued

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

YELLOWSTONE RIVER BASIN

06295000 YELLOWSTONE RIVER AT FORSYTH, MT

(National water-quality assessment program)

LOCATION.--Lat 46°15'58", long 106°41'24" (NAD 27), in NE$^1/_4$NW$^1/_4$NW$^1/_4$ sec.23, T.6 N., R.40 E., Rosebud County, Hydrologic Unit 10100001, on right bank 0.3 mi downstream from U.S. Highway 12 bridge, at intake for Forsyth water supply, at Forsyth, and at river mile 238.2.

DRAINAGE AREA.--40,339 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 16, 1921 to September 30, 1923 (no winter records), October 1977 to current year. Miscellaneous discharge measurements were made in 1974 to 1976 and are available in files of Helena district office.

GAGE.--Water-stage recorder. Datum of gage is 2,504.62 ft (NGVD 29), from nearby elevation determined by City of Forsyth. July 1921 to March 1922, nonrecording gage on discontinued highway bridge 10 ft downstream from gage at different datum. March 1922 to September 1923, nonrecording gage on discontinued highway bridge 10 ft downstream from gage at datum 2 ft higher.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 838,000 acres upstream from station. Flow regulated to some extent by Bighorn Lake, usable capacity, 1,356,000 acre-ft, on Bighorn River. Small diversion dam about 4,200 ft downstream from station. Bureau of Reclamation satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1918 reached a stage of about 20 ft, datum used in 1921, information from local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2470	4170	e3800	e2600	e3000	e2200	e3500	5180	27700	20100	6440	4380
2	2390	4160	e3700	e2800	e3200	e2500	e3000	5260	36900	19500	6080	4380
3	2380	4170	e3900	e3000	e3300	e2800	e3200	6290	41600	18200	5890	4310
4	2370	4250	e4000	e3200	e3400	e3300	e3400	6480	44200	16600	5830	4130
5	2630	4290	4290	e3200	e3400	e3000	e3400	6390	38200	15200	5880	4000
6	2980	4210	4220	e3400	e3500	e2800	e3500	7220	30000	14100	5960	3880
7	3080	4150	3990	e3600	e3600	e2800	4080	7490	26800	13400	5980	3830
8	3200	4060	4010	e3600	e3600	e2500	4180	8060	30300	12700	5800	4120
9	3210	4120	4080	e3600	e3700	e2400	4440	e7400	32000	12100	5630	4430
10	3280	4260	4160	e3900	e3800	e2700	4680	e7000	30300	11600	6010	4600
11	3390	4450	4090	e4000	e3800	e3000	4770	e6400	26600	11200	5910	4950
12	3460	4340	e3600	e3800	e3800	e3200	4670	e6200	22700	10600	5730	4860
13	3490	4260	e3500	e3700	e3800	e3700	4640	e6200	19700	9760	5430	4610
14	3550	4220	e3500	e3700	e3800	e4000	4650	e7400	17600	9170	5020	4450
15	3510	4240	e3500	e3700	e3700	e4200	4640	e9400	16500	8750	4730	4330
16	3750	4270	e3500	e3700	e3800	e4000	4550	e10500	16300	8590	4480	4250
17	3930	4240	e3600	e3600	e3800	e3800	5530	e11000	18200	8330	4260	4170
18	3920	4340	e3600	e3500	e3800	e3700	7070	e10500	21200	8510	4210	4120
19	3860	4420	e3500	e2900	e4000	e3600	6990	e11000	24700	8950	4160	4230
20	3710	4450	e3500	e2800	e4000	e3000	6420	e11500	28500	8760	4120	4250
21	3820	4430	e3500	e2700	e4100	e2600	5800	14300	29600	8810	3960	4340
22	3980	4420	e3500	e2800	e4000	e2400	5480	20900	24300	8850	4010	4430
23	3970	4350	e3500	e3000	e3600	e2800	5140	26200	23100	8780	4190	4490
24	3950	4420	e3500	e3200	e3300	e3000	5050	23800	24100	8450	4160	4520
25	3920	e4200	e3500	e3200	e3000	e3500	5060	18800	23800	8280	4420	4490
26	3940	e4100	e3400	e3000	e2800	e3800	5050	15400	24600	8060	4590	4500
27	4240	e4000	e3400	e3000	e2400	e3800	4920	13400	24300	7640	4210	4450
28	4240	e3600	e3300	e2800	e2300	e3800	4820	12600	23700	7520	4030	4440
29	4170	e3400	e3000	e2700	---	e3800	4890	12800	22600	7570	4080	4510
30	4150	e3600	e2900	e2800	---	e3600	5160	14400	21000	7430	4540	4520
31	4160	---	e2800	e3000	---	e3600	---	18900	---	7130	4390	---
TOTAL	109100	125590	112340	100500	98300	99900	142680	348370	791100	334640	154130	130970
MEAN	3519	4186	3624	3242	3511	3223	4756	11240	26370	10790	4972	4366
MAX	4240	4450	4290	4000	4100	4200	7070	26200	44200	20100	6440	4950
MIN	2370	3400	2800	2600	2300	2200	3000	5180	16300	7130	3960	3830
AC-FT	216400	249100	222800	199300	195000	198200	283000	691000	1569000	663800	305700	259800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2002, BY WATER YEAR (WY)

MEAN	7492	6987	6106	5717	6138	7059	7723	17260	29760	18270	8148	6959
MAX	10720	10490	8927	7796	10210	15120	13270	27850	63710	34430	17570	11320
(WY)	1983	1983	1983	1983	1997	1979	1997	1997	1997	1982	1997	1978
MIN	3519	4186	3624	3242	3511	3223	4220	11240	14690	6135	2742	2723
(WY)	2002	2002	2002	2002	2002	2002	1981	2002	1987	1988	2001	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1978 - 2002	
ANNUAL TOTAL	2077690		2547620			
ANNUAL MEAN	5692		6980		10640	
HIGHEST ANNUAL MEAN					17590	1997
LOWEST ANNUAL MEAN					6026	2001
HIGHEST DAILY MEAN	24500	Jun 15	44200	Jun 4	97000	May 21 1978
LOWEST DAILY MEAN	1950	Aug 30	2200	Mar 1	1400	Nov 23 1977
ANNUAL SEVEN-DAY MINIMUM	2030	Aug 26	2570	Feb 25	2030	Aug 26 2001
MAXIMUM PEAK FLOW			44900	Jun 4	106000	May 21 1978
MAXIMUM PEAK STAGE			8.11	Jun 4	14.53	May 21 1978
INSTANTANEOUS LOW FLOW					1400	Nov 23 1977
ANNUAL RUNOFF (AC-FT)	4121000		5053000		7711000	
10 PERCENT EXCEEDS	12200		17000		22600	
50 PERCENT EXCEEDS	4240		4200		7260	
90 PERCENT EXCEEDS	2820		3000		4430	

e--Estimated.

06295000 YELLOWSTONE RIVER AT FORSYTH, MT--Continued

(National water-quality assessment program)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to 1982, January 1999 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District Office. Samples collected this year as part of the National Water-Quality Assessment Program (NAWQA) for the Yellowstone River study unit under the direction of the Wyoming District.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)
OCT 2001												
24...	1000	3960	693	10.6	97	7.4	636	.0	7.5	160	156	190
NOV												
29...	1030	E3400	686	14.9	115	7.7	701	-8.0	.5	170	154	188
DEC												
13...	1300	E3500	689	12.5	96	8.2	726	2.0	.5	170	160	195
JAN 2002												
17...	1400	E3600	700	--	--	8.1	702	-1.0	.0	165	154	188
FEB												
21...	1300	E4100	704	9.0	67	8.6	702	10.5	.5	162	144	176
MAR												
25...	1400	E3500	696	14.4	108	8.3	786	2.0	.0	170	169	204
MAY												
16...	1100	E10500	701	8.8	94	8.5	538	11.0	14.5	128	119	135
JUN												
12...	1100	22700	--	--	--	8.1	254	19.5	13.0	68	63	77
JUL												
02...	1000	19400	700	7.9	96	8.0	228	25.0	20.5	64	60	73
AUG												
02...	0900	6080	694	8.2	99	8.3	540	20.0	20.0	132	128	142
SEP												
19...	1000	4240	692	7.8	87	8.5	684	17.5	16.0	E161	142	168

DATE	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001											
24...	0	8.79	160	<.04	.37	.20	.008	<.02	.033	28	299
NOV											
29...	0	10.6	188	<.04	.24	.38	E.006	<.02	.051	66	E606
DEC											
13...	0	9.56	191	<.04	.28	.47	.010	<.02	.011	21	E198
JAN 2002											
17...	0	9.83	193	E.02	.23	.53	E.005	E.01	.009	4	E39
FEB											
21...	0	9.46	197	E.03	.33	.43	<.008	<.02	.049	36	E399
MAR											
25...	0	10.8	220	E.03	.36	.42	E.004	<.02	.040	39	E369
MAY											
16...	5	7.15	137	<.04	.59	.06	<.008	<.02	.110	102	E2980
JUN											
12...	0	3.57	45.7	E.02	.40	.17	E.005	E.01	.172	176	10800
JUL											
02...	0	3.27	40.2	<.04	.22	.12	E.004	E.01	.104	77	4030
AUG											
02...	7	7.92	133	<.04	.38	.36	.010	.02	.107	62	1020
SEP											
19...	2	9.63	184	<.04	.39	.21	E.004	<.02	.052	34	389

DATE	TIME	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERI-PHYTON BIOMASS ASH FREE DRY G/SQ M (49954)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS) (70950)	PHEO-PHYTIN A, PERI-PHYTON (MG/M2) (62359)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70957)
SEP 2002							
19...	0930	190	214	27.9	335	36	83.4

E--Estimated.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	TIME	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)	ALPHA BHC DIS-SOLVED (UG/L) (34253)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BUTYL-ATE, WATER, DISS, REC (UG/L) (04028)	CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933)
NOV 2001											
29...	1030	<.002	<.004	<.002	<.005	E.005	<.010	<.002	<.041	<.020	<.005
JAN 2002											
17...	1400	<.006	<.006	<.004	<.005	.008	<.010	<.002	<.041	<.020	<.005
MAR											
25...	1400	<.006	<.006	<.004	<.005	.025	<.010	<.002	<.041	<.020	<.005
MAY											
16...	1100	<.006	<.006	<.004	<.005	.008	<.010	<.002	<.041	<.020	<.005
JUN											
12...	1100	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	--	<.005
JUL											
02...	1000	<.006	<.006	<.004	<.005	E.007	<.010	<.002	<.041	<.020	<.005
AUG											
02...	0900	<.006	<.006	<.004	<.005	.009	<.010	<.002	<.041	<.020	<.005
SEP											
19...	1000	<.006	<.006	<.004	<.005	E.006	<.010	<.002	<.041	<.020	<.005

DATE	CYANA-ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	DIAZ-INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)
NOV 2001											
29...	<.018	<.003	<.006	93.9	<.005	<.005	<.02	<.002	<.009	<.005	<.003
JAN 2002											
17...	<.018	<.003	<.006	112	<.005	<.005	<.02	<.002	<.009	<.005	<.003
MAR											
25...	<.018	<.003	E.004	122	<.005	<.005	<.02	<.002	<.009	<.005	<.003
MAY											
16...	<.018	<.003	<.006	119	<.005	<.005	<.02	<.002	<.009	<.005	<.003
JUN											
12...	<.018	<.003	<.006	102	<.005	<.005	<.02	<.002	<.009	<.005	<.003
JUL											
02...	<.018	<.003	<.006	103	<.005	<.005	<.02	<.002	<.009	<.005	<.003
AUG											
02...	<.018	<.003	E.004	104	<.005	<.005	<.02	<.002	<.009	<.005	<.003
SEP											
19...	<.018	<.003	E.003	109	<.005	<.005	<.02	<.002	<.009	<.005	<.003

DATE	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	LINDANE DIS-SOLVED (UG/L) (39341)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA-THION, DIS-SOLVED (UG/L) (39532)	METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO-LACHLOR WATER DISSOLV (UG/L) (39415)	METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	P,P' DDE DISSOLV (UG/L) (34653)
NOV 2001											
29...	87.7	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003
JAN 2002											
17...	95.5	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003
MAR											
25...	94.2	<.004	<.035	<.027	<.050	<.006	E.002	<.006	<.002	<.007	<.003
MAY											
16...	103	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003
JUN											
12...	93.8	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003
JUL											
02...	96.6	<.004	<.035	E.004	<.050	<.006	<.013	<.006	<.002	<.007	<.003
AUG											
02...	99.1	<.004	<.035	<.027	<.050	<.006	E.005	<.006	<.002	<.007	<.003
SEP											
19...	109	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003

E--Estimated.

DATE	PARA-THION, DIS-SOLVED (UG/L) (39542)	PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO-METON, WATER, DISS, REC (UG/L) (04037)	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)
NOV 2001											
29...	<.007	<.002	<.010	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.011
JAN 2002											
17...	<.010	<.004	<.022	<.006	<.011	E.01	<.004	<.010	<.011	<.02	<.005
MAR											
25...	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005
MAY											
16...	<.010	<.004	<.022	<.006	<.011	E.01	<.004	<.010	<.011	<.02	<.005
JUN											
12...	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005
JUL											
02...	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005
AUG											
02...	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005
SEP											
19...	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005

DATE	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TER-BUTHYL-AZINE, WATER, DISS, REC (UG/L) (04022)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
NOV 2001							
29...	<.02	<.034	<.02	<.01	<.005	<.002	<.009
JAN 2002							
17...	<.02	<.034	<.02	<.01	<.005	<.002	<.009
MAR							
25...	<.02	<.034	<.02	<.01	<.005	<.002	<.009
MAY							
16...	<.02	<.034	<.02	--	<.005	<.002	<.009
JUN							
12...	<.02	<.034	<.02	--	<.005	.007	<.009
JUL							
02...	<.02	<.034	<.02	--	<.005	.003	<.009
AUG							
02...	<.02	<.034	<.02	--	<.005	.012	<.009
SEP							
19...	<.02	<.034	<.02	--	<.005	.008	<.009

E--Estimated.

YELLOWSTONE RIVER BASIN

06295113 ROSEBUD CREEK AT RESERVATION BOUNDARY, NEAR KIRBY, MT

LOCATION.--Lat 45°21'40", long 106°59'23" (NAD 27), in NE$^1/_4$NE$^1/_4$SW$^1/_4$ sec.36, T.5 S., R.38 E., Big Horn County, Hydrologic Unit 10100003, on right bank, 0.2 mi upstream from Dry Creek, 0.5 mi north of reservation boundary, 1.9 mi downstream from Cache Creek, 2.0 mi north of Kirby, and at river mile 179.6.

DRAINAGE AREA.-- 123 mi^2.

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

GAGE.--Water-stage recorder. Elevation of gage is 3,780 ft (NGVD 29).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Numerous small diversions for irrigation upstream from station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--A discharge of 231 ft^3/s was measured May 9, 1978, at site 1.9 mi upstream from present site. Flow was known to be higher during flood of May 19-21, 1978, from information by local resident.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.00	e0.50	e0.35	e0.15	e0.50	e0.60	e1.5	2.8	1.0	0.23	0.00	0.00
2	e0.00	e0.45	e0.35	e0.10	e0.70	e0.50	e1.0	2.7	0.89	0.20	0.00	0.00
3	e0.00	e0.45	e0.40	e0.15	e0.90	e0.50	e0.70	2.6	0.97	0.19	0.00	0.00
4	e0.00	e0.40	e0.35	e0.20	e0.90	e0.60	e1.0	2.8	1.1	0.16	0.00	0.00
5	e0.40	e0.40	e0.35	e0.35	e0.90	e1.0	e1.5	2.6	1.4	0.05	0.00	0.00
6	e0.45	e0.40	e0.35	e0.30	e1.0	e1.5	e1.5	2.5	1.5	0.03	0.00	0.00
7	e0.40	e0.35	e0.35	e0.50	e1.5	e0.80	e2.0	2.4	1.4	0.04	0.00	0.00
8	e0.40	e0.35	e0.35	e1.0	e1.5	e0.80	e2.0	2.5	1.3	0.03	0.00	0.00
9	e0.40	e0.35	e0.35	e2.0	e1.0	e0.70	e1.5	2.3	1.4	0.02	0.00	0.00
10	e0.40	e0.30	e0.35	e2.0	e1.0	e1.0	e2.0	2.1	1.5	0.01	0.00	0.00
11	e0.35	e0.30	e0.30	e2.0	e1.0	e1.0	e2.0	2.1	1.5	0.00	0.00	0.00
12	e0.30	e0.35	e0.30	e2.0	e1.5	e1.5	e2.5	2.0	1.3	0.00	0.00	0.00
13	e0.30	e0.35	e0.30	e1.7	e1.0	e2.0	e2.5	1.9	1.4	0.00	0.13	0.00
14	e0.25	e0.40	e0.30	e1.7	e1.0	e1.5	2.7	1.8	1.4	0.00	0.21	0.00
15	e0.25	e0.40	e0.35	e1.7	e1.0	e1.0	2.9	1.5	1.2	0.00	0.08	0.00
16	e0.30	e0.40	e0.35	e1.0	e1.0	e1.0	2.9	1.4	1.1	0.00	0.02	0.00
17	e0.40	e0.40	e0.40	e1.0	e1.5	e1.0	2.6	1.4	1.0	0.00	0.00	0.00
18	e0.40	e0.35	e0.45	e0.90	e1.5	e0.90	2.8	1.2	1.0	0.00	0.00	0.00
19	e0.40	e0.30	e0.40	e0.90	e1.5	e0.90	2.7	1.1	0.92	0.00	0.00	0.00
20	e0.40	e0.30	e0.35	e0.90	e1.0	e1.0	2.8	0.97	0.90	0.00	0.00	0.00
21	e0.40	e0.40	e0.35	e1.0	e1.0	e0.70	2.8	0.99	0.89	0.00	0.00	0.00
22	e0.35	e0.40	e0.35	e1.5	e1.0	e0.70	3.2	0.99	1.2	0.00	0.00	0.00
23	e0.35	e0.40	e0.30	e1.5	e1.5	e1.0	3.1	1.4	1.1	0.00	0.00	0.00
24	e0.35	e0.40	e0.35	e1.0	e1.0	e1.0	2.9	1.3	0.95	0.00	0.00	0.00
25	e0.35	e0.35	e0.40	e1.5	e0.50	e1.0	2.7	1.4	0.86	0.00	0.00	0.00
26	e0.40	e0.35	e0.40	e1.5	e0.50	e1.0	2.9	1.6	0.73	0.00	0.00	0.00
27	e0.50	e0.30	e0.40	e1.0	e0.40	e1.5	2.9	1.7	0.48	0.00	0.00	0.00
28	e0.50	e0.30	e0.35	e0.70	e0.60	e1.0	2.9	1.3	0.34	0.00	0.00	0.00
29	e0.40	e0.30	e0.30	e0.60	---	e1.0	2.9	1.2	0.35	0.00	0.00	0.00
30	e0.40	e0.35	e0.20	e0.40	---	e1.0	2.5	1.2	0.27	0.00	0.00	0.00
31	e0.45	---	e0.20	e0.40	---	e1.5	---	1.1	---	0.00	0.00	---
TOTAL	10.25	11.05	10.65	31.65	28.40	31.20	69.90	54.85	31.35	0.96	0.44	0.00
MEAN	0.331	0.368	0.344	1.021	1.014	1.006	2.330	1.769	1.045	0.031	0.014	0.000
MAX	0.50	0.50	0.45	2.0	1.5	2.0	3.2	2.8	1.5	0.23	0.21	0.00
MIN	0.00	0.30	0.20	0.10	0.40	0.50	0.70	0.97	0.27	0.00	0.00	0.00
AC-FT	20	22	21	63	56	62	139	109	62	1.9	0.9	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2002, BY WATER YEAR (WY)

MEAN	2.902	3.257	3.266	3.381	6.339	13.48	14.91	12.31	8.527	3.640	1.653	1.635
MAX	8.02	11.7	12.7	10.0	29.0	41.8	40.7	23.9	19.7	11.1	4.60	3.18
(WY)	1980	1980	1980	1980	1996	1996	1985	1984	1986	1993	1993	1984
MIN	0.33	0.37	0.34	1.02	1.01	1.01	2.33	1.77	1.04	0.031	0.014	0.000
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1980 - 2002	
ANNUAL TOTAL	840.76		280.70			
ANNUAL MEAN	2.303		0.769		6.265	
HIGHEST ANNUAL MEAN					11.7	1996
LOWEST ANNUAL MEAN					0.77	2002
HIGHEST DAILY MEAN	22	Apr 22	3.2	Apr 22	170	Mar 13 1996
LOWEST DAILY MEAN	0.00	Sep 2	0.00	Many days	0.00	Sep 16 1990
ANNUAL SEVEN-DAY MINIMUM	0.00	Sep 26	0.00	Jul 11	0.00	Sep 26 2001
MAXIMUM PEAK FLOW			a3.7	Apr 22	c219	Mar 17 1996
MAXIMUM PEAK STAGE			b3.51	Dec 26	b8.28	Mar 13 1996
INSTANTANEOUS LOW FLOW					0.00	Sep 6 1989
ANNUAL RUNOFF (AC-FT)	1670		557		4540	
10 PERCENT EXCEEDS	5.3		2.0		14	
50 PERCENT EXCEEDS	1.0		0.40		3.5	
90 PERCENT EXCEEDS	0.13		0.00		0.96	

a--Gage height, 2.42 ft.
b--Backwater from ice.
c--Gage height, 6.30 ft.
e--Estimated.

YELLOWSTONE RIVER BASIN

06295250 ROSEBUD CREEK NEAR COLSTRIP, MT

LOCATION.--Lat 45°46'03", long 106°34'10" (NAD 27), in SE$^1/_4$SW$^1/_4$NE$^1/_4$ sec.8, T.1 S., R.42 E., Rosebud County, Hydrologic Unit 10100003, on left bank 10 ft downstream from bridge on FAS Route 315, 1.5 mi downstream from Lee Coulee, 8.4 mi southeast of Colstrip, and at river mile 85.6.
DRAINAGE AREA.--799 mi^2.
PERIOD OF RECORD.--October 1974 to current year.
GAGE.--Water-stage recorder. Elevation of gage is 3,000 ft (NGVD 29).
REMARKS.--Records fair except those for estimated daily discharges, which are poor. Diversions for irrigation of about 800 acres upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.00	0.02	e0.08	e0.70	8.6	e7.0	11	4.7	3.5	0.00	0.00	0.00
2	e0.00	0.03	e0.10	e0.60	7.2	e7.5	e10	3.8	3.5	0.00	0.00	0.00
3	e0.00	0.02	e0.12	e0.60	7.7	e7.5	e10	3.2	3.4	0.00	0.00	0.00
4	e0.00	0.02	e0.12	e0.70	8.4	e8.5	11	2.4	2.4	0.00	0.00	0.00
5	e0.00	0.03	e0.12	e0.70	7.6	e9.0	12	2.1	1.9	0.00	0.00	0.00
6	e0.00	0.03	e0.16	e0.80	6.4	e9.5	13	3.1	1.2	0.00	0.00	0.00
7	e0.00	0.02	e0.18	e0.80	6.0	e9.5	13	6.0	1.1	0.00	0.00	0.00
8	e0.00	0.02	e0.20	e0.90	5.9	e9.0	14	5.5	0.97	0.00	0.00	0.00
9	e0.00	0.03	e0.28	e1.1	5.7	e8.5	14	5.5	0.89	0.00	0.00	0.00
10	e0.00	0.02	0.28	1.2	6.1	e9.0	14	5.5	0.94	0.00	0.00	0.00
11	e0.00	0.02	0.20	2.6	6.0	e10	15	5.2	0.81	0.00	0.00	0.00
12	e0.00	0.02	0.17	2.4	6.7	10	13	4.7	0.71	0.00	0.00	0.00
13	e0.00	0.03	e0.14	2.5	7.3	10	13	4.7	0.50	0.00	0.00	0.00
14	e0.00	0.03	0.13	2.2	6.7	11	12	4.5	0.56	0.00	0.00	0.00
15	e0.00	0.03	0.17	2.1	7.1	11	10	4.2	0.47	0.00	0.00	0.00
16	e0.00	0.03	e0.18	2.4	7.0	12	9.4	3.9	0.30	0.00	0.00	0.00
17	e0.00	0.03	0.56	2.5	6.9	11	9.3	3.8	0.20	0.00	0.00	0.00
18	e0.00	0.03	0.71	3.0	7.0	12	11	3.7	0.10	0.00	0.00	0.00
19	e0.00	0.02	0.66	4.3	7.1	11	11	3.5	0.04	0.00	0.00	0.00
20	e0.00	0.03	0.68	4.2	7.5	e10	9.9	2.9	0.01	0.00	0.00	0.00
21	e0.00	0.03	0.68	4.3	7.8	e9.5	9.3	2.6	0.00	0.00	0.00	0.00
22	e0.00	0.03	0.59	4.8	8.5	e10	9.6	3.2	0.00	0.00	0.00	0.00
23	e0.00	0.04	e0.60	4.7	9.1	e10	9.8	5.7	0.01	0.00	0.00	0.00
24	e0.00	0.04	e0.60	4.8	e8.5	e11	8.2	5.6	0.02	0.00	0.00	0.00
25	e0.00	0.03	e0.60	4.7	e8.0	11	6.7	3.9	0.00	0.00	0.00	0.00
26	e0.00	0.03	e0.70	4.7	e8.0	11	5.5	3.5	0.00	0.00	0.00	0.00
27	e0.00	0.03	e0.70	4.9	e7.5	11	4.2	4.2	0.00	0.00	0.00	0.00
28	e0.00	0.03	e0.80	4.8	e7.5	11	6.4	4.6	0.00	0.00	0.00	0.00
29	e0.00	e0.04	e0.80	5.0	---	11	6.0	4.2	0.00	0.00	0.00	0.00
30	0.02	e0.06	e0.80	6.7	---	11	5.5	4.2	0.00	0.00	0.00	0.00
31	0.03	---	e0.70	8.2	---	11	---	3.9	---	0.00	0.00	---
TOTAL	0.05	0.87	12.81	93.90	203.8	310.5	306.8	128.5	23.53	0.00	0.00	0.00
MEAN	0.002	0.029	0.413	3.029	7.279	10.02	10.23	4.145	0.784	0.000	0.000	0.000
MAX	0.03	0.06	0.80	8.2	9.1	12	15	6.0	3.5	0.00	0.00	0.00
MIN	0.00	0.02	0.08	0.60	5.7	7.0	4.2	2.1	0.00	0.00	0.00	0.00
AC-FT	0.1	1.7	25	186	404	616	609	255	47	0.00	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2002, BY WATER YEAR (WY)

MEAN	9.642	12.38	12.52	15.04	27.37	45.51	40.76	51.68	36.49	18.52	9.221	6.800
MAX	47.5	46.2	46.0	70.3	105	164	185	306	212	104	57.1	55.8
(WY)	1979	1979	1979	1975	1996	1994	1979	1975	1978	1975	1975	1978
MIN	0.000	0.029	0.41	3.03	5.04	7.42	8.88	4.15	0.78	0.000	0.000	0.000
(WY)	1991	2002	2002	2002	1989	1991	1992	2002	2002	2002	2001	1983

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1975 - 2002	
ANNUAL TOTAL	2300.72		1080.76			
ANNUAL MEAN	6.303		2.961		b23.80	
HIGHEST ANNUAL MEAN					95.9	1975
LOWEST ANNUAL MEAN					2.96	2002
HIGHEST DAILY MEAN	108	Jun 30	15	Apr 11	668	Mar 3 1994
LOWEST DAILY MEAN	0.00	Aug 1	a0.00	Oct 1	a0.00	Aug 31 1981
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 1	a0.00	Oct 1	a0.00	Aug 31 1981
MAXIMUM PEAK FLOW			22	Apr 9	c754	Mar 2 1994
MAXIMUM PEAK STAGE			1.34	Apr 9	9.03	May 21 1978
ANNUAL RUNOFF (AC-FT)	4560		2140		17240	
10 PERCENT EXCEEDS	17		10		50	
50 PERCENT EXCEEDS	3.8		0.28		12	
90 PERCENT EXCEEDS	0.00		0.00		0.82	

a--No flow many days most years.
b--Median of yearly mean discharge, 15.1 ft^3/s, 10,900 acre-ft/yr.
c--Gage height, 8.42 ft.
e--Estimated.

YELLOWSTONE RIVER BASIN

06296003 ROSEBUD CREEK AT MOUTH, NEAR ROSEBUD, MT

LOCATION.--Lat 46°15'53", long 106°28'30" (NAD 27), in SW$^1/_4$NW$^1/_4$NE$^1/_4$ sec.21, T.6 N., R.42 E., Rosebud County, Hydrologic Unit 10100003, on left bank 0.4 mi upstream from bridge on Interstate Highway 94, 0.8 mi upstream from mouth, and 1.6 mi southwest of Rosebud.

DRAINAGE AREA.--1,302 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,480 ft (NGVD 29).

REMARKS.--Water-discharge records fair except those for estimated daily discharges, which are poor. Diversions for irrigation of about 2,000 acres upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.00	e0.00	e0.04	e0.01	e0.04	e0.01	e0.08	0.52	0.65	0.00	0.00	0.00
2	e0.00	e0.00	e0.06	e0.03	e0.04	e0.03	e0.06	0.26	0.93	0.00	0.00	0.00
3	e0.00	e0.00	e0.04	e0.04	e0.04	e0.04	e0.04	0.00	0.43	0.00	0.00	0.00
4	e0.00	e0.00	e0.04	e0.04	e0.04	e0.06	e0.08	0.00	0.32	0.00	0.00	0.00
5	e0.00	e0.00	e0.04	e0.03	e0.04	e0.04	e0.25	0.00	0.31	0.00	e56	0.00
6	e0.00	0.00	e0.04	e0.01	e0.04	e0.03	e0.40	0.00	0.22	0.00	29	0.00
7	e0.00	0.00	e0.06	e0.04	e0.04	e0.03	e0.40	0.22	0.20	0.00	0.27	0.00
8	e0.00	0.00	e0.08	e0.06	e0.04	e0.03	e0.40	0.18	0.21	0.00	0.00	0.00
9	e0.00	0.00	e0.06	e0.04	e0.04	e0.01	e0.40	0.53	0.37	0.00	0.00	16
10	e0.00	0.00	e0.04	e0.04	e0.04	e0.03	e0.60	0.26	0.44	0.00	0.03	3.7
11	e0.00	0.00	e0.03	e0.04	e0.06	e0.04	e0.40	0.06	11	0.00	0.00	0.68
12	e0.00	0.00	e0.03	e0.04	e0.06	e0.04	0.03	0.17	0.38	0.00	0.00	0.62
13	e0.00	0.00	e0.03	e0.04	e0.06	e0.03	0.00	0.21	0.23	0.00	0.00	0.54
14	e0.00	0.00	e0.04	e0.04	e0.06	e0.03	0.00	0.27	0.17	0.00	0.00	0.68
15	e0.00	0.00	e0.04	e0.03	e0.06	e0.03	0.00	0.57	0.16	0.00	0.00	0.61
16	e0.00	0.01	e0.04	e0.03	e0.06	e0.03	0.11	0.70	0.10	0.00	0.00	0.41
17	e0.00	0.00	e0.04	e0.03	e0.08	e0.01	0.00	0.98	0.09	0.00	0.00	0.29
18	e0.00	0.00	e0.04	e0.03	e0.08	e0.01	0.30	0.88	0.12	0.00	0.00	0.30
19	e0.00	0.00	e0.03	e0.04	e0.08	e0.01	5.2	0.78	0.08	0.00	0.00	0.45
20	e0.00	0.00	e0.03	e0.04	e0.10	e0.01	23	0.69	0.01	0.00	0.00	0.25
21	e0.00	0.00	e0.01	e0.06	e0.25	e0.01	32	0.35	0.00	0.00	0.00	0.06
22	e0.00	0.03	e0.01	e0.04	e0.25	e0.03	43	0.56	0.06	0.00	0.00	0.11
23	e0.00	0.03	e0.01	e0.03	e0.08	e0.03	35	0.54	35	0.00	0.00	0.11
24	e0.00	0.03	e0.01	e0.04	e0.04	e0.04	3.7	0.94	32	0.00	0.00	0.32
25	e0.00	e0.04	e0.01	e0.04	e0.03	e0.06	0.85	0.44	0.82	0.00	0.00	0.48
26	e0.00	e0.03	e0.03	e0.03	e0.04	e0.08	0.44	0.33	0.07	0.00	0.00	0.68
27	e0.00	e0.01	e0.03	e0.03	e0.03	e0.08	0.61	0.27	0.00	0.00	0.00	0.69
28	e0.00	e0.03	e0.03	e0.01	e0.03	e0.08	0.83	0.32	0.00	0.00	0.00	0.69
29	e0.00	e0.03	e0.01	e0.01	---	e0.08	1.0	0.35	0.00	0.00	0.00	0.63
30	e0.00	e0.04	e0.01	e0.01	---	e0.08	0.63	0.26	0.00	0.00	0.00	0.61
31	e0.00	---	e0.01	e0.03	---	e0.10	---	0.46	---	0.00	0.00	---
TOTAL	0.00	0.28	1.02	1.03	1.85	1.22	149.81	12.10	84.37	0.00	85.30	28.91
MEAN	0.000	0.009	0.033	0.033	0.066	0.039	4.994	0.390	2.812	0.000	2.752	0.964
MAX	0.00	0.04	0.08	0.06	0.25	0.10	43	0.98	35	0.00	56	16
MIN	0.00	0.00	0.01	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	0.6	2.0	2.0	3.7	2.4	297	24	167	0.00	169	57

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2002, BY WATER YEAR (WY)

MEAN	8.398	9.426	10.16	19.30	38.46	72.24	43.54	60.84	40.94	18.07	8.221	8.543
MAX	45.7	47.6	47.8	159	187	428	180	478	286	133	47.8	77.3
(WY)	1979	1979	1979	1999	1997	1994	1979	1978	1978	1993	1975	1978
MIN	0.000	0.009	0.033	0.033	0.066	0.039	4.99	0.39	0.48	0.000	0.001	0.000
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	1988	2002	1988	1990

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1975 - 2002	
ANNUAL TOTAL	1672.05		365.89			
ANNUAL MEAN	4.581		1.002		28.13*	
HIGHEST ANNUAL MEAN					113	1978
LOWEST ANNUAL MEAN					1.00	2002
HIGHEST DAILY MEAN	66	Aug 1	56	Aug 5	2800	Mar 4 1994
LOWEST DAILY MEAN	0.00	Jul 12	0.00	Oct 1	a0.00	Aug 28 1984
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 28	0.00	Oct 1	0.00	Aug 5 1988
MAXIMUM PEAK FLOW			115	Aug 5	3700	Mar 4 1994
MAXIMUM PEAK STAGE			2.34	Aug 5	7.70	Mar 4 1994
INSTANTANEOUS LOW FLOW					a0.00	Aug 28 1984
ANNUAL RUNOFF (AC-FT)	3320		726		20380	
10 PERCENT EXCEEDS	17		0.60		60	
50 PERCENT EXCEEDS	0.36		0.03		8.0	
90 PERCENT EXCEEDS	0.00		0.00		0.13	

*--Median of yearly mean discharge, 18.9 ft^3/s, 13,700 acre-ft/yr.
a--No flow on many days in 1984, 1990-92, 2000-2002.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975-86, 1988-93, May 1999 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
APR 2002									
10...	0900	.64	8.4	1820	9.0	7.5	.82	<.013	<.002
MAY									
29...	1230	.35	8.4	2820	32.0	23.5	.69	<.013	<.002
JUN									
11...	1000	20	8.6	3270	18.0	15.0	1.5	<.013	.003
SEP									
11...	1130	.78	8.1	693	25.0	19.5	1.1	1.45	.044

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
APR 2002					
10...	<.007	.105	99	71	.12
MAY					
29...	<.007	.054	99	139	.13
JUN					
11...	<.007	.380	99	858	46.3
SEP					
11...	.008	.559	99	422	.89

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
MAY 2002											
29...	1230	650	70.5	115	11.2	7	433	498	18.5	.7	4.59
JUN											
11...	1000	530	63.0	91.6	10.7	12	622	581	20.6	.9	3.42

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
MAY 2002											
29...	1100	2.79	1.94	2050	<1	<.2	.9	5.5	<2	7	8
JUN											
11...	1290	3.33	132	2450	5	<.1	10.0	22.3	11	20	46

E--Estimated.

YELLOWSTONE RIVER BASIN

06306300 TONGUE RIVER AT STATE LINE, NEAR DECKER, MT

LOCATION.--Lat 45°00'32", long 106°50'08" (NAD 27), in NW$^1/_4$NW$^1/_4$NE$^1/_4$ sec.33, T.9 S., R.40 E., Big Horn County, Hydrologic Unit 10090101, on left bank 1 mi north of Wyoming-Montana State line, 1.4 mi southeast of Decker, 1.6 mi upstream from Badger Creek, and at river mile 200.9.

DRAINAGE AREA.--1,477 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1960 to current year. Records published as "near Decker" May 1928 to September 1938, not equivalent owing to intervening drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,429.14 ft (NGVD 29) (levels by U.S. Army Corps of Engineers).

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow regulated by many small reservoirs in Wyoming, combined capacity, about 15,000 acre-ft. Diversions for irrigation of about 64,300 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	140	e120	e85	e70	e75	e75	188	857	130	64	117
2	64	141	e120	e90	e70	e80	e80	218	874	120	58	109
3	63	137	e120	e90	e70	e90	e90	194	784	113	51	101
4	70	131	e110	e90	e70	e100	e100	196	703	106	46	97
5	90	129	e110	e80	e75	e90	e110	198	545	100	48	93
6	108	125	e110	e80	e80	e80	e120	207	470	92	49	91
7	110	129	e110	e90	e80	e75	e110	214	453	87	53	95
8	115	134	e110	e90	e70	e75	e110	207	463	89	59	106
9	113	130	e110	e80	e75	e80	e120	242	442	87	63	123
10	117	114	e100	e90	e80	e90	e130	209	434	81	74	145
11	119	124	e100	e90	e75	e110	e130	196	445	76	75	141
12	118	120	e100	e90	e80	e110	e130	182	375	77	71	132
13	125	126	e110	e80	e80	e100	e150	167	320	68	60	131
14	131	124	e110	e80	e80	e100	e160	162	285	62	59	125
15	137	126	e100	e80	e80	e95	e190	204	252	55	65	117
16	133	126	e110	e75	e85	e95	e220	220	234	51	66	113
17	128	126	e110	e70	e90	e90	e210	207	228	49	59	112
18	134	123	e100	e70	e90	e90	e200	198	223	52	57	123
19	144	130	e100	e75	e90	e85	e190	225	237	48	54	144
20	136	114	e100	e80	e90	e80	187	301	227	78	58	170
21	133	108	e100	e75	e100	e80	177	381	209	96	66	157
22	134	128	e110	e70	e90	e90	170	481	199	93	184	153
23	129	137	e110	e75	e80	e90	170	462	188	80	138	144
24	130	137	e110	e80	e80	e85	164	344	193	103	107	141
25	126	138	e120	e80	e70	e80	161	306	199	96	103	142
26	121	e130	e120	e75	e80	e90	150	288	179	85	99	143
27	118	e120	e110	e70	e80	e85	150	293	163	79	89	150
28	127	e110	e100	e70	e75	e85	156	302	159	86	89	149
29	132	e110	e90	e65	---	e90	146	317	155	87	110	141
30	132	e110	e90	e60	---	e90	147	388	138	78	121	142
31	136	---	e90	e65	---	e90	---	616	---	78	127	---
TOTAL	3639	3777	3310	2440	2235	2745	4403	8313	10633	2582	2422	3847
MEAN	117.4	125.9	106.8	78.71	79.82	88.55	146.8	268.2	354.4	83.29	78.13	128.2
MAX	144	141	120	90	100	110	220	616	874	130	184	170
MIN	63	108	90	60	70	75	75	162	138	48	46	91
AC-FT	7220	7490	6570	4840	4430	5440	8730	16490	21090	5120	4800	7630

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2002, BY WATER YEAR (WY)

MEAN	253.2	223.7	179.1	177.1	228.8	302.8	355.3	1136	1638	460.8	175.9	217.5
MAX	403	324	271	330	672	855	676	3283	3570	1674	475	615
(WY)	1969	1974	1976	1974	1971	1972	1977	1978	1978	1975	1968	1968
MIN	116	126	102	78.7	79.8	88.5	124	268	176	54.7	13.1	73.3
(WY)	1961	2002	1985	2002	2002	2002	1961	2002	2001	2001	2001	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1961 - 2002	
ANNUAL TOTAL	54536.6		50346			
ANNUAL MEAN	149.4		137.9		445.6	
HIGHEST ANNUAL MEAN					862	1978
LOWEST ANNUAL MEAN					138	2002
HIGHEST DAILY MEAN	540	May 17	874	Jun 2	15400	May 19 1978
LOWEST DAILY MEAN	6.9	Aug 27	46	Aug 4	5.4	Aug 24 1961
ANNUAL SEVEN-DAY MINIMUM	8.0	Aug 25	52	Aug 2	7.2	Aug 22 1961
MAXIMUM PEAK FLOW			1050	Jun 2	17500	May 12 1978
MAXIMUM PEAK STAGE			4.53	Jun 2	14.25	May 12 1978
INSTANTANEOUS LOW FLOW			42	Jul 19	3.0	Aug 23 1961
ANNUAL RUNOFF (AC-FT)	108200		99860		322800	
10 PERCENT EXCEEDS	250		219		1050	
50 PERCENT EXCEEDS	135		110		234	
90 PERCENT EXCEEDS	24		70		114	

e--Estimated.

06306300 TONGUE RIVER AT STATE LINE, NEAR DECKER, MT--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1965 to September 1976, November 1980 to December 1986, August 2000 to current year.
WATER TEMPERATURE: October 1965 to September 1976.

INSTRUMENTATION: Specific conductance probe installed Aug. 21, 2000.

REMARKS.--Missing conductance data from Jan. 7 to Mar. 27 due to ice conditions. Records are rated good, except for period Oct. 1 to Nov. 15, which are rated fair. Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1966-76, 1981-87, 2000-current year): Maximum daily, 1,490 microsiemens per centimeter (µS/cm), Aug. 12, 1966, Jan. 11, 1972; minimum daily, 192 µS/cm, June 7, 1976.
WATER TEMPERATURE (water years 1966-76): Maximum, 30.5°C, July 16, 1966; minimum, 0.0°C on many days during winter.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily mean, 1,120 microsiemens per centimeter (µS/cm), Nov. 11; minimum daily mean, 204 µS/cm, June 2.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
OCT 2001											
01...	1230	66	673	--	--	8.4	870	24.0	15.0	330	62.0
NOV											
15...	1145	131	685	--	--	8.3	765	15.0	3.0	330	64.9
DEC											
11...	1100	E100	667	9.7	76	8.3	760	.0	.0	340	69.5
JAN 2002											
07...	1000	E90	672	13.1	96	8.2	600	4.0	1.0	270	57.7
FEB											
07...	1000	E80	675	10.5	81	8.3	590	2.0	.0	260	54.9
MAR											
18...	1130	E90	676	13.1	107	8.3	583	.0	2.0	250	52.7
APR											
03...	1030	E90	670	7.2	74	8.6	699	7.0	10.5	310	60.8
MAY											
29...	1230	314	671	6.1	80	8.4	330	26.0	22.0	150	34.6
JUN											
05...	1130	543	672	6.6	77	8.2	245	26.0	17.0	110	26.7
JUL											
10...	1030	80	682	7.3	96	8.3	625	25.0	23.0	240	45.9
AUG											
07...	0945	50	675	5.8	76	8.1	990	25.0	22.0	350	61.9
SEP											
16...	1115	114	667	10.8	137	8.2	735	21.0	20.0	310	60.4

YELLOWSTONE RIVER BASIN

06306300 TONGUE RIVER AT STATE LINE, NEAR DECKER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
OCT 2001											
01...	42.1	3.62	1	53.3	254	4.22	.4	7.6	186	.70	91.3
NOV											
15...	40.1	2.92	1	40.6	291	4.28	.4	6.3	155	.67	173
DEC											
11...	39.9	3.01	.9	37.0	280	5.22	.4	7.3	148	.65	E129
JAN 2002											
07...	29.3	2.22	.6	23.7	240	5.21	.3	6.4	91.9	.49	E87.6
FEB											
07...	29.7	2.37	.7	27.1	242	5.71	.3	5.7	95.7	.50	E79.2
MAR											
18...	29.0	2.56	.8	28.3	220	7.35	.3	3.5	90.6	.47	E84.1
APR											
03...	37.7	3.02	.9	35.9	227	3.54	.2	1.3	161	.60	E107
MAY											
29...	15.2	1.44	.4	12.6	130	2.03	.1	5.3	45.9	.27	166
JUN											
05...	11.2	1.20	.4	8.57	97	1.49	E.1	7.1	30.6	.20	213
JUL											
10...	30.8	3.11	1	43.7	225	3.52	.3	5.7	115	.52	82.9
AUG											
07...	48.2	4.96	2	86.0	302	4.99	.5	7.5	238	.86	85.6
SEP											
16...	39.2	3.66	1	40.6	250	4.11	.3	7.2	156	.63	142

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)
OCT 2001											
01...	512	<.04	.32	<.013	<.002	<.007	.026	<1	.06	.7	<4
NOV											
15...	490	E.02	.30	.026	<.002	<.007	.017	<1	E.04	.4	<2
DEC											
11...	480	<.04	.23	.165	.044	<.007	.007	<1	.08	.4	<2
JAN 2002											
07...	362	E.03	1.1	.151	.010	.016	.017	<1	E.04	.3	<2
FEB											
07...	368	.11	.32	.173	.003	.019	.025	1	E.03	.3	<2
MAR											
18...	347	.17	.47	.138	.003	<.007	.011	2	.19	.5	<2
APR											
03...	440	<.04	.45	.014	<.002	<.007	.042	1	.13	.6	<2
MAY											
29...	195	<.04	.65	<.013	<.002	<.007	.100	2	.17	.6	<2
JUN											
05...	145	<.04	.56	.018	E.002	.008	.112	3	E.04	.5	<2
JUL											
10...	384	<.04	.60	E.011	<.002	<.007	.091	1	.09	1.1	<2
AUG											
07...	634	<.04	.40	<.013	<.002	<.007	.040	1	.11	.9	E1
SEP											
16...	462	<.04	.36	.014	<.002	<.007	.050	1	.11	.7	<2

E--Estimated.

06306300 TONGUE RIVER AT STATE LINE, NEAR DECKER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)
OCT 2001											
01...	51.6	51.6	<.06	77	91	<.04	<.04	<.8	<1.6	.26	1.0
NOV											
15...	54.5	52.6	<.06	74	83	<.04	E.02	<.8	<.8	.24	.8
DEC											
11...	52.4	52.5	<.06	80	72	E.02	<.04	<.8	<.8	.25	1.1
JAN 2002											
07...	51.6	47.8	<.06	60	62	<.04	<.04	<.8	<.8	.14	.7
FEB											
07...	48.6	47.0	<.06	56	57	<.04	E.03	E.4	.8	.15	.9
MAR											
18...	49.4	46.3	<.06	57	54	<.04	<.04	E.4	<.8	.24	.9
APR											
03...	56.4	62.2	<.06	65	66	<.04	E.03	<.8	<.8	.41	1.2
MAY											
29...	41.1	50.3	<.06	28	29	<.04	E.02	<.8	E.7	.23	.7
JUN											
05...	28.3	43.0	<.06	24	22	<.04	E.03	<.8	.9	.14	.6
JUL											
10...	63.6	79.3	<.06	73	72	<.04	E.03	<.8	E.5	.29	1.3
AUG											
07...	68.4	67.5	<.06	109	102	<.04	E.03	<.8	<.8	.25	1.6
SEP											
16...	52.0	53.3	<.06	78	87	<.04	E.03	<.8	<.8	.29	1.2

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)
OCT 2001											
01...	2.3	280	<.08	<1	27.6	16.3	33.8	--	1.0	.17	3
NOV											
15...	1.5	200	E.05	<1	22.4	14.9	22.0	--	.8	1.52	2
DEC											
11...	1.5	150	E.05	<1	23.4	11.7	16.8	--	.8	1.68	1
JAN 2002											
07...	.9	80	E.07	<1	23.0	8.7	10.7	--	.6	E.04	2
FEB											
07...	.9	90	.09	<1	14.4	12.2	14.5	--	.6	.23	2
MAR											
18...	1.2	140	E.05	<1	16.5	25.4	28.5	--	.8	.70	3
APR											
03...	4.6	640	E.07	<1	18.8	50.6	92.5	--	.7	.89	5
MAY											
29...	2.1	910	E.06	<1	7.6	12.2	83.8	--	.4	1.44	2
JUN											
05...	2.4	1020	E.06	1	5.2	8.1	78.9	E.01	.3	.90	2
JUL											
10...	3.4	1090	E.06	1	24.6	27.3	111	--	1.1	1.66	4
AUG											
07...	2.8	410	E.04	<1	39.0	9.3	47.7	--	1.3	1.58	4
SEP											
16...	2.5	680	.09	<1	21.0	24.7	69.5	--	.9	2.85	5

E--Estimated.

YELLOWSTONE RIVER BASIN

06306300 TONGUE RIVER AT STATE LINE, NEAR DECKER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SILVER, DISSOLVED (UG/L AS AG) (01075)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	THALLIUM, DISSOLVED (UG/L AS TL) (01057)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	URANIUM NATURAL DISSOLVED (UG/L AS U) (22703)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)
OCT 2001												
01...	.6	.6	<1	686	<.04	1.2	<1	3	4.63	90	80	14.3
NOV												
15...	.4	E.2	<1	585	<.04	.5	1	3	4.98	74	58	20.5
DEC												
11...	.5	.6	<1	558	E.04	1.4	2	5	4.97	61	35	E9.4
JAN 2002												
07...	.4	E.2	<1	341	<.04	3.3	2	3	3.71	61	29	E7.0
FEB												
07...	.5	.5	<1	322	<.04	1.2	2	4	3.67	57	23	E5.0
MAR												
18...	.9	E.2	<1	311	<.04	<.2	2	4	4.06	83	6	E1.5
APR												
03...	.3	.8	<1	505	<.04	1.7	1	7	4.29	95	42	E10.2
MAY												
29...	E.2	<.4	<1	169	<.04	2.7	<1	5	1.44	95	71	60.2
JUN												
05...	.4	<.4	<1	121	<.04	1.2	<1	6	1.08	89	77	113
JUL												
10...	.4	E.3	<1	345	<.04	1.6	<1	7	2.66	88	56	12.1
AUG												
07...	.5	.6	<1	760	<.04	2.2	<1	4	4.79	96	11	1.5
SEP												
16...	.4	.5	<1	576	<.04	1.5	1	5	4.37	93	56	17.2

E--Estimated.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	882	521	833	790	---	---	669	662	243	553	806	737
2	905	515	854	808	---	---	720	666	204	560	846	728
3	889	507	797	815	---	---	658	694	207	558	884	715
4	954	514	773	786	---	---	685	726	220	565	921	718
5	833	515	761	752	---	---	726	732	244	579	958	705
6	757	564	759	723	---	---	781	708	272	596	982	712
7	783	652	746	---	---	---	766	655	285	601	984	728
8	776	588	769	---	---	---	709	647	284	607	950	732
9	768	523	771	---	---	---	704	598	281	626	935	732
10	762	863	757	---	---	---	763	581	289	620	886	722
11	740	1120	751	---	---	---	770	599	299	670	823	713
12	721	1010	759	---	---	---	768	615	317	687	837	716
13	691	914	785	---	---	---	762	630	340	661	881	721
14	680	769	793	---	---	---	763	649	369	658	900	725
15	667	789	759	---	---	---	742	607	383	674	893	730
16	658	790	750	---	---	---	588	506	402	703	885	733
17	674	768	759	---	---	---	526	458	420	718	916	720
18	643	763	746	---	---	---	525	489	430	752	922	704
19	638	764	742	---	---	---	546	469	447	750	923	692
20	621	772	758	---	---	---	594	410	448	769	911	685
21	606	773	768	---	---	---	626	353	431	771	889	688
22	598	775	759	---	---	---	657	320	439	776	810	677
23	594	777	772	---	---	---	673	314	458	791	832	687
24	600	778	789	---	---	---	677	344	458	796	889	691
25	611	779	792	---	---	---	670	364	481	771	834	685
26	617	776	778	---	---	---	661	380	506	802	819	685
27	626	778	748	---	---	---	677	370	506	829	818	691
28	623	763	740	---	---	687	673	365	506	830	816	689
29	570	777	750	---	---	686	683	340	528	775	781	710
30	547	799	762	---	---	630	692	322	526	753	763	706
31	534	---	778	---	---	562	---	341	---	764	749	---
MAX	954	1120	854	---	---	---	781	732	528	830	984	737

YELLOWSTONE RIVER BASIN

06307500 TONGUE RIVER AT TONGUE RIVER DAM, NEAR DECKER, MT

LOCATION.--Lat 45°08'29", long 106°46'15" (NAD 27), in SW$^1/_4$SE$^1/_4$SE$^1/_4$ sec.12, T.8 S., R.40 E., Big Horn County, Hydrologic Unit 10090101, on left bank 0.5 mi downstream from Tongue River Dam, 4 mi upstream from Post Creek, 8 mi northeast of Decker, 16 mi southeast of Kirby, and at river mile 188.4.

DRAINAGE AREA.--1,770 mi^2.

PERIOD OF RECORD.--May 1939 to current year.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,344.40 ft (NGVD 29) (levels by Bureau of Reclamation). Prior to Aug. 5, 1975, at datum 10.00 ft lower.

REMARKS.--Records good. Flow regulated by Tongue River Reservoir (station number 06307000) and many small reservoirs, combined capacity, about 15,000 acre-ft. Diversion for irrigation of about 64,800 acres upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	88	92	94	80	81	73	80	316	299	278	103
2	100	88	92	94	80	81	73	80	324	299	262	102
3	101	88	92	94	80	81	73	80	308	304	252	106
4	101	88	92	94	80	81	73	80	308	323	250	105
5	100	89	92	94	80	81	73	80	310	324	214	105
6	100	90	92	94	80	81	73	80	313	323	179	106
7	99	90	92	93	80	81	73	80	315	320	151	105
8	99	90	92	92	80	81	73	80	314	301	121	106
9	99	90	92	92	80	81	73	80	312	268	101	105
10	99	90	92	92	80	81	74	80	312	269	101	107
11	99	90	92	92	80	81	75	80	312	267	100	106
12	99	90	92	93	80	82	75	80	312	264	99	105
13	98	90	92	93	80	80	75	80	312	265	99	107
14	98	90	92	94	80	71	75	81	312	264	154	107
15	98	91	92	94	80	71	75	82	312	264	154	107
16	98	91	92	93	80	71	76	101	308	266	153	108
17	98	90	92	80	80	71	76	141	308	267	166	115
18	98	90	92	80	80	71	76	174	296	278	164	117
19	98	90	92	80	80	71	76	216	281	277	162	117
20	98	90	92	79	80	71	76	237	281	277	161	119
21	98	90	93	80	81	71	76	237	282	279	161	119
22	98	90	94	79	81	71	76	237	283	277	131	120
23	98	90	94	80	81	71	77	237	281	280	112	121
24	98	90	94	80	81	71	78	237	281	280	112	123
25	98	90	94	80	81	71	78	237	268	279	111	122
26	97	91	94	80	81	71	78	237	255	281	110	123
27	89	92	94	80	81	72	78	237	255	280	107	123
28	88	92	94	80	81	72	78	262	256	281	107	122
29	88	92	94	80	---	72	79	288	276	280	106	122
30	88	92	94	80	---	73	80	292	299	279	104	115
31	88	---	94	80	---	73	---	306	---	280	104	---
TOTAL	3009	2702	2873	2690	2248	2338	2264	4879	8902	8795	4586	3368
MEAN	97.06	90.07	92.68	86.77	80.29	75.42	75.47	157.4	296.7	283.7	147.9	112.3
MAX	101	92	94	94	81	82	80	306	324	324	278	123
MIN	88	88	92	79	80	71	73	80	255	264	99	102
AC-FT	5970	5360	5700	5340	4460	4640	4490	9680	17660	17440	9100	6680

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2002, BY WATER YEAR (WY)

MEAN	274.3	254.5	187.9	172.9	179.6	224.1	362.1	903.2	1429	570.6	361.4	308.0
MAX	665	554	369	287	592	676	958	2714	3824	2083	767	775
(WY)	1946	1942	1979	1983	1971	1971	1965	1978	1944	1975	1975	1998
MIN	71.1	40.6	61.7	79.9	56.9	22.7	14.9	157	183	169	103	107
(WY)	1989	1976	1989	1961	1961	1961	1940	2002	2001	1956	1943	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1939 - 2002	
ANNUAL TOTAL	56059		48654			
ANNUAL MEAN	153.6		133.3		437.1	
HIGHEST ANNUAL MEAN					853	1978
LOWEST ANNUAL MEAN					133	2002
HIGHEST DAILY MEAN	306	Jul 25	324	Jun 2	9580	May 20 1978
LOWEST DAILY MEAN	79	Sep 7	71	Mar 14	0.50	Apr 17 1940
ANNUAL SEVEN-DAY MINIMUM	81	Sep 5	71	Mar 14	0.50	Apr 17 1940
MAXIMUM PEAK FLOW			a333	Jun 2	10800	May 20 1978
MAXIMUM PEAK STAGE			b11.40	Jul 4	c20.00	May 20 1978
INSTANTANEOUS LOW FLOW					d0.00	Nov 12 1969
ANNUAL RUNOFF (AC-FT)	111200		96510		316600	
10 PERCENT EXCEEDS	273		281		910	
50 PERCENT EXCEEDS	143		93		255	
90 PERCENT EXCEEDS	90		76		116	

a--Gage height, 11.38
b--Occurred on July 4-7.
c--From floodmark in well.
d--Results of dam closure.

06307616 TONGUE RIVER AT BIRNEY DAY SCHOOL BRIDGE, NEAR BIRNEY, MT

LOCATION.--Lat 45°24'42", long 106°27'26" (NAD 27), in SE$^1/_4$SW$^1/_4$SW$^1/_4$ sec.8, T.5 S., R.43 E., Rosebud County, Hydrologic Unit 10090102, on left bank, 60 ft upstream from Bureau of Indian Affairs bridge, 0.2 mi east of Birney Day School, 5.5 mi downstream from Cook Creek, 6.5 mi northeast of Birney, and at river mile 144.3.

DRAINAGE AREA.--2,621 mi^2.

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

GAGE.--Water-stage recorder. Elevation of gage is 3,060 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by Tongue River Reservoir (station number 06307000), and many small reservoirs in Wyoming (combined capacity, about 15,000 acre-ft). Numerous diversions for irrigation upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	103	e100	e100	e90	e90	e85	91	284	276	270	102
2	98	103	e100	e100	e90	e90	e85	86	285	275	276	98
3	98	103	e100	e100	e90	e90	e85	82	276	275	257	98
4	100	104	e100	e100	e90	e90	e85	83	247	278	260	104
5	103	103	e100	e100	e90	e90	e85	82	245	297	264	104
6	100	104	e100	e100	e90	e90	e85	82	240	333	216	105
7	101	104	e100	e100	e90	e90	e85	85	245	362	194	111
8	104	103	e100	e100	e90	e90	e85	87	243	301	193	173
9	105	104	e100	e100	e90	e90	e85	85	259	271	176	139
10	106	104	e100	e100	e90	e90	87	83	265	241	85	110
11	102	103	e100	e100	e90	e90	86	83	245	229	82	107
12	106	103	e100	e100	e90	e90	84	83	244	206	84	108
13	104	103	e100	e100	e90	e90	83	83	243	197	82	109
14	107	105	e100	e100	e90	e90	83	82	243	195	80	104
15	105	105	e100	e100	e90	e80	83	83	261	200	133	104
16	104	105	e100	e100	e90	e80	83	82	270	213	145	103
17	105	106	e100	e100	e90	e80	83	86	279	207	137	102
18	105	105	e100	e90	e90	e80	87	118	285	210	152	119
19	106	105	e100	e90	e90	e80	87	156	267	240	154	121
20	109	e80	e100	e90	e90	e80	85	189	240	311	153	113
21	109	e80	e100	e90	e90	e80	88	211	245	247	202	117
22	108	e100	e100	e90	e90	e80	85	223	375	252	256	118
23	109	e100	e100	e90	e90	e80	82	223	357	261	145	114
24	111	e100	e100	e90	e90	e80	83	221	263	256	135	115
25	110	e100	e100	e90	e90	e80	82	221	257	252	117	117
26	110	e100	e100	e90	e90	e80	81	221	235	254	109	119
27	110	e100	e100	e90	e90	e80	83	224	219	291	111	115
28	105	e100	e100	e90	e90	e85	87	222	219	285	111	115
29	101	e100	e100	e90	---	e85	83	247	224	278	105	115
30	102	e100	e100	e90	---	e85	83	267	253	278	130	116
31	103	---	e100	e90	---	e85	---	281	---	278	106	---
TOTAL	3246	3035	3100	2960	2520	2640	2533	4452	7813	8049	4920	3395
MEAN	104.7	101.2	100.0	95.48	90.00	85.16	84.43	143.6	260.4	259.6	158.7	113.2
MAX	111	106	100	100	90	90	88	281	375	362	276	173
MIN	98	80	100	90	90	80	81	82	219	195	80	98
AC-FT	6440	6020	6150	5870	5000	5240	5020	8830	15500	15970	9760	6730

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2002, BY WATER YEAR (WY)

MEAN	245.6	218.6	179.5	179.2	197.6	225.6	275.3	654.1	1119	556.1	398.8	320.0
MAX	381	347	260	287	350	434	583	1769	2921	1269	676	694
(WY)	1996	1987	1987	1983	1983	1996	1996	1984	1984	1995	1997	1998
MIN	84.7	65.6	63.5	91.3	90.0	78.0	65.9	144	225	234	159	113
(WY)	1989	1989	1989	1989	2002	1987	1992	2002	2001	2001	2002	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1980 - 2002	
ANNUAL TOTAL	57664		48663			
ANNUAL MEAN	158.0		133.3		381.0	
HIGHEST ANNUAL MEAN					644	1984
LOWEST ANNUAL MEAN					133	2002
HIGHEST DAILY MEAN	470	Jun 4	375	Jun 22	3740	Jun 14 1984
LOWEST DAILY MEAN	80	Nov 20	80	Nov 20	28	Apr 6 1987
ANNUAL SEVEN-DAY MINIMUM	94	Nov 20	80	Mar 15	28	Apr 5 1987
MAXIMUM PEAK FLOW			913	Jun 22	a4520	Jun 14 1984
MAXIMUM PEAK STAGE			3.47	Jun 22	b6.92	Feb 8 1996
ANNUAL RUNOFF (AC-FT)	114400		96520		276000	
10 PERCENT EXCEEDS	278		257		677	
50 PERCENT EXCEEDS	141		100		251	
90 PERCENT EXCEEDS	100		83		119	

a--Gage height, 6.43 ft, from rating curve extended about 2,700 ft^3/s.
b--Backwater from ice.
e--Estimated.

YELLOWSTONE RIVER BASIN

06307830 TONGUE RIVER BELOW BRANDENBERG BRIDGE, NEAR ASHLAND MT

LOCATION.--Lat 45°50'24", long 106°13'22" (NAD 27), in SE$^1/_4$SW$^1/_4$NE$^1/_4$ sec.14, T.1N., R.44E., Rosebud County, Hydrologic Unit 10090102, on right bank downstream from county bridge, 22 mi north of Ashland, and at river mile 81.3.

DRAINAGE AREA.--3,948 mi^2. Area at site used prior to Sept. 20, 1984, 4,062 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1973 to September 20, 1984, July 2000 to current year.

GAGE--Water-stage recorder. Elevation of gage is 2,760 ft (NGVD 29), from topographic map. October 1973 to Sept. 20, 1984, water-stage recorder at site 6..5 mi downstream at different datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow regulated by Tongue River Reservoir (station number 06307000), and many small reservoirs in Wyoming combined capacity (about 15,000 acre-ft). Diversions for irrigation for about 73,000 acres above station. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	98	e90	e90	e80	e80	e80	93	179	198	201	116
2	91	98	e100	e100	e90	e80	e70	93	206	215	203	103
3	91	97	e100	e110	e90	e80	e70	95	221	226	202	101
4	93	97	e100	e100	e90	e90	e90	94	195	225	199	99
5	98	97	e95	e100	e90	e90	e100	88	186	217	192	100
6	100	98	e95	e100	e90	e90	e110	92	182	229	206	103
7	100	97	e95	e110	e90	e70	e120	87	171	233	186	105
8	100	97	e95	e110	e90	e70	121	89	182	331	165	123
9	100	95	e95	e110	e90	e80	115	88	210	248	150	148
10	102	95	e95	e100	e90	e90	111	86	198	227	132	176
11	104	95	e95	e100	e90	e90	107	86	190	188	115	139
12	106	96	e95	e100	e90	e100	104	86	186	166	100	123
13	107	97	e95	e100	e90	e100	100	88	184	145	94	118
14	107	98	e95	e100	e90	e90	98	84	191	132	91	114
15	107	97	e95	e100	e90	e90	96	83	191	118	88	112
16	109	97	e90	e100	e100	e80	95	83	207	100	81	111
17	107	96	e95	e100	e100	e70	95	84	230	110	99	108
18	106	95	e100	e100	e100	e70	112	84	213	118	112	119
19	107	96	e95	e80	e100	e70	109	84	224	119	111	124
20	109	95	e95	e80	e100	e70	102	97	229	119	114	125
21	110	96	e95	e90	e100	e70	100	108	203	196	121	122
22	109	99	e95	e90	e110	e80	98	143	231	159	127	121
23	112	99	e95	e80	e100	e80	97	162	385	164	173	121
24	110	101	e100	e80	e80	e80	96	169	461	168	173	121
25	110	102	e100	e100	e70	e80	92	169	299	171	164	123
26	110	e85	e100	e100	e70	e80	92	162	283	168	149	122
27	108	e75	e100	e80	e80	e80	92	161	254	171	131	123
28	107	e75	e95	e70	e80	e80	92	150	218	188	135	123
29	106	e85	e90	e70	---	e80	92	149	213	222	119	121
30	101	e90	e90	e65	---	e80	93	146	204	188	113	122
31	100	---	e90	e70	---	e80	---	171	---	199	106	---
TOTAL	3218	2838	2960	2885	2530	2520	2949	3454	6726	5658	4352	3586
MEAN	103.8	94.60	95.48	93.06	90.36	81.29	98.30	111.4	224.2	182.5	140.4	119.5
MAX	112	102	100	110	110	100	121	171	461	331	206	176
MIN	91	75	90	65	70	70	70	83	171	100	81	99
AC-FT	6380	5630	5870	5720	5020	5000	5850	6850	13340	11220	8630	7110

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2002, BY WATER YEAR (WY)*

MEAN	276.2	216.2	194.1	219.3	229.3	289.5	322.5	821.0	1417	668.2	425.4	308.2
MAX	511	388	389	334	406	705	594	2502	3452	2261	915	436
(WY)	1974	1974	1979	1975	1983	1975	1975	1978	1978	1975	1975	1979
MIN	104	84.3	95.5	93.1	90.4	81.3	98.3	111	224	183	125	115
(WY)	2002	1976	2002	2002	2002	2002	2002	2002	2002	2002	2001	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1974 - 2002*	
ANNUAL TOTAL	55853		43676			
ANNUAL MEAN	153.0		119.7		451.8	
HIGHEST ANNUAL MEAN					885	1975
LOWEST ANNUAL MEAN					119	2002
HIGHEST DAILY MEAN	732	Jul 1	461	Jun 24	7600	May 22 1978
LOWEST DAILY MEAN	75	Nov 27	65	Jan 30	45	Nov 30 1975
ANNUAL SEVEN-DAY MINIMUM	86	Nov 26	73	Mar 16	53	Nov 25 1975
MAXIMUM PEAK FLOW			738	Jun 24	a8280	May 22 1978
MAXIMUM PEAK STAGE			5.02	Jun 24	9.96	May 22 1978
INSTANTANEOUS LOW FLOW					45	Nov 30 1975
ANNUAL RUNOFF (AC-FT)	110800		86630		327300	
10 PERCENT EXCEEDS	218		197		914	
50 PERCENT EXCEEDS	150		100		290	
90 PERCENT EXCEEDS	95		80		120	

*--During period of operation (1974-1984, July 2000 to current year).
a--Site and datum then in use.
e--Estimated.

06307830 TONGUE RIVER BELOW BRANDENBERG BRIDGE, NEAR ASHLAND MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974-81, June 2000 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: August 2000 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1974 to September 1981.

INSTRUMENTATION.--Conductance probe installed Aug. 23, 2000.

REMARKS.--Missing specific conductance data for Mar. 6-28 due to ice effect. Unpublished records of daily and instantaneous temperature and instantaneous specific conductance are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily mean, 1,130 microsiemens per centimeter (µS/cm), Jan. 2, 3, 2002; minimum daily mean, 579 µS/cm , Sept. 11, 2002.
SEDIMENT CONCENTRATION: Maximum daily mean, 6,400 mg/L July 26, 1979; minimum daily mean, 1 mg/L Oct. 18, 24, 1976.
SEDIMENT LOAD: Maximum daily, 27,200 tons May 19, 1978; minumum daily, 0.47 ton Nov. 15-17, 1975.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily mean, 1,130 microsiemens per centimeter (µS/cm), Jan. 2, 3; minimum daily mean, 579 µS/cm, Sept. 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
OCT 2001											
02...	1000	88	693	8.7	94	8.3	849	17.0	14.5	320	52.4
NOV											
20...	1210	88	688	12.4	97	8.5	937	5.0	1.0	350	59.4
DEC											
11...	1445	E95	683	13.3	102	8.3	1020	0.0	0.0	390	67.9
JAN 2002											
15...	1200	E100	690	14.5	110	8.3	944	-4.0	0.0	350	63.3
FEB											
07...	1230	E90	688	10.1	82	8.2	983	13.0	2.5	390	72.1
MAR											
18...	1600	E70	692	13.8	105	8.3	788	-4.0	0.0	300	53.0
APR											
23...	1015	98	684	7.7	80	8.3	942	15.0	12.0	350	55.8
MAY											
29...	0930	151	681	5.1	62	8.4	805	26.0	19.0	310	53.8
JUN											
05...	1700	181	686	6.4	82	8.4	780	27.0	22.5	310	57.9
JUL											
10...	1530	222	697	6.6	86	8.4	630	28.0	24.0	250	47.7
AUG											
13...	1030	94	690	8.5	96	8.5	722	24.0	16.0	270	47.3
SEP											
10...	1030	177	--	--	--	8.4	608	20.0	17.5	220	38.6

E--Estimated.

06307830 TONGUE RIVER BELOW BRANDENBERG BRIDGE, NEAR ASHLAND MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

Date	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
OCT 2001											
02...	44.8	5.32	2	71.7	246	5.41	.4	4.8	235	.77	135
NOV											
20...	48.3	5.19	2	72.5	293	5.41	.5	6.0	248	.84	148
DEC											
11...	52.8	5.76	2	80.1	300	5.74	.4	6.0	283	.93	E175
JAN 2002											
15...	47.3	4.91	2	67.8	282	5.32	.5	4.4	235	.81	E161
FEB											
07...	51.6	5.19	2	75.0	313	5.52	.5	6.3	257	.90	E160
MAR											
18...	39.9	4.00	2	59.4	234	4.18	.3	4.4	198	.68	E95
APR											
23...	50.6	4.97	2	78.3	272	5.71	.3	2.5	249	.83	161
MAY											
29...	43.5	4.79	1	56.8	238	5.51	.3	3.9	205	.70	210
JUN											
05...	40.5	4.51	1	50.2	240	5.26	.3	5.1	196	.68	246
JUL											
10...	31.0	4.30	1	39.3	193	4.29	.3	5.7	140	.53	233
AUG											
13...	36.0	4.46	1	55.8	221	4.67	.3	6.5	169	.62	116
SEP											
10...	31.0	4.40	1	45.3	184	4.16	.4	2.3	139	.51	179

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001									
02...	567	.38	<.013	<.002	<.007	.039	96	49	11.6
NOV									
20...	621	.38	<.013	<.002	<.007	.010	76	24	5.7
DEC									
11...	681	.34	<.013	<.002	<.007	.007	81	8.0	E2.0
JAN 2002									
15...	597	.30	<.013	<.002	<.007	.010	--	--	--
FEB									
07...	660	.28	<.013	<.002	<.007	.007	86	37	E9.0
MAR									
18...	503	.25	<.013	<.002	<.007	.011	90	21	E4.0
APR									
23...	610	.32	<.013	<.002	<.007	.030	95	27	7.1
MAY									
29...	516	.48	<.013	<.002	<.007	.072	85	79	32.2
JUN									
05...	503	.61	<.013	<.002	<.007	.10	94	145	70.9
JUL									
10...	389	.76	.128	.004	<.007	.26	99	404	242
AUG									
13...	457	.51	<.013	<.002	<.007	.088	97	81	20.6
SEP									
10...	375	.97	.021	E.002	<.007	.28	99	388	185

E--Estimated.

YELLOWSTONE RIVER BASIN

06307830 TONGUE RIVER BELOW BRANDENBERG BRIDGE, NEAR ASHLAND MT--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	855	845	851	832	816	825	1040	1020	1030	1120	1090	1110
2	853	849	851	907	804	869	1040	998	1020	1140	1120	1130
3	857	851	854	911	900	907	1020	982	1000	1140	1110	1130
4	858	853	855	914	906	909	1030	982	1010	1110	1080	1100
5	854	844	848	914	908	910	1040	1010	1030	1080	1070	1070
6	848	842	844	915	906	909	1050	1000	1020	1070	1040	1060
7	846	840	842	910	907	908	1030	985	1010	1040	1000	1030
8	844	835	841	917	910	914	1030	990	1010	1000	968	985
9	840	837	839	916	912	914	1020	984	1000	968	942	956
10	842	839	840	918	908	913	1020	986	1000	942	911	928
11	843	834	838	919	912	914	1020	993	1000	913	899	907
12	840	834	837	921	913	916	1060	1000	1040	918	908	913
13	842	836	839	920	912	916	1090	1040	1070	916	888	899
14	846	842	845	921	913	917	1070	1050	1070	897	878	886
15	850	844	846	923	916	919	1050	1020	1030	920	890	909
16	852	843	848	923	916	918	1070	1020	1050	932	919	922
17	863	852	859	923	918	920	1070	1040	1060	937	929	932
18	871	862	867	924	920	922	1040	1010	1030	968	937	952
19	877	866	872	938	918	925	1050	1020	1040	978	967	973
20	872	867	869	939	918	927	1060	1040	1050	982	971	977
21	874	867	871	930	918	925	1050	1010	1030	990	980	985
22	875	863	872	938	923	930	1060	1020	1040	990	982	986
23	868	847	853	940	921	926	1110	1040	1080	999	984	994
24	864	837	849	926	921	923	1130	1110	1120	1000	992	998
25	862	854	859	926	921	924	1120	1090	1110	997	976	989
26	863	787	826	922	912	917	1110	1090	1100	977	955	968
27	796	780	790	972	916	936	1110	1080	1100	961	952	957
28	802	713	758	1020	972	1010	1100	1080	1090	968	960	964
29	804	743	762	1040	997	1020	1110	1100	1110	977	963	969
30	840	753	786	1020	1000	1010	1110	1090	1100	1000	945	990
31	827	810	815	---	---	---	1090	1090	1090	1010	997	1000
MONTH	877	713	840	1040	804	923	1130	982	1050	1140	878	986

		FEBRUARY			MARCH			APRIL			MAY	
1	1000	996	998	976	945	963	880	848	864	946	938	942
2	1010	995	1000	997	970	986	922	847	881	941	927	935
3	1030	1010	1020	1010	992	1000	907	866	889	937	926	932
4	1040	1020	1030	1010	993	1000	928	863	894	930	917	924
5	1020	999	1010	994	924	965	935	901	917	930	918	928
6	1010	1000	1000	---	---	---	918	873	896	927	915	920
7	1000	968	986	---	---	---	908	856	881	927	912	921
8	968	948	958	---	---	---	911	893	897	924	916	920
9	948	932	942	---	---	---	918	900	908	920	914	917
10	951	939	945	---	---	---	917	905	910	935	915	924
11	949	938	945	---	---	---	961	916	937	940	929	936
12	940	929	934	---	---	---	976	959	964	942	936	939
13	943	929	936	---	---	---	987	975	983	950	942	946
14	935	925	930	---	---	---	986	972	979	968	950	959
15	931	924	928	---	---	---	978	964	971	969	960	964
16	937	922	930	---	---	---	972	968	970	970	962	966
17	931	909	921	---	---	---	976	968	973	968	905	954
18	910	892	900	---	---	*788	975	878	918	963	943	959
19	900	873	888	---	---	---	901	878	885	969	949	966
20	873	851	865	---	---	---	941	901	917	968	916	960
21	851	828	839	---	---	---	945	938	941	952	889	927
22	832	767	804	---	---	---	944	939	941	889	848	863
23	795	756	770	---	---	---	990	937	944	849	812	827
24	851	795	827	---	---	---	956	949	951	819	802	808
25	869	847	855	---	---	---	958	952	955	810	791	798
26	911	863	884	---	---	---	960	952	956	802	787	794
27	930	909	916	---	---	---	953	948	950	806	796	802
28	947	930	937	---	---	---	949	941	945	803	796	800
29	---	---	---	883	817	845	948	943	946	812	798	805
30	---	---	---	864	825	854	950	944	947	817	804	811
31	---	---	---	917	856	881	---	---	---	809	788	799
MONTH	1040	756	925	---	---	---	990	847	930	970	787	898

*--Instantaneous value from USGS cross-sectional sample collected during period when probe was frozen in ice.

YELLOWSTONE RIVER BASIN

06307830 TONGUE RIVER BELOW BRANDENBERG BRIDGE, NEAR ASHLAND MT--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	791	781	785	664	634	653	695	675	686	702	685	695
2	786	757	776	635	613	628	677	666	671	693	681	687
3	768	746	759	618	605	612	669	656	663	714	693	706
4	770	752	763	625	610	616	656	626	642	708	702	705
5	771	756	764	638	612	626	663	641	651	707	702	704
6	790	771	781	647	636	641	661	639	650	707	699	703
7	798	782	789	659	638	651	674	640	662	703	667	697
8	793	739	776	668	625	649	668	644	653	670	644	655
9	744	719	734	650	619	638	666	652	658	644	625	638
10	753	732	742	686	615	627	684	657	671	628	565	605
11	766	742	751	660	638	652	695	680	689	607	545	579
12	767	745	755	679	657	670	713	692	701	689	562	626
13	774	740	762	690	667	677	750	711	725	722	689	708
14	765	740	753	702	685	693	754	740	746	714	707	710
15	753	729	744	713	701	706	757	749	753	729	714	723
16	740	688	719	755	712	732	774	754	764	723	715	718
17	700	668	686	775	754	763	778	720	760	720	713	717
18	671	648	662	790	760	772	736	699	714	715	666	682
19	670	652	662	786	751	762	699	678	690	679	664	672
20	673	658	667	754	732	749	678	656	666	681	665	674
21	664	653	659	732	657	693	667	653	660	689	675	681
22	656	640	649	707	656	693	659	645	652	695	688	692
23	640	629	635	730	697	712	647	618	640	695	689	692
24	692	630	659	740	728	734	622	608	616	700	692	695
25	692	648	667	730	719	724	992	575	716	700	685	693
26	690	667	679	722	714	718	954	545	633	706	697	702
27	683	603	651	714	670	697	619	533	596	710	703	706
28	612	598	606	683	661	673	676	559	649	714	708	711
29	660	612	633	701	678	690	679	664	672	712	705	709
30	663	649	657	698	680	689	686	662	680	709	681	704
31	---	---	---	708	685	696	697	645	671	---	---	---
MONTH	798	598	711	790	605	685	992	533	677	729	545	686

YELLOWSTONE RIVER BASIN

06308500 TONGUE RIVER AT MILES CITY, MT

LOCATION.--Lat 46°23'05", long 105°50'41" (NAD 27), in SE$^1/_4$SE$^1/_4$SE$^1/_4$ sec. 4, T.7 N., R.47 E., Custer County, Hydrologic Unit 10090102, on right bank 1.5 mi south of Miles City and at river mile 2.3.

DRAINAGE AREA.--5,397 mi^2. Area at site used prior to Oct. 4, 1995, 5,379 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1938 to April 1942, April 1946 to current year. Published as "near Miles City" April 1938 to April 1942. Not equivalent to records published as "near Miles City" May 1929 to October 1932. April 1946 to Oct. 4, 1995, at site 2.5 mi upstream. Flows at present site are equivalent with site operated from 1946. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,360 ft (NGVD 29). April 1938 to April 1942, nonrecording gage at site 8 mi upstream at different datum. April 1946 to Sept. 30, 1963, at datum 1.00 ft higher. Oct. 4, 1995, gage was moved 2.5 miles downstream.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow regulation by Tongue River Reservoir (station 0630700) (capacity of 79,100 acre-feet), and many small reservoirs in Wyoming (combined capacity about 15,000 acre-ft). Diversions for irrigation of about 100,800 acres upstream from station. U. S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	112	e90	e85	e70	e70	e80	91	10	24	9.5	17
2	7.8	108	e120	e95	e75	e75	e70	88	9.1	16	14	17
3	8.3	108	e120	e100	e80	e80	e80	85	12	12	15	14
4	27	108	e110	e105	e85	e85	e95	85	12	9.8	12	14
5	25	107	e110	e105	e90	e80	e120	85	14	10	10	13
6	25	108	e110	e105	e90	e70	161	90	12	11	53	15
7	26	108	e110	e110	e90	e65	154	84	10	20	32	15
8	27	107	e110	e105	e90	e55	156	92	7.8	20	31	34
9	29	107	e100	e100	e90	e65	155	91	13	27	29	224
10	31	106	e100	e90	e90	e85	151	83	13	39	27	102
11	33	106	e100	e85	e90	e95	144	82	16	26	22	48
12	36	108	e100	e80	e90	e95	135	76	29	19	23	63
13	41	108	e100	e75	e90	e90	123	71	25	16	24	28
14	47	108	e100	e70	e90	e85	117	70	23	14	21	23
15	50	109	e100	e65	e95	e80	114	57	21	9.2	15	22
16	53	110	e90	e60	e95	e75	112	53	19	7.3	14	22
17	31	110	e100	e60	e100	e70	111	47	20	28	17	22
18	79	109	e100	e55	e100	e65	132	50	20	77	17	23
19	109	102	e100	e60	e105	e60	159	50	27	39	13	34
20	109	111	e95	e65	e100	e55	187	48	28	22	10	22
21	109	115	e95	e65	e95	e55	171	48	31	14	10	17
22	111	106	e95	e65	e90	e60	146	58	57	10	15	16
23	115	108	e95	e70	e80	e70	125	114	52	11	17	16
24	117	111	e95	e75	e65	e70	112	124	72	12	13	17
25	120	113	e100	e80	e50	e70	104	127	262	8.4	11	32
26	120	107	e100	e75	e55	e70	101	139	180	7.3	14	32
27	116	96	e100	e65	e60	e75	98	107	103	8.1	16	32
28	116	e80	e90	e55	e65	e80	94	19	76	17	19	33
29	114	e70	e85	e50	---	e85	96	10	53	25	16	33
30	113	e110	e80	e50	---	e90	94	12	30	17	21	33
31	115	---	e80	e60	---	e85	---	13	---	13	19	---
TOTAL	2068.2	3176	3080	2385	2365	2310	3697	2249	1256.9	589.1	579.5	1033
MEAN	66.72	105.9	99.35	76.94	84.46	74.52	123.2	72.55	41.90	19.00	18.69	34.43
MAX	120	115	120	110	105	95	187	139	262	77	53	224
MIN	7.8	70	80	50	50	55	70	10	7.8	7.3	9.5	13
AC-FT	4100	6300	6110	4730	4690	4580	7330	4460	2490	1170	1150	2050

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2002, BY WATER YEAR (WY)*

MEAN	246.6	256.1	191.5	196.4	281.3	532.4	441.4	692.0	1266	466.5	182.2	200.1
MAX	694	585	423	529	1794	1783	1693	2983	3825	2207	700	599
(WY)	1972	1942	1950	1999	1971	1971	1965	1978	1978	1975	1975	1968
MIN	10.3	60.9	68.0	76.9	84.5	74.5	12.5	29.2	41.9	12.6	6.08	2.40
(WY)	1961	1989	1990	2002	2002	2002	1961	1961	2002	1960	1949	1938

06308500 TONGUE RIVER AT MILES CITY, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1938 - 2002*	
ANNUAL TOTAL	42583.0		24788.7			
ANNUAL MEAN	116.7		67.91		409.4	
HIGHEST ANNUAL MEAN					986	1978
LOWEST ANNUAL MEAN					57.2	1961
HIGHEST DAILY MEAN	848	Jul 27	262	Jun 25	9290	Jun 15 1962
LOWEST DAILY MEAN	6.5	Aug 30	a7.3	Jul 16	0.00	Jul 9 1940
ANNUAL SEVEN-DAY MINIMUM	8.2	Aug 25	10	Jul 21	0.00	Jul 9 1940
MAXIMUM PEAK FLOW			b335	Jun 25	d13300	Jun 15 1962
MAXIMUM PEAK STAGE			c3.84	Mar 29	d13.27	Mar 19 1960
ANNUAL RUNOFF (AC-FT)	84460		49170		296600	
10 PERCENT EXCEEDS	212		113		918	
50 PERCENT EXCEEDS	109		71		224	
90 PERCENT EXCEEDS	17		13		69	

*--During period of operation (April 1938 to April 1942, April 1946 to current year).
a--Also occurred on July 26.
b--Gage height, 3.31 ft.
c--Backwater from ice.
d--At previous site and datum.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946 to September 1994, October 1977 to December 1985, May 1999 to current year.
PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1965 to September 1981.
SUSPENDED-SEDIMENT DISCHARGE: October 1977 to December 1985.
WATER TEMPERATURE: Sesonal records, April 2000 to current yer.
INSTRUMENTATION.--Temperature probe installed Mar. 22, 2000.
REMARKS--Unpublished records of instantaneous specific conductance and temperature data are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1965-81): Maximum daily, 1,520 microsiemens per centimeter (µS/cm) at 25.0°C, May 24, 1981; minimum daily, 215 µS/cm at 25.0°C, Feb. 16, 1971.
SEDIMENT CONCENTRATION (water years 1977-85): Maximum daily mean, 14,200 mg/L, Aug. 3, 1985; minimum daily mean, 3 mg/L, Dec. 20, 1983.
SEDIMENT LOAD: Maximum daily, 84,400 tons May 18, 1978; minimum daily, .13 tons May 5, 1981.
WATER TEMPERATURE (seasonal records): Maximum, 37.0°C, Aug. 22, 2001; minimum 0.0°C, Apr. 5, 2002.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum, 34.0°C, July 14.; minimum 0.0°C, Apr. 1-5.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT									
04..	1015	27	7.9	2280	10.0	10.0	.39	.048	E.002
APR									
09..	0830	157	8.5	978	15.0	7.0	.35	E.009	<.002
JUN									
12..	0830	35	8.6	1240	14.5	12.5	.54	.013	E.002
JUL									
23..	1545	13	8.5	1080	31.5	29.0	.98	.103	.010

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT					
04...	<.007	.026	87	130	9.5
APR					
09...	<.007	.033	98	108	45.8
JUN					
12...	<.007	.064	98	143	13.5
JUL					
23...	<.007	.108	97	118	4.0

E--Estimated.

YELLOWSTONE RIVER BASIN

06308500 TONGUE RIVER AT MILES CITY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT											
04...	1015	340	58.0	47.9	6.19	4	156	362	6.26	.4	8.02
JUN											
12...	0830	330	57.8	43.9	6.44	4	155	330	6.49	.3	7.13

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT											
04...	360	1.17	62.7	860	<2	<.1	<.8	3.8	<1	4	5
JUN											
12...	347	1.12	77.7	822	<4	<.1	E.8	4.3	<1	5	4

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	0.0	0.0	0.0	15.0	7.5	11.0	23.5	18.5	21.0	28.5	19.0	23.5
2	0.0	0.0	0.0	18.0	7.5	12.5	23.5	15.5	19.5	29.5	19.0	24.5
3	0.0	0.0	0.0	14.5	10.0	12.5	22.0	16.5	19.0	29.5	19.5	24.5
4	0.0	0.0	0.0	16.5	7.0	11.5	24.0	14.5	19.0	32.5	22.0	26.5
5	5.5	0.0	1.0	16.5	10.5	13.5	24.5	15.5	20.0	30.0	23.0	26.5
6	11.0	1.0	6.0	13.0	10.0	11.5	27.5	18.0	22.5	30.5	21.0	25.5
7	12.5	6.5	9.5	11.0	6.5	8.5	27.0	18.5	22.0	33.0	23.0	27.5
8	12.0	5.5	8.5	8.5	5.0	6.5	20.5	15.0	17.0	31.5	23.0	26.5
9	12.0	7.0	9.5	13.5	3.0	8.0	17.0	14.5	15.5	28.5	20.5	24.0
10	14.5	8.5	11.5	16.0	7.5	12.0	21.5	14.5	17.5	27.0	19.5	23.0
11	17.5	9.5	13.5	18.5	10.0	14.0	18.0	11.0	14.5	30.5	19.0	24.5
12	16.5	11.0	14.0	19.5	11.5	15.5	19.5	12.5	16.0	33.0	20.5	26.5
13	17.5	10.5	14.0	22.0	12.0	17.0	24.0	13.0	18.5	33.5	22.0	27.5
14	19.0	11.5	15.0	22.0	13.5	18.0	27.0	15.5	21.5	34.0	23.0	28.5
15	16.0	10.0	12.5	20.0	13.5	16.5	28.5	17.5	23.0	32.5	23.5	28.0
16	10.0	7.5	8.5	15.5	11.5	13.0	29.0	19.0	24.0	32.5	24.5	28.0
17	13.5	5.0	9.0	19.5	9.0	14.0	27.0	20.5	23.5	32.5	22.5	27.5
18	11.5	3.5	7.5	20.5	11.5	15.5	26.0	20.0	22.5	32.0	25.0	28.5
19	11.0	3.5	7.0	18.5	12.0	15.0	22.0	17.5	20.0	32.5	25.0	28.5
20	9.0	5.5	7.5	20.5	10.0	15.0	26.0	15.0	20.5	31.5	23.5	27.0
21	10.5	5.0	7.5	23.5	13.0	18.0	27.5	18.0	23.0	29.0	21.5	24.5
22	14.5	6.5	11.0	19.5	7.5	14.0	28.5	21.0	24.5	27.0	20.0	23.5
23	12.5	8.0	11.0	9.5	5.5	7.5	26.0	20.0	23.0	30.5	19.5	24.5
24	10.0	5.0	7.5	14.5	6.5	10.5	28.5	20.0	24.5	29.5	21.5	25.5
25	10.5	3.5	7.0	19.0	11.0	15.0	28.5	22.0	25.0	29.5	20.5	24.5
26	10.5	4.5	8.0	21.0	14.5	17.5	30.5	22.0	26.5	30.0	21.0	24.5
27	8.5	6.0	6.5	24.5	15.0	19.5	31.0	23.0	27.0	27.5	20.0	23.5
28	12.0	5.0	8.5	27.5	16.0	21.5	32.0	23.5	28.0	28.5	18.5	23.0
29	14.5	7.0	10.5	26.0	18.0	22.0	30.0	23.0	26.5	28.5	19.0	24.0
30	13.0	8.5	11.0	25.0	18.0	21.0	29.0	19.5	24.0	31.0	20.0	25.0
31	---	---	---	28.0	18.0	22.5	---	---	---	29.5	20.0	24.0
MONTH	19.0	0.0	8.0	28.0	3.0	14.5	32.0	11.0	21.5	34.0	18.5	25.5

06308500 TONGUE RIVER AT MILES CITY, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR APRIL 2002 TO SEPTEMBER 2002--Continued

	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER	
1	26.5	15.5	20.5	24.0	17.5	20.5
2	26.5	16.5	21.5	24.5	15.5	20.0
3	27.0	18.5	22.5	27.0	16.5	21.5
4	28.0	18.0	22.5	28.0	19.0	23.0
5	25.5	20.0	22.5	28.0	19.0	23.5
6	29.5	20.0	24.5	24.0	20.0	22.0
7	24.5	21.0	22.5	24.0	20.0	21.5
8	22.0	18.0	20.5	21.0	18.5	19.5
9	18.0	15.0	16.5	21.5	17.0	19.0
10	25.5	13.5	19.5	22.5	15.5	19.0
11	23.5	18.0	20.5	24.0	16.0	20.0
12	23.0	15.0	18.5	22.5	17.0	20.0
13	23.0	14.0	18.5	24.0	16.5	20.0
14	24.0	16.0	19.5	23.0	15.0	19.0
15	24.5	15.0	19.5	24.0	15.0	19.5
16	24.0	14.5	18.5	22.5	16.5	19.5
17	23.0	11.0	16.5	21.0	16.0	18.5
18	23.0	14.5	18.5	16.5	13.5	15.0
19	25.5	14.5	20.0	18.0	11.0	14.5
20	23.5	17.0	20.5	17.0	11.5	14.0
21	23.5	19.0	21.0	14.5	10.5	12.0
22	28.0	18.5	23.0	15.5	5.5	10.5
23	27.5	18.5	23.0	17.0	4.5	11.5
24	26.0	19.5	22.5	16.5	10.0	12.5
25	27.0	18.5	22.5	17.0	10.0	13.0
26	27.5	18.0	22.5	15.5	9.0	12.5
27	24.0	19.5	21.5	14.0	10.0	12.0
28	27.0	18.0	22.5	16.5	10.0	12.5
29	27.0	19.5	23.0	17.5	9.5	13.0
30	27.0	19.5	23.0	16.0	11.0	13.5
31	26.0	18.5	22.0	---	---	---
MONTH	29.5	11.0	21.0	28.0	4.5	17.0

06309000 YELLOWSTONE RIVER AT MILES CITY, MT

LOCATION.--Lat 46°25'18", long 105°51'38" (NAD 27), in NE$^1/_4$SW$^1/_4$NW$^1/_4$ sec.28, T.8 N., R.47 E., Custer County, Hydrologic Unit 10100001, on left bank at upstream side of bridge on State Highway 22 at Miles City, 0.8 mi downstream from Tongue River, and at river mile 184.2.

DRAINAGE AREA.--48,253 mi^2.

PERIOD OF RECORD.--September 1922 to September 1923, August 1928 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,333.3 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to May 6, 1929, nonrecording gages at pumping plant 1.2 mi downstream at different datums. May 6, 1929, to Sept. 30, 1931, nonrecording gage, and Oct. 1, 1931, to Nov. 10, 1937, water- stage recorder 300 ft upstream from present site at same datum. Nov. 11, 1937, to Sept. 30, 1946, water-stage recorder at pumping plant 1.2 mi downstream at different datum. Oct. 1, 1946, to Mar. 15, 1979, water-stage recorder at site 300 ft upstream at present datum. Mar. 16, 1979, to Sept. 21, 1979, nonrecording gage at present site and datum. Sept. 22, 1979, recording gage established at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some regulation by reservoirs on tributary streams. Diversions for irrigation of about 1,100,000 acres upstream from station (does not include flood irrigation). Several observations of water temperature and specific conductance were obtained during the year. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3700	4820	e4500	e3000	e3500	e2400	e3000	e5850	21000	20200	6700	4090
2	3620	4750	e4400	e3200	e3600	e2800	e4200	5110	32000	19500	6180	4120
3	3540	4780	e4600	e3400	e3700	e3200	4290	5400	39000	18600	5870	4120
4	3550	4770	e4700	e3600	e3800	e3600	4340	6310	43500	17100	5710	3980
5	3540	4850	e4800	e3600	e3900	e3200	4360	6140	42100	15600	5720	3820
6	3560	4840	e4700	e3800	e4000	e3000	4290	6380	33200	14300	5850	3710
7	3670	4780	e4400	e3900	e4100	e3000	4240	6990	28000	13400	5760	3610
8	3820	4680	e4400	e3900	e4100	e2800	4270	7200	29000	12800	5730	3910
9	3930	4630	e4400	e3900	e4200	e2700	4400	7510	32600	12200	5480	4380
10	3910	4690	e4400	e4200	e4200	e3000	4660	7190	31700	11500	5660	4560
11	4050	4800	e4400	e4400	e4200	e3300	4750	6960	29000	11000	5810	4630
12	4170	4900	e4200	e4200	e4200	e3200	4760	e8000	25300	10600	5820	4900
13	4260	4770	e4000	e4100	e4200	e3100	4680	e7500	21700	9920	5430	4640
14	4240	4730	e4000	e4100	e4200	e3100	4620	e7000	19000	9230	5010	4390
15	4290	4700	e4000	e4100	e4100	e3100	4650	e6780	17500	8710	4630	4280
16	4290	4730	e4000	e4100	e4200	e3000	4600	6160	16800	8450	4330	4180
17	4520	4740	e4100	e4000	e4200	e2900	4630	8260	17700	8410	4070	4110
18	4680	4730	e4100	e3900	e4200	e2800	6270	9580	20100	8190	3940	4100
19	4710	4790	e4000	e3800	e4300	e2700	6960	9880	23600	8480	3850	3950
20	4570	4860	e4000	e3800	e4400	e2600	6770	9570	26900	8660	3780	4090
21	4500	4890	e4000	e3800	e4500	e2550	6140	11100	30500	8580	3690	4100
22	4650	4860	e4000	e3900	e4400	e2450	5740	16000	26400	8560	3560	4150
23	4760	4830	e3700	e4000	e4000	e2550	5420	22300	23700	8660	4030	4240
24	4710	4810	e3400	e4000	e3600	e2800	5140	23800	24200	8440	4140	4300
25	4660	e4800	e3700	e4000	e3300	e3200	5030	19500	24300	8090	3940	4330
26	4590	e4700	e3800	e3600	e3000	e3400	5050	15400	24500	8040	4200	4260
27	4770	e4600	e3800	e3600	e2550	e3400	4990	13000	24600	7700	4110	4280
28	4800	e4400	e3700	e3300	e2450	e3400	e5220	11600	24100	7550	3840	4210
29	4800	e4200	e3500	e3100	---	e3400	e5500	11400	23300	7550	3690	4240
30	4770	e4400	e3400	e3300	---	e3400	e5720	12000	21700	7360	3800	4300
31	4760	---	e3200	e3500	---	e3800	---	14700	---	7220	4270	---
TOTAL	132390	141830	126300	117100	109100	93850	148690	314570	797000	334600	148600	125980
MEAN	4271	4728	4074	3777	3896	3027	4956	10150	26570	10790	4794	4199
MAX	4800	4900	4800	4400	4500	3800	6960	23800	43500	20200	6700	4900
MIN	3540	4200	3200	3000	2450	2400	3000	5110	16800	7220	3560	3610
AC-FT	262600	281300	250500	232300	216400	186200	294900	623900	1581000	663700	294700	249900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 2002, BY WATER YEAR (WY)*

MEAN	7747	7135	5755	5313	6192	8282	8259	17310	34770	20240	8181	7211
MAX	12970	10850	9342	8897	16160	18560	15210	29100	61860	46310	16540	13710
(WY)	1972	1973	1983	1968	1971	1929	1943	1978	1997	1967	1997	1941
MIN	4116	3976	2921	2034	2344	3027	2729	7334	13030	3988	2615	2964
(WY)	1936	1932	1933	1937	1932	2002	1961	1961	1934	1934	1961	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1922 - 2002*	
ANNUAL TOTAL	2166470		2590010			
ANNUAL MEAN	5936		7096		11370	
HIGHEST ANNUAL MEAN					17470	1997
LOWEST ANNUAL MEAN					6141	1934
HIGHEST DAILY MEAN	21300	Jun 16	43500	Jun 4	92400	May 30 1923
LOWEST DAILY MEAN	2560	Aug 19	2400	Mar 1	996	Dec 14 1932
ANNUAL SEVEN-DAY MINIMUM	2590	Aug 22	2640	Mar 18	1220	Dec 12 1932
MAXIMUM PEAK FLOW			44500	Jun 4	a102000	May 22 1978
MAXIMUM PEAK STAGE			9.69	Jun 4	b21.70	Mar 20 1944
INSTANTANEOUS LOW FLOW					1800	Mar 7 1995
ANNUAL RUNOFF (AC-FT)	4297000		5137000		8239000	
10 PERCENT EXCEEDS	11900		16900		25400	
50 PERCENT EXCEEDS	4730		4400		7510	
90 PERCENT EXCEEDS	3430		3400		4110	

06309000 YELLOWSTONE RIVER AT MILES CITY, MT--Continued

SUMMARY STATISTICS	WATER YEARS 1922 - 1961**		WATER YEARS 1967 - 2002***	
ANNUAL MEAN	10710		11900	
HIGHEST ANNUAL MEAN	16600	1943	17470	1997
LOWEST ANNUAL MEAN	6141	1934	6176	2001
HIGHEST DAILY MEAN	92400	May 30 1923	82300	Jun 15 1997
LOWEST DAILY MEAN	996	Dec 14 1932	1640	Nov 25 1977
ANNUAL SEVEN-DAY MINIMUM	1220	Dec 12 1932	2270	Nov 20 1977
MAXIMUM PEAK FLOW	96300	Jun 19 1944	a102000	May 22 1978
MAXIMUM PEAK STAGE	b21.70	Mar 20 1944	b20.78	Mar 15 1979
ANNUAL RUNOFF (AC-FT	7756000		8619000	
10 PERCENT EXCEEDS	25000		25500	
50 PERCENT EXCEEDS	6620		8280	
90 PERCENT EXCEEDS	3500		4980	

*--During period of operation (1922-23, 1928 to current year).
**--Prior to construction of Yellowtail Dam, during period of operation (1922-23, 1928-61).
***--After completion of Yellowtail Dam.
a--Gage height, 16.50 ft.
b--Backwater from ice jam.
e--Estimated.

YELLOWSTONE RIVER BASIN

06324500 POWDER RIVER AT MOORHEAD, MT

LOCATION.--Lat 45°03'25", long 105°52'39" (NAD 27), in NE$^1/_4$NE$^1/_4$NW$^1/_4$ sec.18, T.9S., R.48E., Powder River County, Hydrologic Unit 10090207, on left bank 25 ft downstream from bridge on Powder River, 7.3 mi upstream from Buffalo Creek, and at river mile 183.7.

DRAINAGE AREA.--8,080 mi^2; Sept. 13, 1956 to Aug. 27, 2001 published as 8,088 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1929 to September 1972, October 1974 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1932(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,334.63 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to Aug. 28, 1931, nonrecording gage at site 0.3 mi upstream at different datum. Aug. 28, 1931, to Mar. 21, 1956, water-stage recorder at site 1.2 mi upstream at different datum. Mar. 22 to July 24, 1956, nonrecording gage at site 0.3 mi downstream at different datum. July 25 to Sept. 12, 1956, nonrecording gage at present site and datum. Sept. 13, 1956 to Aug. 27, 2001, water-stage recoder during period of gage operation 1.1 mi downstream at different datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Some regulation by three reservoirs in Wyoming with combined usable capacity of 36,800 acre-ft. Diversions for irrigation of about 66,300 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 30, 1923, reached a stage of 19 ft, site and datum used 1931-56, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	94	e150	e110	e300	e120	e200	248	62	8.7	17	978
2	6.1	100	e180	e140	e300	e110	e150	241	245	7.5	10	694
3	6.1	117	e170	e180	e250	e120	e150	322	426	11	6.6	459
4	6.3	122	e140	e170	e250	e200	e250	263	260	11	11	325
5	7.1	114	e140	e150	e250	e150	e300	222	190	7.1	7.0	251
6	7.4	107	e160	e150	e300	e100	e400	262	173	11	202	195
7	9.5	107	e170	e200	e300	e100	e500	298	94	16	13	160
8	14	109	e170	e210	e250	e100	478	249	61	9.0	5.5	137
9	35	110	e140	e200	e250	e150	449	201	49	5.4	3.9	139
10	39	113	e130	e200	e250	e200	407	195	47	4.2	3.8	131
11	39	115	e120	e200	e250	e230	348	182	39	11	7.1	122
12	43	124	e110	e200	e250	e250	321	179	36	13	11	119
13	52	131	e130	e180	e300	e200	309	187	32	7.9	7.2	112
14	55	132	e140	e140	e250	e200	307	181	40	5.2	3.8	100
15	51	130	e120	e180	e300	e220	257	164	32	24	2.4	92
16	47	133	e150	e210	e300	e220	229	244	25	20	1.9	91
17	50	132	e140	e180	e300	e200	214	200	22	15	1.6	88
18	66	131	e130	e190	e250	e200	235	163	19	13	4.6	86
19	72	141	e120	e200	e250	e150	346	134	17	11	5.1	86
20	82	155	e110	e250	e250	e120	531	113	16	15	2.8	86
21	86	142	e100	e250	e300	e150	496	117	15	24	81	77
22	91	151	e100	e200	e250	e200	390	122	14	50	423	101
23	92	175	e110	e200	e150	e200	329	127	14	419	352	99
24	95	164	e130	e300	e100	e200	286	291	14	306	306	130
25	96	156	e150	e300	e80	e200	286	169	14	192	178	128
26	98	e100	e170	e250	e100	e250	266	118	16	136	138	122
27	97	e90	e130	e200	e130	e250	221	98	12	111	146	113
28	92	e100	e110	e100	e130	e230	212	93	10	85	177	108
29	88	e150	e100	e170	---	e230	240	88	11	60	1600	107
30	88	e170	e120	e200	---	e250	252	80	11	34	2580	103
31	93	---	e110	e250	---	e230	---	70	---	24	1430	---
TOTAL	1710.0	3815	4150	6060	6640	5730	9359	5621	2016	1667.0	7738.3	5539
MEAN	55.16	127.2	133.9	195.5	237.1	184.8	312.0	181.3	67.20	53.77	249.6	184.6
MAX	98	175	180	300	300	250	531	322	426	419	2580	978
MIN	6.1	90	100	100	80	100	150	70	10	4.2	1.6	77
AC-FT	3390	7570	8230	12020	13170	11370	18560	11150	4000	3310	15350	10990

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2002, BY WATER YEAR (WY)*

MEAN	226.4	224.9	159.3	153.6	288.0	612.0	507.6	1057	1366	466.6	175.3	145.2
MAX	897	660	326	445	1200	2290	1314	5553	4131	2500	1219	686
(WY)	1995	1999	1981	1981	1930	1947	1965	1978	1967	1937	1941	1982
MIN	16.1	80.0	56.2	27.2	20.9	185	117	82.6	39.5	33.9	0.60	1.28
(WY)	1955	1936	1933	1950	1933	2002	1961	1934	1954	1961	1966	1960

06324500 POWDER RIVER AT MOORHEAD, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1930 - 2002*	
ANNUAL TOTAL	47966.03		60045.3			
ANNUAL MEAN	131.4		164.5		448.4	
HIGHEST ANNUAL MEAN					1091	1978
LOWEST ANNUAL MEAN					109	1961
HIGHEST DAILY MEAN	1260	Jul 13	2580	Aug 30	27500	May 20 1978
LOWEST DAILY MEAN	0.08	Aug 21	1.6	Aug 17	0.00	Jul 15 1931
ANNUAL SEVEN-DAY MINIMUM	0.14	Aug 19	3.2	Aug 14	0.00	Sep 4 1960
MAXIMUM PEAK FLOW			a3660	Aug 29	c33000	May 20 1978
MAXIMUM PEAK STAGE			b7.57	Apr 7	d17.70	Mar 21 1956
INSTANTANEOUS LOW FLOW					0.00	Jul 15 1931
ANNUAL RUNOFF (AC-FT)	95140		119100		324800	
10 PERCENT EXCEEDS	266		300		1040	
50 PERCENT EXCEEDS	122		131		220	
90 PERCENT EXCEEDS	5.0		11		46	

*--During period of operation (1930-72, 1975 to current year).
a--Gage height, 6.38 ft.
b--Backwater from ice.
c--Gage height, 15.24 ft.
d--Ice jam, site and datum then in use.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951-53, 1956-67, 1969-72, 1975-77, 2001 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1986 to November 1989, May 2001 to current year.

WATER TEMPERATURE: February 1951 to September 1953, October 1955 to September 1957, October 1974 to September 1977, March 1978 to September 1981 (seasonal records only).

SUSPENDED-SEDIMENT DISCHARGE: October 1974 to September 1977, March 1978 to September 1996 (seasonal records only).

INSTRUMENTATION.--Specific conductance probe installed May 20, 2001.

REMARKS.--Missing specific conductance data for Aug. 22-24 and Sept. 1-6 due to equipment problems. From Nov. 23 to Apr. 12 the probe was in ice conditions. Instantaneous values are shown during this period when available. Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE (water years 1986-90, 2001-2002): Maximum daily, 5,920 microsiemens per centimeter (µS/cm), July 16, 2002; minimum daily, 642 µS/cm at 25.0°C, May 20, 1988.

WATER TEMPERATURE (water years 1951-53, 1955-57, 1975-81): Maximum daily, 33.0°C, July 14, 1981; minimum daily 0.0°C on many days during winter.

SEDIMENT CONCENTRATION: Maximum daily mean, 53,500 mg/L May 27, 1980; minimum daily mean, 3 mg/L Sept. 16-18, 1996.

SEDIMENT LOAD: Maximum daily, 2,230,000 tons May 20, 1978; minimum daily, 0.17 ton Aug. 1, 1988 and Sept. 16, 1996.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: For period of available record, maximum daily mean, 5,920 microsiemens per centimeter (µS/cm), July 16; minimum daily mean, 741 µS/cm, Aug. 7.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
OCT 2001											
02...	1315	5.9	677	8.9	102	8.3	2190	20.0	16.0	810	148
NOV											
21...	0845	158	670	10.2	80	8.5	1950	-2.0	0.0	580	131
DEC											
12...	0915	E110	675	13.4	104	8.2	2260	-5.0	0.0	730	171
JAN 2002											
16...	1100	210	676	14.8	115	8.2	1740	-2.0	0.0	590	140
FEB											
20...	1200	E250	674	10.1	78	8.5	1740	5.0	0.0	490	117
MAR											
19...	0800	E150	677	13.3	103	8.2	1580	1.0	0.0	450	106
APR											
08...	1235	523	676	7.8	75	8.2	1460	11.0	8.0	400	95.6
MAY											
14...	1200	184	668	6.2	77	8.5	1970	24.5	19.0	520	119
JUN											
06...	0900	199	673	7.5	92	8.5	1450	25.0	19.0	380	86.9
JUL											
10...	1810	3.8	682	7.6	112	8.5	2350	28.0	29.0	870	159
AUG											
20...	1115	2.9	668	8.5	109	8.2	2630	30.0	20.5	1000	200
SEP											
10...	1500	134	--	--	--	8.2	2180	26.0	23.0	680	187

YELLOWSTONE RIVER BASIN

06324500 POWDER RIVER AT MOORHEAD, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)
OCT 2001											
02...	107	9.27	3	213	144	25.7	.3	.6	1100	27.0	1690
NOV											
21...	62.2	7.09	4	206	247	132	.5	7.5	663	580	1360
DEC											
12...	73.9	7.84	4	223	294	132	.5	10.3	785	E469	1580
JAN 2002											
16...	58.6	6.45	3	162	266	83.9	.5	10.1	575	680	1200
FEB											
20...	47.3	5.51	4	190	234	148	.5	8.0	487	E772	1150
MAR											
19...	44.6	5.78	3	170	217	100	.4	6.5	478	E469	1040
APR											
08...	39.3	8.30	3	159	166	63.9	.4	6.8	516	1400	992
MAY											
14...	53.6	7.54	5	255	213	127	E.1	6.5	666	678	1360
JUN											
06...	39.8	5.64	4	170	148	95.7	.3	6.7	466	516	961
JUL											
10...	114	12.1	4	250	142	62.5	.4	4.0	1160	19.0	1850
AUG											
20...	120	12.3	4	274	177	50.7	.4	5.4	1320	16.4	2090
SEP											
10...	50.7	8.97	4	229	163	90.0	.8	7.9	902	571	1580

DATE	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)
OCT 2001											
02...	<.04	.51	<.013	<.002	<.007	.016	2	.15	.7	<2	40
NOV											
21...	E.03	.68	.090	<.002	<.007	.116	--	.10	.9	3	30
DEC											
12...	<.04	.46	.345	<.002	<.007	.045	<1	.11	.7	2	36
JAN 2002											
16...	<.04	.32	.411	E.002	<.007	.033	<1	.09	.8	<2	29
FEB											
20...	<.04	.24	.321	.004	<.007	.022	2	.24	.6	E1	26
MAR											
19...	<.04	.25	.347	.005	<.007	.019	1	.18	.7	<2	25
APR											
08...	.11	2.4	.385	.007	<.007	1.40	2	.23	.8	11	29
MAY											
14...	<.04	1.0	.156	<.002	E.004	.47	2	.30	1.2	5	34
JUN											
06...	<.04	.42	<.013	<.002	<.007	.085	2	.23	1.0	<2	32
JUL											
10...	<.04	.68	<.013	<.002	<.007	.022	3	.31	1.5	<2	47
AUG											
20...	<.04	.74	<.013	<.002	<.007	.066	4	.31	1.1	E1	63
SEP											
10...	<.04	1.3	.375	.003	E.005	.57	3	.35	.9	5	43

E--Estimated.

06324500 POWDER RIVER AT MOORHEAD, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)
OCT 2001											
02...	36.8	<.06	163	208	<.04	E.03	<.8	<.8	.32	4.2	9.3
NOV											
21...	71.5	<.06	223	237	<.04	.15	E.5	2.5	.41	2.1	9.1
DEC											
12...	45.9	<.06	251	237	<.04	.06	<.8	E.5	.41	3.8	5.5
JAN 2002											
16...	35.5	<.06	173	175	<.04	E.03	<.8	E.8	.35	2.2	4.1
FEB											
20...	28.3	<.06	216	216	<.04	.05	<.8	E.7	.35	2.4	3.5
MAR											
19...	28.2	<.06	187	156	<.04	E.03	<.8	<.8	.27	2.5	3.2
APR											
08...	321	<.06	132	145	E.02	.90	<.8	16.2	.43	3.3	34.9
MAY											
14...	140	<.06	217	236	E.03	.31	<.8	7.0	.36	4.2	16.0
JUN											
06...	42.9	<.06	160	166	E.03	.04	<.8	1.0	.22	2.8	4.4
JUL											
10...	47.8	<.06	302	275	E.02	E.02	<.8	<.8	.51	6.8	12.6
AUG											
20...	69.9	<.10	228	267	<.07	E.04	<1.6	E.4	.69	5.9	7.4
SEP											
10...	159	<.06	200	194	E.02	.43	<.8	8.5	.46	5.1	20.8

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)
OCT 2001											
02...	120	E.07	<1	59.4	16.3	35	--	3.4	3.00	7	1.1
NOV											
21...	5260	E.05	5	85.1	9.2	118	--	2.2	2.30	9	2.4
DEC											
12...	1340	<.08	1	101	5.7	34	--	2.4	3.31	5	2.9
JAN 2002											
16...	750	<.08	<1	77.1	8.1	23	--	1.9	3.28	4	2.3
FEB											
20...	620	<.08	<1	71.6	10.2	245	--	1.6	3.24	5	1.6
MAR											
19...	580	E.08	<1	62.4	7.0	19	--	1.8	1.02	6	2.4
APR											
08...	29700	<.08	29	57.2	7.8	863	--	3.1	3.24	38	3.0
MAY											
14...	11200	<.08	11	79.7	2.4	282	--	3.6	3.50	15	3.6
JUN											
06...	1160	.28	1	55.2	1.8	53	E.01	2.6	2.59	5	1.5
JUL											
10...	50	E.05	<1	86.7	15.8	34	--	4.6	4.03	6	1.7
AUG											
20...	760	<.20	<2	70.9	14.5	72	--	4.2	5.96	6	1.9
SEP											
10...	12500	.13	10	70.9	4.1	280	--	8.6	8.53	27	3.2

E--Estimated.

YELLOWSTONE RIVER BASIN

06324500 POWDER RIVER AT MOORHEAD, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001											
02...	1.4	<1	1850	<.04	.3	3	5	17.2	70	7	.11
NOV											
21...	2.0	<1	1740	<.04	.7	2	32	11.2	96	337	144
DEC											
12...	3.0	<1	2070	<.04	1.4	3	8	12.9	94	202	E60
JAN 2002											
16...	1.7	<1	1660	<.04	3.6	2	6	10.4	90	106	60.1
FEB											
20...	1.8	<1	1360	<.04	.3	1	4	8.42	73	47	E31.7
MAR											
19...	2.4	<1	1250	<.04	<.2	2	4	7.50	87	82	E33.2
APR											
08...	2.8	<1	1110	<.04	3.0	2	124	8.15	93	2110	2980
MAY											
14...	3.0	<1	1590	<.04	2.1	2	46	9.11	99	775	385
JUN											
06...	1.5	<1	999	<.04	1.6	1	8	5.93	98	72	38.7
JUL											
10...	1.5	<1	2110	<.04	1.0	3	8	14.6	86	4	.04
AUG											
20...	2.0	<2	2150	<.08	1.6	7	7	17.2	99	89	.70
SEP											
10...	4.2	<1	1810	<.04	1.6	3	62	12.7	99	850	308

E--Estimated.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2190	2090				*1960	*1680	1900	2640	3820	2590	---
2	2180	2110						1860	2390	3800	2810	---
3	2220	2010						1860	1050	4140	2920	---
4	2280	1990			*1930	*2350	*1660	1840	1130	4370	3010	---
5	2320	1970						1840	1320	4080	2590	---
6	2330	2040						1900	1470	3530	961	---
7	2350	2080			*1920			1960	1790	2800	741	1960
8	2340	2090				*2250	*1490	1920	2250	2390	1700	2080
9	2380	2090						1910	2670	2280	2220	2080
10	2130	2120						2080	2930	2350	2570	2150
11	1970	2120			*1990	*1190	*1900	2120	3190	2470	2470	2150
12	1590	2120	**2260				1970	2040	3310	2360	2290	2140
13	1420	2130					2020	2000	3480	2100	2800	2190
14	1360	2110			*1940	*1750	2040	1960	3560	1990	2350	2230
15	1330	2090					2070	1920	2780	2560	2300	2280
16	1320	2040		**1740			2060	1970	3020	5920	2340	2340
17	1280	2020					2050	1940	3400	5410	2450	2340
18	1460	2030			*1770	*1050	2040	2240	3540	4480	2550	2310
19	1790	2020				**1580	1940	2420	3580	4060	2630	2320
20	1950	1980			**1740		1950	2300	3710	3870	2650	2340
21	2020	1930		*2110	*2080	*1650	1870	2320	3800	3050	2560	2360
22	1980	1930					1620	2440	3830	2190	---	2300
23	2030	---					1510	2630	3830	2450	---	2200
24	1990	---		*2120			1530	2030	3900	2730	---	2340
25	1990	---					1600	1880	3760	2490	2020	2380
26	1970	---			*1680	*1540	1690	2040	3730	2270	1860	2250
27	1960	---					1810	2320	3680	2020	1560	2060
28	1990	---		*2090			1840	2490	3400	2440	1660	2080
29	2050	---				*1680	1900	2560	3480	2520	2110	2230
30	2050	---					1970	2600	3700	2390	1790	2200
31	2050			*2400			---	2590	---	2510	1910	---
MEAN	1940	---		---	---	---	---	2130	3010	3090	---	---
MAX	2540	---		---	---	---	---	2630	3900	5920	---	---
MIN	1260	---		---	---	---	---	1840	1050	1990	---	---

*--Instantaneous values obtained from observer grab samples during winter ice period.
**--Instantaneous values obtained from USGS cross-section samples during winter ice period.

06324970 LITTLE POWDER RIVER ABOVE DRY CREEK, NEAR WESTON, WY

LOCATION.--Lat 44°55'37", long 105°21'10" (NAD 27), in NW$^1/_4$SW$^1/_4$SW$^1/_4$ sec.13, T.57 N., R.71 W., Campbell County, Hydrologic Unit 10090208, on left bank 3.1 mi upstream from Dry Creek, 5.0 mi south of the Wyoming-Montana State line, and 20 mi north of Weston.
DRAINAGE AREA.--1,235 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1972 to current year.
REVISED RECORDS.--WDR WY-77-1: Drainage area. WDR WY-78-1: 1976(M).
GAGE.--Water-stage recorder. Elevation of gage is 3,410 ft (NGVD 29).
REMARKS.--Water-discharge records fair except those for Aug. 28 to Sept. 30 and those for estimated daily discharges, which are poor. Diversion upstream from station for irrigation of about 80 acres downstream from station. Flow occasionally affected by contributions from mine dewatering. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.57	e0.84	0.04	e0.44	e1.2	23	3.8	1.4	0.49	0.07	0.08
2	0.00	0.65	e1.0	0.03	e0.45	e1.1	17	3.6	1.3	0.49	0.06	0.12
3	0.00	0.74	e1.2	0.03	e0.47	e0.90	15	5.2	1.3	0.50	0.06	0.16
4	0.00	0.53	e1.2	0.04	e0.48	e0.84	18	4.5	1.7	e0.37	0.06	0.18
5	0.00	0.58	e1.1	0.10	0.54	e1.1	16	3.5	1.8	e0.28	0.06	0.18
6	0.01	0.45	e0.98	0.18	0.60	e1.4	13	3.5	2.4	e0.22	0.05	0.17
7	0.01	0.63	e1.1	0.21	0.68	e1.7	22	4.8	1.5	e0.18	0.05	0.15
8	0.03	0.60	e1.1	0.32	0.86	e1.3	23	6.0	1.4	e0.13	0.04	0.15
9	0.05	0.61	e1.0	0.52	e0.68	e1.0	23	5.2	1.3	e0.11	0.04	1.9
10	0.05	0.56	e1.2	0.76	e0.74	e1.3	20	4.7	2.0	e0.09	0.03	0.12
11	0.05	0.71	e1.0	0.93	e0.80	e1.5	14	3.8	2.0	e0.11	0.03	0.06
12	0.04	0.86	1.2	0.86	e0.84	2.4	9.8	3.4	1.8	e0.17	0.03	0.05
13	0.05	0.98	1.1	1.1	1.1	2.9	6.9	3.1	1.7	e0.23	0.03	0.05
14	0.23	0.95	1.1	1.2	1.4	2.6	5.1	2.1	0.92	e0.20	0.03	0.06
15	0.30	0.95	e1.0	1.2	1.4	2.2	4.8	1.6	0.52	e0.14	0.03	0.05
16	0.23	e0.95	1.1	1.1	1.4	2.1	4.7	1.6	0.42	e0.16	0.03	0.05
17	0.21	0.98	1.0	1.1	e1.0	2.7	3.9	1.6	0.31	e0.17	0.03	0.05
18	0.27	0.93	e0.92	0.92	e1.1	2.7	4.3	1.5	0.35	e0.19	0.03	0.06
19	0.21	e0.98	e0.84	0.63	e1.1	2.4	4.4	1.4	0.29	e0.20	0.03	0.05
20	0.18	e0.92	e0.88	0.51	e1.0	2.6	4.1	1.2	0.23	e0.20	0.03	0.05
21	0.20	e1.0	e0.80	0.55	e1.1	2.4	4.1	1.1	0.20	e0.19	0.03	0.05
22	0.23	e0.94	e0.70	0.69	e1.3	2.9	4.1	1.8	0.21	0.16	0.03	0.05
23	0.26	e0.90	e0.60	0.86	e1.5	2.8	3.7	2.1	0.19	0.16	0.03	0.05
24	0.27	e0.88	e0.50	0.85	e1.4	2.9	4.1	1.9	0.17	0.19	0.08	0.03
25	0.32	e0.86	0.51	0.83	e1.3	3.0	6.7	2.0	0.18	0.17	0.07	e0.03
26	0.27	e0.80	0.63	e0.66	e1.0	3.4	4.4	2.1	0.15	0.14	1.2	e0.03
27	0.33	e0.74	0.77	e0.58	e1.0	4.3	3.5	1.7	0.18	0.15	0.49	e0.02
28	0.46	e0.60	0.73	e0.48	e1.2	4.7	3.1	1.5	0.26	0.13	0.02	e0.02
29	0.31	e0.70	0.26	e0.42	---	4.9	2.8	1.5	0.32	0.08	0.03	e0.02
30	0.40	e0.70	0.24	e0.40	---	7.2	2.7	1.3	0.36	0.09	0.04	e0.02
31	0.57	---	0.07	e0.42	---	17	---	1.3	---	0.08	0.05	---
TOTAL	5.54	23.25	26.67	18.52	26.88	91.44	291.2	84.4	26.86	6.17	2.89	4.06
MEAN	0.179	0.775	0.860	0.597	0.960	2.950	9.707	2.723	0.895	0.199	0.093	0.135
MAX	0.57	1.0	1.2	1.2	1.5	17	23	6.0	2.4	0.50	1.2	1.9
MIN	0.00	0.45	0.07	0.03	0.44	0.84	2.7	1.1	0.15	0.08	0.02	0.02
AC-FT	11	46	53	37	53	181	578	167	53	12	5.7	8.1

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 2002, BY WATER YEAR (WY)

MEAN	11.35	3.850	2.549	8.073	37.63	59.98	23.79	57.97	28.33	11.01	5.535	3.997
MAX	172	25.4	9.97	89.0	336	613	99.3	703	187	68.8	44.8	60.8
(WY)	1995	1999	1995	1974	1997	1978	1999	1978	1984	1982	1993	1986
MIN	0.009	0.015	0.21	0.10	0.46	1.34	0.75	1.04	0.90	0.044	0.000	0.002
(WY)	1992	1982	1982	1991	1989	1981	1981	1992	2002	1980	1991	1991

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1973 - 2002	
ANNUAL TOTAL	2752.71		607.88			
ANNUAL MEAN	7.542		1.665		21.11	
HIGHEST ANNUAL MEAN					127	1978
LOWEST ANNUAL MEAN					1.49	1992
HIGHEST DAILY MEAN	252	Jul 25	23	Apr 1,8,9	5000	May 19 1978
LOWEST DAILY MEAN	0.00	Oct 1-5	0.00	Oct 1-5	0.00	Many days, some years
ANNUAL SEVEN-DAY MINIMUM	0.00	Sep 29	0.00	Oct 1	0.00	Many days, some years
MAXIMUM PEAK FLOW			32	Apr 7	a5300	May 19 1978
MAXIMUM PEAK STAGE			2.91	Apr 7	11.63	Mar 20 1978
ANNUAL RUNOFF (AC-FT)	5460		1210		15300	
10 PERCENT EXCEEDS	14		3.8		34	
50 PERCENT EXCEEDS	1.6		0.70		2.9	
90 PERCENT EXCEEDS	0.03		0.04		0.03	

a--Gage height, 11.62 ft.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975-82, 1985 to current year.

REMARKS.--Record includes samples collected as part of the National Water-Quality Assessment Program (NAWQA) for the Yellowstone River study unit under the direction of the Wyoming District.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)
OCT											
11...	0815	.05	--	--	--	--	8.0	3770	10.0	6.0	1200
NOV											
14...	1400	.88	17	675	11.7	105	8.2	3470	15.0	5.0	820
DEC											
12...	1200	1.1	--	673	12.8	103	8.1	4340	1.0	.5	920
JAN											
16...	1400	1.0	17	673	12.3	97	7.9	4200	-2.0	.0	1200
FEB											
20...	1500	1.0	6.3	672	10.4	84	8.0	2950	8.0	1.0	780
MAR											
19...	1100	2.3	--	674	13.1	104	8.1	2790	3.0	.5	680
APR											
09...	1310	25	--	675	10.5	103	8.2	2050	17.0	9.0	490
MAY											
07...	1300	5.3	110	670	10.0	105	8.0	3460	11.0	11.0	860
JUN											
11...	0710	1.8	--	676	7.1	80	8.1	3850	16.0	14.5	880
JUL											
16...	1415	.16	--	676	10.4	158	7.9	3720	33.5	30.0	1200
AUG											
13...	1210	.02	--	678	9.9	127	7.9	3730	24.0	21.0	1100
SEP											
10...	1650	.11	--	679	10.2	135	8.2	1840	25.5	23.0	500

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT											
11...	241	144	17.2	6	479	--	440	420	512	--	118
NOV											
14...	151	107	19.1	8	502	--	376	324	395	--	32.1
DEC											
12...	172	119	23.4	10	684	--	514	520	634	--	120
JAN											
16...	240	146	25.9	8	637	--	547	504	615	--	85.8
FEB											
20...	160	91.4	15.3	7	425	--	392	360	420	10	34.6
MAR											
19...	140	79.7	14.2	7	399	352	351	356	434	--	45.6
APR											
09...	92.9	61.1	14.7	5	250	276	271	--	--	--	50.8
MAY											
07...	164	110	19.0	7	483	389	388	379	456	--	85.0
JUN											
11...	153	121	22.6	9	603	357	354	--	--	--	77.9
JUL											
16...	254	139	26.1	6	449	--	375	411	493	--	234
AUG											
13...	198	141	20.9	7	505	339	327	--	--	--	189
SEP											
10...	101	58.7	13.2	4	214	229	229	222	264	--	77.5

06324970 LITTLE POWDER RIVER ABOVE DRY CREEK, NEAR WESTON, WY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT												
11...	.9	13.4	1600	4.13	.41	3040	2870	E.03	--	.65	E.03	<.008
NOV												
14...	.8	5.04	1580	3.80	6.63	2790	2590	<.04	--	.39	<.05	<.008
DEC												
12...	.9	10.6	1860	4.75	10.4	3500	3300	E.02	--	.43	<.05	<.008
JAN												
16...	.9	13.6	2010	4.97	9.97	3660	3470	E.03	--	.40	<.05	<.008
FEB												
20...	.7	10.1	1290	3.21	6.63	2360	2250	E.03	--	.24	<.05	<.008
MAR												
19...	.7	8.26	1130	2.89	13.3	2130	2030	<.04	--	.27	<.05	<.008
APR												
09...	.5	8.44	774	2.07	103	1530	1420	--	--	--	--	--
MAY												
07...	.6	5.78	1480	3.71	39.1	2730	2580	<.04	--	.68	<.05	<.008
JUN												
11...	.8	4.88	1770	4.29	15.3	3150	2970	--	--	--	--	--
JUL												
16...	.6	13.7	1480	4.17	1.32	3060	2840	<.04	--	.84	<.05	<.008
AUG												
13...	.8	8.70	1580	4.26	.17	3130	2850	<.04	.39	.43	<.05	<.008
SEP												
10...	.3	7.27	620	1.79	.39	1320	1220	<.04	--	.73	<.05	<.008

DATE	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)
OCT											
11...	--	<.02	.047	<2	275	<.10	.6	E1	65	58.2	<.10
NOV											
14...	--	<.02	.021	<2	162	.20	.9	E2	38	41.9	<.10
DEC											
12...	--	<.02	.014	<2	158	.14	.9	E2	37	35.8	<.10
JAN											
16...	--	E.01	.020	<2	179	.14	1.1	E2	34	36.9	<.10
FEB											
20...	--	<.02	.013	<2	77	.14	.8	E1	22	20.8	<.10
MAR											
19...	--	<.02	.013	<1	120	.36	.7	<2	21	19.6	<.06
APR											
09...	--	--	--	3	12500	.38	1.3	4	30	69.7	<.06
MAY											
07...	--	<.02	.059	<2	703	.25	1.0	<2	38	45.2	<.10
JUN											
11...	--	--	--	<2	1180	.46	1.2	13	42	50.3	<.10
JUL											
16...	--	<.02	.054	1	126	.30	2.0	2	75	73.6	<.06
AUG											
13...	.010	<.02	.021	<2	39	.20	1.0	E2	38	34.1	<.10
SEP											
10...	--	<.02	.063	3	209	.30	1.3	E1	48	52.6	<.06

E--Estimated.

YELLOWSTONE RIVER BASIN

06324970 LITTLE POWDER RIVER ABOVE DRY CREEK, NEAR WESTON, WY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	BORON, DIS-SOLVED (UG/L AS B) (01020)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, COPPER, DIS-SOLVED (UG/L AS CU) (01040)	TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, IRON, DIS-SOLVED (UG/L AS FE) (01046)	TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
OCT											
11...	194	192	.28	<.07	<.8	<.8	1.46	17.2	5.3	<30	550
NOV											
14...	213	214	.87	<.07	<4.0	<.8	.51	3.7	6.8	<30	240
DEC											
12...	383	291	<.07	E.04	<.8	<.8	.64	6.6	7.0	<30	150
JAN											
16...	332	342	<.07	<.07	E.4	<.8	1.01	4.1	7.8	<30	300
FEB											
20...	154	174	<.07	E.02	E.6	<.8	.83	4.0	5.5	198	160
MAR											
19...	190	163	<.04	<.04	<.8	<.8	.70	3.5	4.4	11	190
APR											
09...	214	197	.30	.16	<.8	4.2	.88	5.3	12.4	E9	5000
MAY											
07...	263	307	.20	<.07	<.8	.9	1.01	5.1	9.0	<30	1090
JUN											
11...	319	279	.50	E.04	<.8	1.1	.87	9.9	10.1	<30	1380
JUL											
16...	211	245	.08	<.07	<.8	<.8	1.21	7.8	6.5	<30	490
AUG											
13...	215	240	<.07	<.07	<.8	<.8	.63	7.7	6.6	E15	100
SEP											
10...	131	121	.04	E.02	<.8	<.8	.55	2.9	5.2	E10	370

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)
OCT											
11..	<.20	<2	48.3	684	653	2.1	<.10	6	E.4	1.5	<2
NOV											
14..	<.20	<2	61.3	84.2	110	1.9	<.10	4	1.0	E.7	<2
DEC											
12..	<.20	<2	167	77.7	78.9	2.4	3.85	5	1.8	1.9	<2
JAN											
16..	<.20	<2	159	202	187	3.3	7.31	7	1.5	1.6	<2
FEB											
20..	<.20	<1	62.4	217	178	2.1	3.32	5	1.1	1.1	<2
MAR											
19..	<.08	<1	69.0	129	121	2.1	1.86	6	1.1	.8	<1
APR											
09..	E.07	10	60.4	82.6	277	3.4	3.83	10	1.7	1.2	<1
MAY											
07..	<.20	<2	76.2	194	278	3.2	4.75	7	1.5	1.2	<2
JUN											
11..	<.20	3	86.6	127	197	3.2	1.96	7	1.8	2.9	<2
JUL											
16..	.11	<2	68.4	377	421	2.1	2.04	5	1.7	1.2	<1
AUG											
13..	<.20	<2	64.8	41.0	46.6	2.3	4.72	6	1.5	.9	<2
SEP											
10..	<.08	<1	27.4	122	170	1.3	4.96	7	.6	.9	<1

E--Estimated.

06324970 LITTLE POWDER RIVER ABOVE DRY CREEK, NEAR WESTON, WY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT								
11..	3280	<.08	.6	11	6	25.8	--	--
NOV								
14..	2090	<.08	.7	9	6	15.8	60	.14
DEC								
12..	2900	<.08	1.9	6	7	18.9	112	.33
JAN								
16..	3490	<.08	9.0	4	7	20.5	68	.19
FEB								
20..	1980	<.08	.7	3	5	15.5	22	.06
MAR								
19..	1760	<.04	<.2	3	4	14.3	73	.46
APR								
09..	1340	<.04	2.3	3	35	14.2	--	--
MAY								
07..	2280	<.08	2.8	4	10	16.7	189	2.7
JUN								
11..	2320	<.08	2.9	6	14	16.7	--	--
JUL								
16..	2730	<.04	.9	6	5	16.1	61	.03
AUG								
13..	2720	<.08	2.5	6	4	14.9	--	--
SEP								
10..	1090	<.04	1.7	3	4	5.82	36	.01

YELLOWSTONE RIVER BASIN

06325500 LITTLE POWDER RIVER NEAR BROADUS, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 45°23'25", long 105°18'15" (NAD 27), in NW$^1/_4$NE$^1/_4$ sec. 21, T.5 S., R.52 E., Powder River County, Hydrologic Unit 10090208, on left bank 1.5 mi downstream from East Fork, 5.5 mi southeast of Broadus, and 8 mi upstream from mouth.
DRAINAGE AREA.--1,974 mi^2.
PERIOD OF RECORD.--March 2002 to September 2002.
GAGE.--Elevation of site is 3,020 ft (NGVD 29).
REMARKS.--Data collected from April 2001 to February 2002 at station 06325550, Little Powder River at mouth, near Broadus. Site moved to current location in March 2002 due to backwater conditions and heavy sediment deposition in channel that prevented reliable flow measurements and samples.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
MAR											
19...	1330	9.0	684	13.9	107	8.3	2670	7.0	0.0	610	130
APR											
25...	1330	5.5	687	8.9	94	8.3	2420	10.0	12.5	410	84.9
MAY											
16...	1200	6.1	668	6.2	77	8.5	1970	24.5	19.0	380	75.9
JUN											
06...	1115	1.5	680	7.3	97	8.1	3710	26.0	23.0	820	153
JUL											
11...	0700	1.8	690	5.4	64	8.8	1810	19.5	18.5	97	17.4
AUG											
20...	1445	E1.0	676	--	--	8.6	1680	32.0	23.5	92	20.4
SEP											
10...	1300	1.0	--	--	--	8.5	1630	24.0	20.5	99	22.8

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
MAR											
19...	69.6	13.9	7	419	369	44.3	.6	9.6	1100	2.73	48.8
APR											
25...	48.1	9.39	9	409	410	37.0	.3	9.0	863	2.32	25.3
MAY											
16...	45.3	7.55	10	444	432	27.7	.3	7.8	889	2.39	28.9
JUN											
06...	107	20.2	9	589	377	45.5	<.1	6.6	1690	3.86	11.5
JUL											
11...	13.0	2.92	16	365	421	5.26	.2	.5	506	1.58	5.65
AUG											
20...	9.85	2.68	15	338	411	3.77	.2	5.3	448	1.46	E2.90
SEP											
10...	10.2	2.61	15	344	413	3.60	.2	10.2	419	1.44	2.86

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)
MAR											
19...	2010	<.04	.60	<.013	<.002	<.007	.021	E1	20.6	131	.05
APR											
25...	1710	<.04	.76	<.013	<.002	<.007	.043	2	41.9	135	.04
MAY											
16...	1760	<.04	.56	<.013	<.002	<.007	.037	2	45.9	112	.04
JUN											
06...	2840	<.04	.83	<.013	<.002	<.007	.143	E1	63.2	220	E.06
JUL											
11...	1160	<.04	.52	<.013	<.002	<.007	.091	5	44.3	81	.05
AUG											
20...	1080	<.04	.48	<.013	<.002	<.007	.092	5	50.3	82	.06
SEP											
10...	1060	<.04	.47	<.013	<.002	<.007	.060	6	47.5	79	.07

E--Estimated.

YELLOWSTONE RIVER BASIN

06325500 LITTLE POWDER RIVER NEAR BROADUS, MT

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAR											
19...	<.8	4.8	530	<1	162	7	1.0	6	91	135	3.3
APR											
25...	E.7	13.0	1110	1	336	8	2.3	9	88	68	1.0
MAY											
16...	1.2	6.9	1390	2	315	5	1.1	9	99	202	3.3
JUN											
06...	2.4	9.2	2570	3	333	8	1.9	15	96	58	.23
JUL											
11...	1.5	9.0	1840	2	90.3	5	.5	10	96	105	.51
AUG											
20...	1.5	5.9	2060	3	87.3	4	.9	10	99	131	E.35
SEP											
10...	1.7	6.7	1880	3	116	5	.8	11	96	109	.29

E--Estimated.

YELLOWSTONE RIVER BASIN

06325550 LITTLE POWDER RIVER AT MOUTH, NEAR BROADUS, MT

WATER-QUALITY RECORDS

LOCATION.--Lat 45°27'39", long 105°19'39" (NAD 27), in NW$^1/_4$SW$^1/_4$NE$^1/_4$ sec. 29, T.4 S., R.52 E., Powder River County, Hydrologic Unit 10090208, at county bridge, 0.4 mi upstream from mouth and 4.0 mi northeast of Broadus. Formerly published as "Little Powder River near Broadus" at different location.

DRAINAGE AREA.--Undetermined.

PERIOD OF RECORD.--August to October 1978, Ocober 1988 to November 1989, April 2001 to February 2002 (site moved to 06325500).

GAGE.--Elevation of site is 2,990 ft (NGVD 29).

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
OCT 2001											
02...	1515	15	685	6.1	70	8.1	1140	18.0	17.0	200	40.0
NOV											
20...	1545	8.0	680	9.1	78	8.2	3720	11.5	3.5	990	195
DEC											
11...	1730	E.50	677	13.3	104	8.1	3960	-1.0	0.0	1100	218
JAN 2002											
16...	1630	2.7	680	14.7	115	8.0	4630	-3.0	0.0	1200	248
FEB											
20...	1700	E1.1	682	10.8	84	7.9	3260	7.0	0.0	870	183

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
OCT 2001											
02...	25.5	6.04	12	398	411	9.44	.4	6.7	677	1.92	57.1
NOV											
20...	122	22.9	7	532	404	52.6	.6	9.7	1750	3.98	63.3
DEC											
11...	126	23.6	7	553	464	49.4	.7	12.2	1860	4.24	E2.86
JAN 2002											
16...	146	24.4	9	736	580	61.2	.8	14.4	2220	5.16	27.7
FEB											
20...	101	16.2	7	468	403	36.0	.6	10.8	1480	3.45	E4.56

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)
OCT 2001											
02...	1410	<.04	.54	<.013	<.002	<.007	.073	E2	49.4	105	.05
NOV											
20...	2930	E.03	.42	<.013	<.002	<.007	.009	<2	39.7	216	<.07
DEC											
11...	3120	<.04	.44	<.013	<.002	<.007	.008	E2	33.5	202	<.07
JAN 2002											
16...	3800	E.04	.49	<.013	<.002	<.007	.013	<2	35.8	233	<.07
FEB											
20...	2540	E.03	.31	<.013	<.002	<.007	.008	E1	21.2	160	.17

E--Estimated.

06325550 LITTLE POWDER RIVER AT MOUTH, NEAR BROADUS, MT

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SELENIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)
OCT 2001											
02...	E.5	7.4	1210	2	131	4	1.6	8	99	143	5.8
NOV											
20...	<.8	8.3	--	<2	137	6	E.4	6	74	94	2.0
DEC											
11...	<.8	7.1	120	<2	200	5	1.6	5	62	198	E.17
JAN 2002											
16...	<.8	8.3	240	<2	450	6	1.8	10	--	--	--
FEB											
20...	<.8	5.2	220	<1	360	7	.9	5	88	50	E.15

E--Estimated.

YELLOWSTONE RIVER BASIN

06326500 POWDER RIVER NEAR LOCATE, MT

LOCATION.--Lat 46°25'48", long 105°18'34" (NAD 27), in $SW^1/_4SW^1/_4SE^1/_4$ sec. 23, T.8 N., R.51 E., Custer County, Hydrologic Unit 10090209, on left bank at downstream side of bridge on U.S. Highway 12, 0.1 mi west of Locate, and 25 mi east of Miles City, and at river mile 29.4.

DRAINAGE AREA.--13,189 mi^2.

PERIOD OF RECORD.--March 1938 to current year.

WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 926: 1939. WSP 1309: 1938-39 (M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,384.79 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to July 11, 1947, nonrecording gage at bridge 1.5 mi upstream, and July 11, 1947 to Sept. 30, 1965, water-stage recorder at site near upstream bridge at different datum. Oct. 1, 1965 to Oct. 4, 1966, nonrecording gage, and Oct. 5, 1966 to Mar. 21, 1978, water-stage recorder at present site and datum. Mar. 22, 1978 to Apr. 23, 1981, water-stage recorder 1.5 mi upstream at different datum, Apr. 24 to Aug. 20, 1981, water-stage recorder at present site and datum, and Aug. 21, 1981 to Sept. 30, 1981, water-stage recorder 1.5 mi upstream at different datum. Oct. 1, 1981 to Apr. 5, 1995 water-stage recorder at site 1.5 miles downstream at different datum. Apr. 7, 1995 to present, water-stage recorders located on each bank and used depending on control conditions.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Some regulation by three reservoirs in Wyoming with combined usable capacity of 36,800 acre-ft. Diversions for irrigation of about 101,800 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.8	86	e110	e45	e75	e100	e220	245	65	e10	17	e1500
2	6.6	84	e140	e50	e75	e90	e280	238	57	4.3	11	e1050
3	6.4	87	e110	e65	e80	e100	e300	250	51	4.7	6.9	778
4	6.8	89	e110	e80	e80	e105	e500	240	53	5.2	5.0	655
5	6.9	92	e100	e70	e85	e105	e600	210	45	3.2	4.4	506
6	7.6	94	e100	e60	e85	e110	e650	208	37	e3.5	4.0	428
7	7.9	99	e110	e50	e85	e115	e700	215	33	e4.0	25	372
8	8.2	101	e100	e55	e85	e105	e700	235	95	e6.0	125	394
9	8.1	105	e100	e55	e85	e95	e800	202	67	e15	89	325
10	8.3	e110	e95	e55	e85	e105	719	212	57	e20	47	270
11	8.7	e110	e90	e55	e85	e115	634	252	80	8.0	39	240
12	9.2	e110	e90	e55	e90	e115	591	231	85	3.8	18	221
13	9.8	e110	e95	e60	e90	e120	533	192	60	4.3	8.7	205
14	9.4	e120	e100	e60	e90	e120	463	171	38	3.4	4.0	186
15	9.7	e125	e100	e60	e95	e115	409	161	33	2.2	3.6	166
16	9.7	136	e105	e65	e100	e105	347	136	33	1.6	3.0	151
17	13	139	e110	e70	e100	e105	288	124	34	10	1.8	144
18	20	150	e105	e70	e110	e105	313	112	33	23	2.0	137
19	24	137	e90	e70	e110	e110	312	121	34	13	1.3	142
20	30	134	e80	e70	e115	e110	317	112	33	9.0	0.46	128
21	35	135	e75	e70	e115	e115	282	115	33	4.8	0.85	122
22	38	128	e80	e70	e115	e115	275	106	34	2.5	0.80	128
23	43	146	e85	e70	e120	e125	290	104	50	1.2	1.6	121
24	51	147	e90	e65	e115	e115	375	95	59	1.3	4.1	112
25	59	147	e90	e65	e100	e110	348	92	e55	0.83	4.2	108
26	66	141	e90	e70	e90	e110	304	108	e50	1.0	3.6	98
27	73	e90	e85	e70	e95	e130	284	110	e45	0.37	55	102
28	76	e80	e70	e70	e105	e170	263	131	e40	15	106	104
29	79	e90	e55	e70	---	e160	257	151	e30	36	93	120
30	82	e110	e50	e55	---	e180	252	97	e20	62	65	116
31	85	---	e45	e70	---	e200	---	82	---	32	57	---
TOTAL	904.1	3432	2855	1965	2660	3680	12606	5058	1439	311.20	807.31	9129
MEAN	29.16	114.4	92.10	63.39	95.00	118.7	420.2	163.2	47.97	10.04	26.04	304.3
MAX	85	150	140	80	120	200	800	252	95	62	125	1500
MIN	6.4	80	45	45	75	90	220	82	20	0.37	0.46	98
AC-FT	1790	6810	5660	3900	5280	7300	25000	10030	2850	617	1600	18110

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2002, BY WATER YEAR (WY)

MEAN	252.2	220.4	150.4	143.3	433.7	1237	744.5	1154	1616	571.4	215.9	171.3
MAX	921	790	417	476	3850	4627	3062	5970	8045	2015	1096	898
(WY)	1941	1999	1942	1981	1943	1972	1965	1978	1944	1993	1941	1941
MIN	1.77	12.5	12.5	4.53	2.82	80.2	109	114	48.0	10.0	1.30	0.19
(WY)	1961	1961	1961	1950	1950	1950	1961	2001	2002	2002	1988	1960

06326500 POWDER RIVER NEAR LOCATE, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1939 - 2002	
ANNUAL TOTAL	65200.8		44846.61			
ANNUAL MEAN	178.6		122.9		575.7	
HIGHEST ANNUAL MEAN					1622	1944
LOWEST ANNUAL MEAN					79.4	1961
HIGHEST DAILY MEAN	2560	Jul 27	1500	Sep 1	26000	Feb 19 1943
LOWEST DAILY MEAN	4.7	Sep 5	0.37	Jul 27	0.00	Jan 16 1950
ANNUAL SEVEN-DAY MINIMUM	5.3	Aug 30	1.3	Aug 17	0.00	Jan 16 1950
MAXIMUM PEAK FLOW			1970	Sep 1	31000	Feb 19 1943
MAXIMUM PEAK STAGE			3.77	Sep 1	a12.20	Mar 16 1978
INSTANTANEOUS LOW FLOW			0.00	Jul 27	b0.00	Jul 30 1998
ANNUAL RUNOFF (AC-FT)	129300		88950		417100	
10 PERCENT EXCEEDS	461		266		1350	
50 PERCENT EXCEEDS	110		90		240	
90 PERCENT EXCEEDS	8.7		6.5		40	

a--Backwater from ice.
b--On many days in 1950, 1960-61, and 1988.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1948-63, 1975 to September 1994, January 1999 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: January 1951 to September 1962, October 1974 to September 1981, July 1988 to January 1990.
SUSPENDED-SEDIMENT DISCHARGE: October 1974 to September 1984.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1951-62, 1975-81, 1988-90): Maximum daily, 4,000 microsiemens per centimeter (µS/cm) at 25.0°C, Apr. 1, 1977; minimum daily, 523 µS/cm at 25.0°C, Mar. 11, 12, 1989.
SEDIMENT CONCENTRATION: Maximum daily mean, 56,800 mg/L May 6, 1975; minimum daily mean, 1.8 mg/L July 30, 1977.
SEDIMENT LOAD: Maximum daily, 906,000 tons May 6, 1975; minimum daily, 1.2 tons Jul. 20, 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)
OCT											
16...	1200	10	8.4	2950	10.0	10.5	510	107	60.0	8.31	9
MAR											
25...	1130	E100	8.1	1930	-1.0	0.0	530	125	52.2	6.27	4
APR											
09...	1300	746	8.4	1710	23.0	11.0	420	99.4	41.5	6.98	4
MAY											
15...	2000	149	8.4	2190	13.5	15.5	520	112	58.4	7.80	5
JUN											
11...	1930	77	8.3	1960	15.0	16.5	390	88.4	40.4	8.03	6
JUL											
23...	1030	1.5	8.3	2590	27.0	26.0	540	116	60.1	10.9	8
AUG											
21...	0745	1.0	8.2	2980	19.0	19.0	580	123	67.1	11.9	9
SEP											
11...	0815	246	8.0	1970	18.0	16.0	620	172	46.0	9.45	4

E--Estimated.

YELLOWSTONE RIVER BASIN

06326500 POWDER RIVER NEAR LOCATE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT											
16...	453	--	314	81.0	.3	9.13	1160	2.81	55.8	2070	.37
MAR											
25...	219	254	253	112	.5	7.3	632	1.78	E354	1310	.31
APR											
09...	206	364	173	82.7	.4	6.9	612	1.58	2340	1160	5.0
MAY											
15...	286	260	208	123	.5	8.0	802	2.07	613	1520	.89
JUN											
11...	292	299	218	72.9	.4	8.5	714	1.85	283	1360	4.1
JUL											
23...	448	339	337	88.6	.5	10.7	1060	2.72	8.09	2000	.65
AUG											
21...	481	313	285	92.7	.5	12.6	1180	2.91	5.77	2140	.54
SEP											
11...	202	437	129	47.9	.7	8.3	881	1.97	963	1450	7.6

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
OCT											
16...	<.013	<.002	<.007	.042	E1	--	--	<.2	3.3	5.4	--
MAR											
25...	.233	<.002	<.007	.035	<2	39	174	.04	.8	4.0	740
APR											
09...	.741	.005	<.007	2.27	15	509	174	1.66	28	61	49100
MAY											
15...	<.013	<.002	<.007	.27	4	109	242	.20	4.3	11	6620
JUN											
11...	.819	.013	<.007	1.69	19	696	242	1.21	50	93	56200
JUL											
23...	<.013	E.002	<.007	.056	<2	123	388	<.07	E.8	8.4	610
AUG											
21...	<.013	<.002	<.007	.065	<2	74	375	E.04	.8	6.6	950
SEP											
11...	1.24	E.002	.013	3.26	2	506	151	2.94	36	78	56900

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT									
16...	<2	--	--	5	--	10	99	175	4.7
MAR									
25...	<1	20.3	--	5	1.6	6	72	146	E39.4
APR									
09...	52	1690	--	64	5.2	197	88	4040	8140
MAY									
15...	6	198	--	10	2.6	26	96	428	172
JUN									
11...	65	1370	--	101	2.4	274	99	5140	1070
JUL									
23...	<2	61.3	--	7	1.1	7	99	122	.49
AUG									
21...	<2	97.5	--	5	1.8	8	99	162	.44
SEP									
11...	43	1690	.20	109	6.6	283	99	5270	3500

E--Estimated.

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY

(National water-quality assessment program)

LOCATION.--Lat 47°40'42", long 104°09'22" (NAD 27), in SW$^1/_4$NE$^1/_4$SW$^1/_4$ sec.9, T.22 N., R.59 E., Richland County, Hydrologic Unit 10100004, on left bank at Montana-Dakota Utilities Company powerplant, 0.2 mi downstream from bridge on State Highway 23, 2.5 mi south of Sidney, 3.0 mi downstream from Fox Creek, and at river mile 29.2.

DRAINAGE AREA.--69,103 mi^2. Area at site 4.5 mi upstream, 68,812 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1910 to September 1931 (published as "at Intake"), October 1933 to current year. If monthly figures of diversions to Lower Yellowstone Canal at Intake are added to records at this site, records equivalent to those published as Yellowstone River at Glendive (1898-1910, 1931-34) can be obtained. Monthly discharge only for some periods, published in WSP 1309. Monthly figures of diversions into Lower Yellowstone Canal prior to 1951 published in WSP 1309, 1951-60 published in WSP 1729, 1961-65 published in WSP 1916, 1966-70 published in WSP 2116, and 1971 to current year are published in annual reports.

GAGE.--Water-stage recorder. Datum of gage is 1,881.3 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Jan. 1, 1911, to Sept. 30, 1931, nonrecording gage at site 32 miles upstream at different datum. Apr. 9, 1934, water-stage recorder at two sites within 500 ft of highway bridge 0.2 mi upstream and May 17, 1945, to Apr. 3, 1952, nonrecording gage on same bridge at datum 1.36 ft higher. Apr. 4, 1952, to Nov. 19, 1967, water-stage recorder at site 4.5 mi upstream at different datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow regulated to some extent by Bighorn Lake, usable capacity, 1,312,000 acre-ft, on the Bighorn River and on other tributary streams in Wyoming and Montana. Diversion for irrigation of about 1,250,000 acres upstream from station. Lower Yellowstone Project Main Canal diverts from left bank in NW$^1/_4$ sec.36, T.18 N., R.56 E., at Lower Yellowstone diversion dam at Intake about 36.6 mi upstream for irrigation of about 52,000 acres of which about one-third lies upstream from station. U. S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3460	4740	e3600	e2700	e3400	e3000	e4400	5140	14200	21500	5630	3390
2	3500	4730	e3800	e2600	e3000	e2800	e4600	4890	20600	19800	5520	3660
3	3580	4780	e4000	e2300	e2900	e2700	e4500	5280	30200	18900	5090	4720
4	3480	4760	e4200	e2400	e3500	e3000	e4800	5220	36800	18200	4680	4450
5	3450	4790	e4400	e2300	e4000	e3100	e5200	5620	41300	16700	4530	4180
6	3450	4810	e4400	e2400	e4200	e3100	e5200	6500	42600	14800	4580	4000
7	3470	4870	e4300	e3000	e4200	e3200	e5200	6340	35200	13300	4670	3790
8	3490	4870	e4500	e4000	e4200	e3200	e5400	6890	29000	12400	4670	3800
9	3590	4780	e4500	e4200	e4200	e3200	e5500	7670	28300	11600	4740	4210
10	3710	4730	e4500	e4200	e4200	e3200	e5600	8230	33200	10700	5020	4400
11	3810	4660	e4500	e4200	e4400	e3200	e5600	7910	32700	9830	4800	4620
12	3850	4710	e4500	e4400	e4400	e2800	e5600	7460	30300	9180	5000	4660
13	3940	4820	e4400	e4600	e4400	e2700	5610	7140	26500	8660	5000	4710
14	4020	4910	e4300	e4600	e4400	e3000	5500	6560	22500	8080	4890	4960
15	4090	4800	e4300	e4400	e4400	e3400	5350	6120	19200	7360	4510	4750
16	4110	4760	e4200	e4300	e4300	e3300	5140	5870	17100	6710	4140	4520
17	4140	4720	e4400	e4300	e4400	e3200	5120	5650	15800	6570	3790	4440
18	4160	4710	e4300	e4300	e4500	e3200	5240	6370	15600	7690	3400	4330
19	4390	4700	e4200	e4300	e4600	e3200	6080	8980	17600	6760	3220	4280
20	4530	4710	e4200	e4200	e4600	e3200	7660	10100	20700	6580	3000	4290
21	4560	4790	e4200	e4200	e4600	e3200	8000	9960	24200	6650	2880	4220
22	4460	4860	e4100	e4200	e4600	e3100	7580	10200	28700	6670	2810	4330
23	4420	4890	e3800	e4200	e4700	e3000	6720	14700	27100	6710	3910	4330
24	4580	4840	e3600	e4200	e4800	e3100	6250	21800	23600	6770	3400	4380
25	4660	4820	e3100	e4200	e4800	e3400	5860	25500	23800	6760	3290	4480
26	4620	4820	e3100	e4200	e4400	e3600	5630	22800	23900	6440	3590	4520
27	4580	e4400	e3000	e4100	e4000	e3600	5510	18700	23800	6210	3260	4530
28	4540	e3600	e3100	e4100	e3400	e3600	5500	15900	24100	6170	3400	4550
29	4650	e3300	e3200	e4000	---	e3800	5410	13800	23600	5940	3460	4600
30	4820	e3300	e3300	e3800	---	e4000	5270	12300	22800	5780	3360	4530
31	4780	---	e3100	e3600	---	e4200	---	12300	---	5740	3340	---
TOTAL	126890	138980	123100	118500	117500	100300	169030	311900	775000	305160	127580	130630
MEAN	4093	4633	3971	3823	4196	3235	5634	10060	25830	9844	4115	4354
MAX	4820	4910	4500	4600	4800	4200	8000	25500	42600	21500	5630	4960
MIN	3450	3300	3000	2300	2900	2700	4400	4890	14200	5740	2810	3390
AC-FT	251700	275700	244200	235000	233100	198900	335300	618700	1537000	605300	253100	259100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 2002, BY WATER YEAR (WY)*

MEAN	8304	7350	5961	5733	6867	10940	10330	18300	38840	23040	8725	7155
MAX	29130	12150	9594	13110	17750	25980	39160	38100	77280	55000	20470	16000
(WY)	1924	1924	1976	1925	1971	1972	1924	1928	1918	1917	1912	1941
MIN	3726	3700	3019	2087	2702	3235	2821	5409	11580	3311	1602	2389
(WY)	1922	1922	1961	1937	1936	2002	1961	1961	1919	1919	1961	1934

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1911 - 2002*	
ANNUAL TOTAL	2208360		2544570			
ANNUAL MEAN	6050		6971		12640	
HIGHEST ANNUAL MEAN					21250	1924
LOWEST ANNUAL MEAN					5814	1934
HIGHEST DAILY MEAN	23900	Jun 17	42600	Jun 6	142000	Jun 21 1921
LOWEST DAILY MEAN	1010	Aug 26	2300	Jan 3	570	May 17 1961
ANNUAL SEVEN-DAY MINIMUM	1060	Aug 23	2530	Jan 1	1010	Aug 8 1961
MAXIMUM PEAK FLOW			43600	Jun 6	a159000	Jun 21 1921
MAXIMUM PEAK STAGE			12.11	Jun 6	b24.03	Mar 6 1994
INSTANTANEOUS LOW FLOW			2300	Jan 3	c470	May 17 1961
ANNUAL RUNOFF (AC-FT)	4380000		5047000		9159000	
10 PERCENT EXCEEDS	12300		16200		28400	
50 PERCENT EXCEEDS	4820		4560		8060	
90 PERCENT EXCEEDS	2920		3200		4130	
90 PERCENT EXCEEDS	2920		3200		4120	

SUMMARY STATISTICS	WATER YEARS 1911 - 1965**		WATER YEARS 1967 - 2002***	
ANNUAL MEAN	12890		12400	
HIGHEST ANNUAL MEAN	21250	1924	19150	1997
LOWEST ANNUAL MEAN	5814	1934	6387	2001
HIGHEST DAILY MEAN	142000	Jun 21 1921	104000	May 23 1978
LOWEST DAILY MEAN	570	May 17 1961	800	Jan 2 1989
ANNUAL SEVEN-DAY MINIMUM	1010	Aug 8 1961	1060	Aug 23 2001
MAXIMUM PEAK FLOW	a159000	Jun 21 1921	f111000	May 23 1978
MAXIMUM PEAK STAGE	d21.85	Mar 22 1947	b24.03	Mar 6 1994
INSTANTANEOUS LOW FLOW	c470	May 17 1961	470	May 17 1961
ANNUAL RUNOFF (AC-FT)	9341000		8983000	
10 PERCENT EXCEEDS	29900		26700	
50 PERCENT EXCEEDS	7690		8610	
90 PERCENT EXCEEDS	3820		4800	

*--During period of operation 1911-31, 1934-current year. Published as "at Intake" 1911-31.
**--Prior to Bighorn Lake reaching operational level.
***-- After Bighorn Lake reached operational level.
a--Gage height, 12.6 ft, site and datum then in use.
b--Backwater from ice.
c--Gage height, 2.73 ft, site and datum then in use.
d--Backwater from ice, site and datum then in use.
e--Estimated.
f--Gage height, 20.02 ft.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1948 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1964 to September 1981.
WATER TEMPERATURE: January 1951 to September 1985.
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1981, October 1982 to September 1991, seasonal records only from October 1991 to current year .

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of District office. Prior to July 1972, sediment sampling and record computation under supervision of U.S. Army Corps of Engineers. Samples were collected this year as part of the National Water-Quality Assessment Program (NAWQA) for the Yellowstone River study unit under the direction of the Wyoming District.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1965-81): Maximum daily, 1,220 microsiemens per centimeter (µS/cm) at 25.0°C, Apr. 6, 1979; minimum daily, 261 µS/cm at 25.0°C, June 4, 1966.
WATER TEMPERATURE (water years 1951-85): Maximum, 29.0°C July 23, 1960; minimum, 0.0°C on many days during winter.
SEDIMENT CONCENTRATION: Maximum daily mean, 26,800 mg/L May 8, 1975; minimum daily mean, 8 mg/L Jan. 9, 1973.
SEDIMENT LOAD: Maximum daily, 3,030,000 tons May 8, 1975; minimum daily, 63 tons Jan. 2, 1989.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATION (seasonal records): Maximum daily mean, 11,300 mg/L, Sept. 3; minimum daily mean, 29 mg/L, Oct. 8.
SEDIMENT LOAD (seasonal records): Maximum daily, 320,000 tons, June 5; minimum daily, 274 tons, Oct. 8.

06329500 YELLOWSTONE RIVER NEAR SIDNEY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)
OCT 2001												
23...	1500	4410	696	11.1	102	8.5	700	2.0	7.5	179	163	195
NOV												
29...	1600	E3300	702	14.3	106	7.6	842	-3.0	.0	194	218	266
DEC												
13...	0800	E4400	706	14.0	104	8.2	800	-12.0	.0	187	178	217
JAN 2002												
17...	0930	E4300	634	12.8	106	8.3	752	-10.0	.0	176	160	195
FEB												
21...	0930	E4600	724	9.1	66	8.4	752	1.5	.0	168	154	188
MAR												
12...	1200	E2800	702	13.3	99	8.2	917	9.0	.0	208	184	224
MAY												
15...	1500	6050	708	10.0	110	8.7	631	16.5	16.0	137	127	145
JUN												
11...	1430	32400	--	--	--	7.7	--	16.0	--	64	58	70
JUL												
01...	1500	21400	700	8.4	109	8.2	235	26.5	24.0	66	59	72
AUG												
01...	1300	5590	718	8.5	102	8.5	556	19.0	21.0	140	128	156
SEP												
21...	1100	4160	705	8.2	84	8.3	771	10.5	13.0	E155	146	168

DATE	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001												
23...	0	9.77	181	<.04	.32	.24	E.007	<.02	.036	93	77	917
NOV												
29...	0	14.8	233	E.02	.27	.40	E.005	<.02	.024	87	57	E508
DEC												
13...	0	12.7	220	E.03	.26	.52	.008	<.02	.020	84	33	E392
JAN 2002												
17...	0	11.3	198	.09	.31	.61	E.007	E.01	.020	90	30	E348
FEB												
21...	0	11.4	211	E.03	.21	.48	<.008	<.02	.025	89	33	E410
MAR												
12...	0	18.4	262	.06	.34	.56	E.005	<.02	.023	96	55	E416
MAY												
15...	5	9.93	170	<.04	.66	.06	E.005	<.02	.105	93	115	1880
JUN												
11...	0	2.93	36.7	<.04	.95	.20	E.005	E.01	.52	70	934	81800
JUL												
01...	0	3.37	41.0	<.04	.46	E.04	<.008	<.02	.193	49	260	15000
AUG												
01...	0	8.18	133	<.04	.55	.44	.010	.02	.180	98	139	2100
SEP												
21...	5	11.6	216	<.04	.57	<.05	<.008	<.02	.112	95	118	1330

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)
OCT 2001										
02...	0715	3460	--	16.0	16.5	73	73	682	<1	<1
NOV										
07...	1615	4870	785	--	5.0	85	44	579	--	--
APR 2002										
17...	1430	5120	820	--	11.0	94	177	2450	--	--
MAY										
20...	1845	10300	1920	24.5	16.5	77	566	15700	<1	7
JUN										
06...	1230	43200	202	21.0	16.0	69	1760	205000	<1	4
12...	1030	30400	233	24.0	15.0	57	794	65200	<1	5
JUL										
09...	1140	11600	328	--	25.0	84	650	20400	--	--
AUG										
15...	1330	4490	690	--	19.0	96	202	2450	<1	<1

E--Estimated.

06329500 YELLOWSTONE RIVER NEAR SIDNEY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)	BED MAT. SIEVE DIAM. % FINER THAN 64.0 MM (80174)
OCT 2001									
02...	21	84	100	100	--	--	--	--	--
MAY 2002									
20...	91	97	97	97	97	97	100	--	--
JUN									
06...	61	67	68	68	68	73	94	100	--
12...	55	58	59	59	60	61	80	82	100
AUG									
15...	2	69	86	86	86	87	93	100	--

DATE	TIME	HARDNESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKALINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
AUG 2002											
01...	1300	180	44.5	16.0	3.21	1	44.6	140	8.18	11.6	133
SEP											
21...	1100	240	54.4	24.7	4.00	2	69.9	E155	11.6	6.23	216

DATE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHROMIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
AUG 2002										
01...	.46	5130	340	8	<.1	2.1	5.8	3	6	14
SEP										
21...	.65	5330	475	6	E.1	1.3	4.3	2	6	10

DATE	TIME	2,6-DIETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	ACETOCHLOR, WATER FLTRD REC (UG/L) (49260)	ALACHLOR, WATER, DISS, REC, (UG/L) (46342)	ALPHA BHC DIS-SOLVED (UG/L) (34253)	ATRAZINE, WATER, DISS, REC (UG/L) (39632)	BENFLURALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BUTYLATE, WATER, DISS, REC (UG/L) (04028)	CARBARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBOFURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLORPYRIFOS DIS-SOLVED (UG/L) (38933)
NOV 2001											
29...	1600	<.002	<.004	<.002	<.005	E.004	<.010	<.002	<.041	<.025	<.005
JAN 2002											
17...	0930	<.006	<.006	<.004	<.005	E.007	<.010	<.002	<.041	<.020	<.005
MAR											
12...	1200	<.006	.991	<.004	<.005	.394	<.010	<.002	<.041	<.020	<.005
MAY											
15...	1500	<.006	<.006	<.004	<.005	.008	<.010	<.002	<.041	<.020	<.005
JUN											
11...	1430	<.006	<.006	<.004	<.005	<.007	<.010	<.002	<.041	--	<.005
JUL											
01...	1500	<.006	<.006	<.004	<.005	.011	<.010	<.002	<.041	<.020	<.005
AUG											
01...	1300	<.006	<.006	<.004	<.005	.010	<.010	<.002	<.041	<.020	<.005
SEP											
21...	1100	<.006	<.006	<.004	<.005	E.006	<.010	<.002	<.041	<.020	<.005

E--Estimated.

06329500 YELLOWSTONE RIVER NEAR SIDNEY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	CYANA-ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	DIAZ-INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)
NOV 2001											
29...	<.018	<.003	<.006	99.1	<.005	<.005	<.02	<.002	<.009	<.005	<.003
JAN 2002											
17...	<.018	<.003	E.003	110	<.005	<.005	<.02	<.002	<.009	<.005	<.003
MAR											
12...	<.018	<.003	E.004	111	<.005	<.005	<.02	<.002	<.009	<.005	<.003
MAY											
15...	<.018	<.003	<.006	115	<.005	<.005	<.02	<.002	<.009	<.005	<.003
JUN											
11...	<.018	<.003	<.006	97.5	<.005	<.005	<.02	<.002	<.009	<.005	<.003
JUL											
01...	<.018	<.003	<.006	112	<.005	<.005	<.02	<.002	<.009	<.005	<.003
AUG											
01...	<.018	<.003	<.006	102	<.005	<.005	<.02	<.002	<.009	<.005	<.003
SEP											
21...	<.018	<.003	E.003	102	<.005	<.005	<.02	<.002	<.009	<.005	<.003

DATE	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	LINDANE DIS-SOLVED (UG/L) (39341)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA-THION, DIS-SOLVED (UG/L) (39532)	METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO-LACHLOR WATER DISSOLV (UG/L) (39415)	METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	P,P' DDE DISSOLV (UG/L) (34653)
NOV 2001											
29...	85.5	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003
JAN 2002											
17...	98.3	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003
MAR											
12...	90.3	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003
MAY											
15...	98.2	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003
JUN											
11...	94.1	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003
JUL											
01...	102	<.004	<.035	<.027	<.050	<.006	E.007	<.006	<.002	<.007	<.003
AUG											
01...	92.7	<.004	<.035	<.027	<.050	<.006	E.007	<.006	<.002	<.007	<.003
SEP											
21...	93.0	<.004	<.035	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003

DATE	PARA-THION, DIS-SOLVED (UG/L) (39542)	PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO-METON, WATER, DISS, REC (UG/L) (04037)	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)
NOV 2001											
29...	<.007	<.002	<.010	<.006	<.011	M	<.004	<.010	<.011	<.02	<.011
JAN 2002											
17...	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005
MAR											
12...	<.010	<.004	<.022	<.006	<.011	E.01	<.004	<.010	<.011	<.02	<.005
MAY											
15...	<.010	<.004	<.022	<.006	<.011	E.01	<.004	<.010	<.011	<.02	<.005
JUN											
11...	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005
JUL											
01...	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005
AUG											
01...	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005
SEP											
21...	<.010	<.004	<.022	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005

E--Estimated.
M--Presence verified, not quantified

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TER-BUTHYL-AZINE, WATER, DISS, REC (UG/L) (04022)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
NOV 2001							
29...	<.02	<.034	<.02	U	<.005	<.002	<.009
JAN 2002							
17...	<.02	<.034	<.02	U	<.005	<.002	<.009
MAR							
12...	<.02	<.034	<.02	U	<.005	<.002	<.009
MAY							
15...	<.02	<.034	<.02	--	<.005	<.002	<.009
JUN							
11...	<.02	<.034	<.02	--	<.005	.003	<.009
JUL							
01...	<.02	<.034	<.02	--	<.005	.004	<.009
AUG							
01...	<.02	<.034	<.02	--	<.005	<.002	<.009
SEP							
21...	<.02	<.034	<.02	--	<.005	.006	<.009

U--Analyzed for, not detected

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	52	486	44	563							46	373
2	68	644	45	574							48	363
3	49	473	44	568							51	372
4	34	320	43	552							54	437
5	30	279	43	556							56	469
6	30	280	43	558							60	502
7	30	281	46	605							85	734
8	29	274	77	1010							140	1210
9	30	291	71	917							128	1110
10	37	370	70	895							86	743
11	49	505	69	868							57	492
12	55	572	68	865							60	454
13	53	564	67	872							53	386
14	50	543	65	861							85	689
15	46	508	61	791							216	1980
16	43	477	55	708							355	3160
17	40	447	51	650							398	3440
18	37	416	52	661							455	3930
19	36	427	55	698							475	4100
20	40	489	58	738							362	3130
21	51	627	60	776							403	3480
22	70	843	61	800							196	1640
23	78	930	61	805							103	834
24	55	680	62	810							48	402
25	39	491	66	859							54	496
26	36	449	69	898							81	787
27	37	458	82	974							135	1310
28	39	478	90	875							142	1380
29	40	502	92	820							250	2560
30	41	533	92	820							349	3770
31	42	543									352	3990
TOTAL	---	15180	---	22947							---	48723

06329500 YELLOWSTONE RIVER NEAR SIDNEY--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	311	3690	179	2480	330	12600	295	17100	136	2070	592	5420
2	203	2520	310	4090	1100	61300	225	12100	165	2460	1000	9890
3	175	2130	217	3090	2440	199000	202	10300	160	2200	11300	144000
4	210	2720	161	2270	2640	262000	195	9580	118	1490	9200	111000
5	208	2920	160	2430	2870	320000	218	9860	86	1050	9900	112000
6	256	3590	165	2900	1850	213000	255	10200	80	990	6200	66900
7	349	4900	140	2400	1200	114000	310	11100	85	1070	3300	33800
8	310	4520	177	3290	860	67400	448	15000	261	3290	2500	25700
9	1280	19000	260	5380	1470	112000	655	20500	675	8650	3080	35000
10	870	13200	980	21800	1590	143000	701	20300	590	7990	2450	29100
11	905	13700	1020	21800	1050	92600	453	12000	492	6380	1980	24700
12	1080	16300	350	7050	855	69900	245	6070	440	5930	1270	16000
13	480	7270	227	4370	720	51500	140	3270	381	5140	970	12300
14	407	6050	167	2960	640	38800	109	2380	300	3960	1030	13800
15	364	5260	123	2030	605	31400	95	1890	210	2560	760	9740
16	255	3540	105	1660	486	22400	89	1610	152	1700	420	5120
17	175	2420	76	1160	580	24800	360	6390	148	1510	210	2520
18	161	2280	84	1450	405	17100	1200	24900	130	1190	146	1710
19	390	6400	282	6840	500	23700	785	14300	100	869	147	1700
20	1980	40900	254	6900	580	32500	405	7200	70	566	159	1840
21	1280	27700	540	14500	740	48400	365	6550	49	380	128	1460
22	950	19400	446	12300	918	71000	346	6230	46	349	217	2540
23	850	15400	1660	65800	750	54900	335	6070	240	2530	294	3440
24	766	12900	3320	195000	603	38500	315	5760	51	468	235	2780
25	570	9020	2800	193000	728	46800	288	5260	120	1070	170	2060
26	333	5060	1460	90000	780	50400	233	4050	865	8380	123	1500
27	262	3900	1000	50400	540	34700	174	2920	880	7730	99	1210
28	232	3450	1030	44200	430	28000	133	2220	710	6520	84	1030
29	205	2990	415	15500	335	21300	107	1720	470	4390	78	968
30	171	2430	285	9480	450	27600	94	1470	395	3590	75	917
31	---	---	280	9310	---	---	100	1550	572	5160	---	---
TOTAL	---	265560	---	805840	---	2330600	---	259850	---	101632	---	680145

SMALLER RESERVOIRS IN MISSOURI RIVER BASIN IN MONTANA

All elevations listed for the following reservoirs are referenced to the National Geodetic Vertical Datum of 1929.

06012000 LIMA RESERVOIR--Lat 44°39'16", long 112°21'54" (NAD 27), in SW$^1/_4$ sec.32, T.13 S., R.6 W., Beaverhead County, Hydrologic Unit 10020001, at Lima Dam on Red Rock River, 7 mi northwest of Monida, and at river mile 2,542.2. DRAINAGE AREA, 570 mi^2. PERIOD OF RECORD, April 1940 to current year. Records prior to October 1950, published only in WSP 1309, and those for April 1955, published only in WSP 1729. Records of daily elevations available in files of Helena district office. Datum of gage is at sea level (levels by Montana Department of Natural Resources and Conservation).

Reservoir is formed by earthfill dam with concrete spillway completed in 1902. Usable capacity, 84,050 acre-ft between elevation 6,537.30 ft, bottom of tunnel, and 6,582.7 ft, spillway crest. No dead storage. Figures given herein represent usable contents. Water is used for irrigation, flood control, and recreation. Records furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 85,870 acre-ft, May 27, 28, June 14, 15, 1984, elevation, 6,582.98 ft; no usable storage Sept. 20-26, 1979, Sept. 13-30, 1987, Oct. 1987, July 18 to Sept. 30, 1992.

EXTREMES FOR CURRENT YEAR: Maximum contents, 28,600 acre-ft, May 26, elevation 6,569.50 ft; minimum contents, 4,010 acre-ft, July 11, 13, elevation, 6,552.59 ft.

06038000 HEBGEN LAKE.--Lat 44°51'51", long 111°20'09" (NAD 27), in SW$^1/_4$NW$^1/_4$ sec.23, T.11 S., R.3 E., Gallatin County, Hydrologic Unit 10020007, at Hebgen Dam on Madison River, 18 mi northwest of West Yellowstone, and at river mile 103. DRAINAGE AREA, 904 mi^2. PERIOD OF RECORD, January 1936 to current year. Records prior to October 1939, published only in WSP 1309. Figures of contents published in WSP 1629, 1709, and 1729 have been found to be in error and should not be used. Prior to Oct. 1, 1949, published as Hebgen Reservoir near West Yellowstone. Records of daily elevations since October 1955 on file in Helena district office. Datum of gage is at sea level (levels by The Montana Power Co.). Prior to earthquake of Aug. 17, 1959, datum of gage was 9.74 ft higher, also at sea level. Reservoir is formed by earthfill dam with concrete core and spillway completed in 1915, repaired in 1960 following severe earthquake of Aug. 17, 1959, which lowered dam 9.74 ft and deformed reservoir area. Subsequent usable capacity, 378,800 acre-ft, between elevation 6,473.00 ft, bottom of outlet tower, and 6,534.87 ft, spillway crest. Dead storage, 7,340 acre-ft below elevation 6,473.00 ft. Prior to Aug. 17, 1959, usable capacity, 344,700 acre-ft between 6,483.11 ft, bottom of outlet tower, and 6,544.61 ft, spillway crest. Observations of reservoir level prior and subsequent to earthquake indicate smaller increases in capacity than indicated by new capacity table. Figures given herein represent usable contents. Water is used for power and recreation. Records furnished by The Montana Power Co. REVISED RECORDS, WSP 1916: 1959-60.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 380,500 acre-ft, July 21, 1987, elevation, 6,535.0 ft; minimum monthend, 670 acre-ft, Dec. 31, 1936, by capacity table used prior to August 1959.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 376,400 acre-ft, June 27, elevation, 6,534.68 ft; minimum observed, 279,200 acre-ft, Apr. 5, elevation, 6,526.47 ft.

06040500 ENNIS LAKE.--Lat 45°28'12", long 111°38'15" (NAD 27), in NW$^1/_4$SW$^1/_4$ sec.20, T.4 S., R.1 E., Madison County, Hydrologic Unit 10020007, at Madison Dam on Madison River, 5 mi northeast of McAllister, and at river mile 40.3. DRAINAGE AREA, 2,181 mi^2. PERIOD OF RECORD, January 1936 to September 1975 (total contents), October 1975 to current year (usable contents). Records prior to October l939, published only in WSP 1309. Prior to 1949, published as Madison Reservoir near McAllister. Records of daily elevations since October 1955 on file in Helena district office. Datum of gage is at Montana Power Company datum (levels by The Montana Power Co.).

Reservoir is formed by timber crib dam completed in 1900. Usable capacity, 41,020 acre-ft between elevation 4,826.5 ft, bottom of penstock, and 4,841.5 ft, top of flashboard. Dead storage, 1,040 acre-ft below elevation 4,826.5 ft. Not normally drawn below 4,831.0 ft, 6,810 acre-ft. Figures given herein represent usable contents. Water is used for power and recreation. Records furnished by PPL EnergyPlus, LLC.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 40,830 acre-ft, June 20, 1968, elevation, 4,841.45 ft; minimum observed, 2,600 acre-ft, Mar. 31, 1937, elevation, 4,828.8 ft.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 37,700 acre-ft, May 31, June 23, 24, elevation, 4,840.90 ft; minimum observed, 27,420 acre-ft, Feb. 25, elevation, 4,838.09 ft.

06064500 LAKE HELENA.--Lat 46°45'58", long 111°53'10" (NAD 27), in SE$^1/_4$SW$^1/_4$ sec. 29, T.12 N., R.2 W., Lewis and Clark County, Hydrologic Unit 10030101, at Hauser Dam on Missouri River, 13 mi northeast of Helena, and at river mile 2,239.1. DRAINAGE AREA, 610 mi^2 above dam and control works on Prickly Pear Creek. PERIOD OF RECORD, May 1945 to current year. April to July 1953 scattered daily elevation and contents, published in WSP 1320-B. May to June 1964 daily elevations and contents, published in WSP 1840-B. Records of daily elevations since October 1955 on file in Helena district office. Nonrecording gage at Hauser Dam read hourly. Datum of gage is at sea level (levels by The Montana Power Co.).

Gage heights collected at Hauser Dam are effective on Lake Helena at control dam. Prior to April 1945, contents of Lake Helena included with records of Hauser Lake. Since that date, a dam and control works has separated the two lakes to allow independent regulation of Lake Helena, if needed. Usable capacity, 12,710 acre-ft, between elevation 3,624.00 ft, bottom of control works, and 3,635.00 ft, top of flashboards. No dead storage. Figures given herein represent usable contents. Water is used for recreation, wildlife, and power production through Hauser Dam. Records furnished by PPL EnergyPlus, LLC.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 11,810 acre-ft, Aug. 2, 1960, Dec. 10, 1962, July 19, 20, Sept. 4, 1963, Aug. 15, 1968, Apr. 6, 1973, June 26, 1980, May 14-16, 1991, elevation, 3,635.60 ft; no storage Mar. 29 to Apr. 7, 1958, Feb. 12, 20, 1962, May 4-10, 1979.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 11,360 acre-ft, on many days, elevation, 3,635.40 ft; minimum observed, 10,680 acre-ft, many days, elevation, 3,635.10 ft.

SMALLER RESERVOIRS IN MISSOURI RIVER BASIN IN MONTANA--Continued

06065000 HAUSER LAKE.--Lat 46°45'58", long 111°53'10" (NAD 27), in SE$^1/_4$SW$^1/_4$ sec.29, T.12 N., R.2 W., Lewis and Clark County, Hydrologic Unit 10030101, at Hauser Dam on Missouri River, 1.6 mi downstream from Prickly Pear Creek, 13 mi northeast of Helena, and at river mile 2,226.4. DRAINAGE AREA, 16,876 mi^2. PERIOD OF RECORD, January 1936 to current year. Records prior to October 1939, published only in WSP 1309. April to July 1953 scattered daily elevations and contents, published in WSP 1320-B. May to June 1964 daily elevations and contents, published in WSP 1840-B. Monthend contents prior to May 1945 include contents of Lake Helena, excluded thereafter. Records of daily elevations since October 1955 on file in Helena district office. Nonrecording gage read hourly. Datum of gage is at sea level (levels by The Montana Power Co.).

Reservoir is formed by concrete dam completed in 1907; separated from Lake Helena in April 1945. Usable contents, 61,870 acre-ft, between elevation 3,617.00 ft, bottom of tunnel, and 3,635.00 ft top of flashboards. Dead storage, 46,810 acre-ft below elevation 3,617.00 ft. Prior to Nov. 28, 1949, usable capacity, 52,090 acre-ft at elevation 3,635.00 ft, decrease caused by construction of Canyon Ferry Dam in backwater of Hauser Dam. Not normally drawn below 3,621.00 ft, 8,870 acre-ft. Capacity above elevation 3625.0 updated in 1990. Figures given herein represent usable contents. Water is used for power and recreation. Records furnished by PPL EnergyPlus, LLC. REVISED RECORDS, WSP 1729: 1949-57.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 65,440 acre-ft, May 14-16, 1991, elevation, 3,635.60 ft; no storage Jan. 31, Feb. 29, 1936.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 64,250 acre-ft, on many days, elevation, 3,635.40 ft; minimum observed, 62,460 acre-ft, many days, elevation, 3,635.10 ft.

06066000 HOLTER LAKE.--Lat 46°59'28", long 112°00'17" (NAD 27), on line between SE$^1/_4$ sec.5 and NE$^1/_4$ sec.8, T.14 N., R.3 W., Lewis and Clark County, Hydrologic Unit 10030101, at Holter Dam on Missouri River, 3.3 mi east of Wolf Creek, and at river mile 2,211.1. DRAINAGE AREA, 17,149 mi^2. PERIOD OF RECORD, January 1936 to current year. Records prior to October 1939, published only in WSP 1309. April to July 1953 scattered daily elevations and contents, published in WSP 1320-B. May to June 1964 daily elevations and contents, published in WSP 1840-B. Records of daily elevations since October 1955 on file in Helena district office. Prior to 1950, published as Holter Reservoir near Wolf Creek. Nonrecording gage read three times daily. Datum of gage is at sea level (levels by The Montana Power Co.).

Reservoir is formed by concrete dam completed in 1918. Usable capacity, 81,920 acre-ft between elevation 3,543.00 ft, bottom of tunnel, and 3,564.00 ft, top of flashboards. Dead storage, 158,500 acre-ft below elevation 3,543.00 ft. Not normally drawn below 3,548.00 ft, 16,660 acre-ft. Figures given herein represent usable contents. Water is used for power and recreation. Records furnished by PPL EnergyPlus, LLC.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 85,250 acre-ft, June 19, 1970, elevation, 3,564.70 ft; no storage Feb. 29, Dec. 31, 1936.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 82,160 acre-ft, June 10, elevation, 3,564.05 ft; minimum observed, 79,280 acre-ft, Oct. 6, elevation, 3,563.44 ft.

06079500 GIBSON RESERVOIR.--Lat 47°36'09", long 112°45'39" (NAD 27), in NE$^1/_4$NW$^1/_4$ SE$^1/_4$ sec.4, T.21 N., R.9 W., Teton County, Hydrologic Unit 10030104, at Gibson Dam on Sun River, 19 mi northwest of Augusta, and at river mile 100.8. DRAINAGE AREA, 575 mi^2. PERIOD OF RECORD, January 1930 to current year. Records prior to October 1940, published only in WSP 1309. April to July 1953 scattered daily elevations and contents, published in WSP 1320-B. May to June 1964 daily elevations and contents, published in WSP 1840-B. Nonrecording gage read daily. Records of daily elevations on file in Helena district office. Datum of gage is at sea level (levels by Bureau of Reclamation).

Reservoir is formed by concrete dam with glory-hole spillway completed in 1929. usable capacity, 96,480 acre-ft, between elevation 4,557.5 ft, bottom of outlet, and 4,724.0 ft, top of glory-hole, by capacity table effective Oct. 1, 1997; see previous reports for superseded figures. Water is used for irrigation and recreation. Records furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD: Maximum contents, 116,300 acre-ft, June 8, 1964, elevation 4,732.23 ft, from floodmark, of which 11,600 acre-ft was uncontrolled storage, by capacity table used Oct. 1, 1965 to July 30, 1975; minimum observed, 11 acre-ft, Oct. 13, 1936, elevation, 4,560.9 ft by capacity table used prior to 1939.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 96,480 acre-ft, June 23, elevation, 4,724.00 ft; minimum, 7,880 acre-ft, Oct. 1, elevation, 4,617.21 ft.

06136500 FRESNO RESERVOIR.--Lat 48°36'304", long 109°56'45" (NAD 27), in SE$^1/_4$ sec, 19, T. 33 N., R.14E, Hill County, Hydrologic Unit 10050002, at dam on Milk River, 13. mi west of Havre and at river mile 437.3. DRAINAGE AREA., 3,766 mi ^{2} of which 670 mi^2 is probably noncontributing. PERIOD OF RECORD, January 1, 1940 to current year. Records prior to September 1940, published only in WSP 1309. March to May 1952 daily elevations and contents published in WSP 1260-B. April to July 1953 scattered daily elevations and contents published in WSP 1320-B. Records of daily contents in files of Helena district office. Nonrecording gage read daily. Datum of gage is at sea level (levels by Bureau of Reclamation).

Reservoir is formed by earthfill dam with concrete spillway completed in 1939. Usable capacity, 103,000 acre-ft, between elevation 2,530.00 ft, invert of tunnel inlet, and 2,575.00 ft, spillway crest, from capacity table effective Feb. 1, 1983. Elevation of maximum water surface is 2,592.93 ft, 224,700 acre-ft. Crest of dam is 2,596.10 ft. There are no gates in the spillway. Dead storage, 448 acre-ft, below elevation 2,530.00 ft. Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Bureau of Reclamation. REVISED RECORDS, WSP 1729: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 154,000 acre-ft, Apr. 3, 1952, elevation, 2,579.3 ft, of which 26,800 acre-ft was uncontrolled storage, capacity table then in use; no storage Feb. 18 to Mar. 6, 1950.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 100,700 acre-ft, June 19, elevation, 2,576.62 ft; minimum observed, 2,980 acre-ft, Apr. 4, elevation, 2,536.04 ft.

SMALLER RESERVOIRS IN MISSOURI RIVER BASIN IN MONTANA--Continued

06204000 MYSTIC LAKE.--Lat 45°13'30", long 109°45'36" (NAD 27), in sec.9, T.7 S., R.16 E., (unsurveyed), Stillwater County, Hydrologic Unit 10070005, at dam on West Rosebud Creek, 15 mi southwest of Roscoe, 25 mi southwest of Absarokee and at river mile 28.8. DRAINAGE AREA, 46.9 mi^2. PERIOD OF RECORD, January 1936 to current year. Records prior to September 1939, published only in WSP 1309. Record of daily elevations since October 1965 available in files of Helena district office. Water-stage recorder. Prior to October 1965, only monthend figures furnished. Datum of gage is at sea level (levels by The Montana Power Co.).

Reservoir is formed by thin-section reinforced concrete arch dam completed in 1925. Usable capacity, 21,000 acre-ft between elevation 7,612.00 ft, minimum operating level, and 7,673.50 ft, top of 3.5 ft stop logs. No dead storage. Figures given herein represent usable contents. Water is used for power development and recreation. Records furnished by PPL EnergyPlus, LLC. REVISED RECORDS, WSP 1916: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 21,130 acre-ft, July 10, 1983, elevation, 7,673.8 ft; no storage most days Mar. 23 to May 5, 1981, Apr. 10 to May 19, 1982, May 4,5, 1983, May 14, 1984, Mar. 23,26,27, 1986, Apr. 8-11, 1988, Apr. 18-20, 1999, Apr. 12 to May 1, 2000.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 20,990 acre-ft, July 17, 18, elevation, 7,673.47 ft; minimum observed, 23 acre-ft, May 13, elevation, 7,612.08 ft.

06307000 TONGUE RIVER RESERVOIR.--Lat 45°07'48" (NAD 27), long 106°46'13", in $SE^1/_4SE^1/_4NE^1/_4$ sec.13, T.8 W., R.40 E., Big Horn County, Hydrologic Unit 10090101, at dam on Tongue River, 4 mi upstream from Post Creek, 7 mi northeast of Decker, and at river mile 189.1. DRAINAGE AREA, 1,770 mi^2. PERIOD OF RECORD, December 1938 to current year. Record prior to September 1939, published only in WSP 1309 and those for January, February 1956, published only in WSP 1729. Nonrecording gage read most days. Datum of gage is at sea level (levels by Bureau of Reclamation) New capacity table effective September 1, 1996.

Reservoir is formed by earthfill dam with concrete spillway completed in May 1939. Total capacity, 79,070 acre-ft between elevation 3,374.4 ft, bottom of outlet, and 3,428.4 ft, spillway crest. Prior to October 1947, usable contents was 73,950 acre-ft at same elevations, due to sedimentation study. Dead storage, 711 acre-ft below elevation, 3,374.4 ft. Figures given herein represent usable contents. Water is used for irrigation. Records furnished by Montana Department of Natural Resources and Conservation. REVISED RECORDS, WSP 1309: 1947-50. WSP 1729: 1951, drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 79,500 acre-ft, June 21, 1999, elevation, 3,428.70 ft; no storage October 1939 to February 1940.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 46,110 acre-ft, June 12, elevation, 3,418.20 ft; minimum observed, 16,500 acre-ft, Oct. 1, elevation, 3,402.30 ft.

Monthend contents, in acre-feet, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date		Lima Reservoir	Hebgen Lake	Ennis Lake	Lake Helena	Hauser Lake
Oct.	31	7,400	313,300	33,580	11,130	63,660
Nov.	30	10,210	304,000	32,120	11,130	63,660
Dec.	31	12,110	295,900	30,660	11,130	63,660
Jan.	31	13,650	286,900	28,880	11,130	63,660
Feb.	28	14,950	283,000	27,810	11,130	63,660
Mar.	31	16,030	279,900	29,230	10,680	62,460
Apr.	30	23,540	290,900	27,810	11,130	63,660
May	31	27,720	338,000	37,700	10,900	63,060
June	30	6,130	374,800	36,570	10,900	63,060
July	31	4,040	349,400	36,570	11,130	63,660
Aug.	31	4,080	336,300	35,070	11,130	63,660
Sept.	30	4,260	324,400	35,820	11,130	63,660

Date		Holter Lake	Gibson Reservoir	Fresno Reservoir	Mystic Lake	Tongue River Reservoir
Oct.	31	81,250	13,080	14,510	13,030	b17,150
Nov.	30	81,100	18,260	11,720	8,810	19,370
Dec.	31	81,580	21,760	9,330	5,850	a19,940
Jan.	31	81,340	25,660	7,120	4,650	21,100
Feb.	28	81,340	29,020	5,330	3,520	22,540
Mar.	31	81,430	32,900	3,250	1,960	b22,620
Apr.	30	81,060	45,530	19,660	251	33,720
May	31	80,210	84,000	27,890	5,390	39,710
June	30	80,210	95,080	89,780	20,440	b42,720
July	31	81,100	60,590	48,790	20,560	b29,510
Aug.	31	81,060	25,050	38,440	18,230	a25,190
Sept.	30	81,200	26,210	43,890	17,600	26,080

a--Interpolated.
b--Figure of contents for first day of following month.

06334500 LITTLE MISSOURI RIVER AT CAMP CROOK, SD

LOCATION.--Lat 45°32'49", long 103°58'23" (NAD 27), in SW$^1/_4$ sec.2, T.18 N., R.1 E., Harding County, Hydrologic Unit 10110201, on left bank 15 ft upstream from bridge on State Highway 20 at east edge of Camp Crook.

DRAINAGE AREA.--1,970 mi^2, approximately.

PERIOD OF RECORD.--September 1903 to November 1906, May 1956 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1904. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,108.98 ft (NGVD 29). Sept. 2, 1903, to Nov. 30, 1906, nonrecording gage at site 0.5 mi upstream at different datum. May 1956 to Oct. 8, 1957, nonrecording gage at site 15 ft downstream, and Oct. 9, 1957, to Sept. 30, 1976, water-stage recorder at present site both at datum 2.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Small diversions upstream from station for irrigation. Satellite data-collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1952 reached a stage of about 18 ft, present datum, from local residents.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	4.8	e8.1	e2.1	e2.1	e4.6	e15	8.3	5.2	1.5	0.60	1.0
2	3.8	4.9	e7.9	e2.2	e2.3	e4.7	e17	7.7	5.7	1.5	0.72	0.99
3	3.8	4.9	e7.3	e2.3	e2.5	e5.0	e25	7.2	4.8	1.5	0.75	0.70
4	3.9	4.9	e7.1	e2.4	e2.7	e5.1	e26	7.3	3.6	1.6	0.70	0.64
5	3.9	4.9	e6.9	e2.5	e2.9	e4.6	e24	7.0	3.5	1.3	1.0	0.73
6	3.7	4.9	e7.0	e2.8	e3.1	e3.8	e22	6.9	3.1	1.1	1.2	0.75
7	5.5	5.0	e7.1	e3.2	e3.3	e3.0	21	7.0	3.0	1.1	0.90	1.2
8	6.4	4.9	e7.3	e3.4	e3.8	e2.8	21	8.2	3.1	1.1	1.6	1.5
9	6.4	6.8	e7.1	e3.4	e4.1	e2.8	19	7.7	3.3	1.1	1.1	1.8
10	6.1	9.1	e6.7	e3.3	e4.7	e3.1	18	7.5	7.1	0.88	0.99	2.2
11	5.3	7.5	e6.0	e3.2	e5.0	e4.0	16	7.0	10	0.94	1.0	2.0
12	5.5	6.4	e5.3	e3.1	e5.1	e5.3	16	6.8	5.7	0.85	0.86	1.6
13	5.4	6.1	e5.4	e3.0	e5.2	e7.2	13	6.2	4.5	0.80	0.85	2.0
14	5.1	5.9	e5.6	e2.8	e5.3	e9.8	11	5.6	4.5	0.72	0.84	1.9
15	5.1	5.5	e6.2	e2.6	e5.5	e10	11	5.5	4.1	0.76	1.0	1.9
16	4.9	5.2	e6.3	e2.5	e5.8	e9.2	9.9	5.6	3.4	0.74	0.82	1.7
17	4.9	5.4	e6.2	e2.4	e6.0	e8.1	9.5	5.5	2.6	0.74	0.78	1.5
18	4.7	5.6	e5.8	e2.3	e6.3	e7.2	11	5.2	3.2	1.9	0.79	1.2
19	4.7	e5.7	e5.3	e2.2	e6.8	e6.6	11	4.9	7.6	1.4	0.70	1.2
20	4.6	e7.4	e4.8	e2.3	e7.3	e5.6	8.7	4.6	17	1.5	0.73	1.0
21	4.7	e8.0	e4.3	e2.4	e8.0	e5.0	8.4	4.6	9.3	1.1	0.94	0.70
22	4.6	e8.0	e3.9	e2.6	e8.8	e4.9	9.3	5.1	8.5	0.97	1.1	0.79
23	5.0	e7.1	e3.4	e2.7	e7.0	e5.0	8.3	5.0	6.0	0.82	1.1	0.81
24	5.2	e7.4	e3.2	e2.9	e6.0	e5.3	9.6	5.9	6.2	0.70	1.2	0.72
25	5.1	e8.3	e2.8	e3.1	e5.1	e6.2	8.7	5.5	6.7	0.71	1.2	0.88
26	5.0	e7.7	e2.6	e3.3	e4.8	e7.4	9.3	5.4	4.4	0.68	1.3	0.93
27	4.9	e7.0	e2.6	e3.1	e4.6	e8.9	9.4	5.5	3.1	0.71	1.3	0.77
28	5.7	e6.8	e2.5	e2.8	e4.5	e9.8	9.7	5.2	2.6	0.85	1.2	0.93
29	5.3	e7.7	e2.4	e2.3	---	e10	8.8	5.3	2.5	0.75	1.2	1.1
30	4.9	e8.1	e2.3	e1.9	---	e11	8.3	5.3	1.6	0.65	1.4	0.84
31	4.6	---	e2.2	e2.0	---	e12	---	5.4	---	0.61	1.2	---
TOTAL	152.5	191.9	161.6	83.1	138.6	198.0	414.9	189.9	155.9	31.58	31.07	35.98
MEAN	4.919	6.397	5.213	2.681	4.950	6.387	13.83	6.126	5.197	1.019	1.002	1.199
MAX	6.4	9.1	8.1	3.4	8.8	12	26	8.3	17	1.9	1.6	2.2
MIN	3.7	4.8	2.2	1.9	2.1	2.8	8.3	4.6	1.6	0.61	0.60	0.64
AC-FT	302	381	321	165	275	393	823	377	309	63	62	71

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 1905, 1957 - 2002, BY WATER YEAR (WY)

MEAN	57.15	12.85	6.832	7.503	84.02	346.7	207.4	337.1	258.5	96.78	41.24	30.29
MAX	876	103	34.9	59.7	1112	2121	1198	1894	1107	961	537	244
(WY)	1972	1972	1972	1974	1996	1978	1971	1978	1967	1905	1906	1905
MIN	0.29	0.000	0.000	0.000	0.000	1.95	1.97	1.12	0.11	0.000	0.000	0.61
(WY)	1905	1905	1905	1905	1969	1992	1981	1992	1961	1961	1904	1958

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1904-1905, 1957-2002	
ANNUAL TOTAL	47285.0		1785.03			
ANNUAL MEAN	129.5		4.890		b124.3	
HIGHEST ANNUAL MEAN					492	1978
LOWEST ANNUAL MEAN					4.68	1961
HIGHEST DAILY MEAN	2000	Mar 10	26	Apr 4	8560	Mar 24 1978
LOWEST DAILY MEAN	1.7	Feb 11	0.60	Aug 1	c0.00	Jul 31 1904
ANNUAL SEVEN-DAY MINIMUM	1.8	Feb 7	0.68	Jul 29	0.00	Jul 31 1904
MAXIMUM PEAK FLOW			e46	Mar 28	9420	Mar 24 1978
MAXIMUM PEAK STAGE			a3.14	Mar 28	16.90	Mar 24 1978
ANNUAL RUNOFF (AC-FT)	93790		3540		90030	
10 PERCENT EXCEEDS	430		8.8		237	
50 PERCENT EXCEEDS	7.6		4.7		10	
90 PERCENT EXCEEDS	2.9		0.86		1.2	

a--Backwater from ice.
b--Median of annual mean discharges, 110 ft^3/s.
c--No flow at times in some years.
e--Estimated.

LITTLE MISSOURI RIVER BASIN

06336600 BEAVER CREEK NEAR TROTTERS, ND

LOCATION.--Lat 47°09'47", long 103°59'32" (NAD 27), in SW$^1/_4$SW$^1/_4$NE$^1/_4$ sec.33, T.143 N., R.105 W., Golden Valley County, Hydrologic Unit 10110204, on left bank 100 ft upstream from bridge on county road, 2.4 mi east of Montana-North Dakota State line, 13 mi southwest of Trotters, 17 mi north of Beach, 20 mi upstream from Elk Creek, and at river mile 27.
DRAINAGE AREA.--616 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORDS.--October 1977 to current year (seasonal records only since 1984).
REVISED RECORDS.--1982: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 2,371.96 ft (NGVD 29).
REMARKS.--Water-discharge records fair except those for estimated daily discharges, which are poor.
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,120 ft^3/s, June 9, gage height, 12.29 ft; minimum daily, no flow, Sept. 24-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					e1.4	e2.3	e20	7.0	2.6	15	2.7	0.10
2					e1.5	e1.9	e12	6.7	2.5	14	1.9	0.10
3					e1.7	e1.9	e10	6.6	2.7	13	1.2	0.14
4					e1.7	e2.0	e13	6.5	2.7	12	1.1	0.15
5					e1.8	e2.0	e14	6.5	2.8	12	0.90	0.13
6					e1.7	e2.1	19	6.5	2.6	10	1.0	0.13
7					e1.6	e2.1	17	6.6	2.1	11	0.97	0.15
8					e1.7	e2.2	17	7.0	1.9	15	0.93	0.17
9					e1.8	e2.1	19	7.7	439	70	0.74	0.19
10					e1.6	e2.3	14	8.1	293	84	0.63	0.20
11					e1.5	e2.5	11	7.7	132	36	0.44	0.20
12					e1.7	e2.7	11	7.4	87	23	0.31	0.15
13					e1.5	e4.2	10	7.1	70	16	0.28	0.13
14					e1.6	e5.3	9.5	6.5	62	12	0.25	0.30
15					e1.5	e7.0	9.6	6.1	56	9.2	0.19	0.40
16					e1.5	e8.3	9.4	5.5	49	7.7	0.14	0.18
17					e1.6	e7.5	9.1	5.3	44	25	0.08	0.10
18					e1.6	e5.9	9.8	5.1	39	24	0.24	0.13
19					e1.5	e3.9	10	4.6	37	15	0.31	0.14
20					e1.6	e3.2	9.7	4.3	33	9.2	0.27	0.04
21					e1.7	e4.7	9.7	4.0	30	7.0	0.23	0.08
22					e1.9	e5.9	9.1	3.8	29	5.8	0.16	0.09
23					e2.2	e4.4	8.9	3.8	28	5.1	0.13	0.08
24					e2.7	e3.4	8.6	3.9	33	4.2	0.09	0.00
25					e3.0	e2.9	7.9	3.6	29	3.7	0.06	0.00
26					e3.0	e2.5	7.6	3.7	24	3.4	0.12	0.00
27					e2.8	e15	7.3	3.6	21	3.1	0.17	0.00
28					e2.5	e61	7.3	3.4	19	3.1	0.13	0.00
29					---	e50	7.3	3.0	17	2.6	0.11	0.00
30					---	e38	7.2	2.7	17	2.5	0.13	0.00
31					---	e27	---	2.7	---	2.6	0.11	---
TOTAL					51.9	286.2	335.0	167.0	1607.9	476.2	16.02	3.48
MEAN					1.854	9.232	11.17	5.387	53.60	15.36	0.517	0.116
MAX					3.0	61	20	8.1	439	84	2.7	0.40
MIN					1.4	1.9	7.2	2.7	1.9	2.5	0.06	0.00
AC-FT					103	568	664	331	3190	945	32	6.9

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1983, AND SEASONS 1984 - 2002

MEAN	1.098	2.624	2.586	4.398	28.71	112.6	48.03	15.92	18.89	10.76	2.177	0.720
MAX	3.29	6.34	5.13	14.7	141	609	406	50.2	125	64.2	18.4	4.72
(WY)	1983	1983	1979	1983	1983	1978	1979	1999	1982	1997	1993	1986
MIN	0.006	0.010	0.032	0.000	0.000	1.21	1.11	1.05	0.12	0.000	0.000	0.000
(WY)	1982	1982	1982	1982	1989	1991	1991	1981	1992	1988	1985	1981

SUMMARY STATISTICS WATER YEARS AND SEASONS 1978 - 2002

ANNUAL MEAN	a33.28		
HIGHEST ANNUAL MEAN	a79.7		1978
LOWEST ANNUAL MEAN	a2.77		1981
HIGHEST DAILY MEAN	2500	Mar 22	1978
LOWEST DAILY MEAN	0.00	Aug 1	1981
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 10	1981
MAXIMUM PEAK FLOW	2720	Mar 29	1978
MAXIMUM PEAK STAGE	b19.27	Mar 22	1978
ANNUAL RUNOFF (AC-FT)	a24110		
10 PERCENT EXCEEDS	51		
50 PERCENT EXCEEDS	2.8		
90 PERCENT EXCEEDS	0.03		

a--Based on complete water years only (1978-83).
b--Backwater from ice.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1978 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND-ARD UNITS) (00403)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
APR											
10...	1130	15	7.8	7.8	1410	1420	4.5	0.5	320	56.0	44.0
JUL											
30...	1220	2.0	7.6	--	1990	2050	26.0	23.2	490	69.0	78.0

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)
APR											
10...	9.70	4	180	54	227	3.6	.20	510	38.4	968	941
JUL											
30...	15.0	6	290	55	330	14.0	.30	810	8.18	1500	1470

DATE	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
APR									
10...	<1.0	90	<1	30	40	<.10	<1	<1	740
JUL									
30...	1.0	90	1	50	70	<.10	2	2	980

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY

LOCATION.--Lat 48°59'44", long 115°10'43" (NAD 27), in NE$^1/_4$SW$^1/_4$SE$^1/_4$ sec.1, T.37 N., R.28 W., Lincoln County, Hydrologic Unit 17010101, 0.3 mi south of international boundary, in middle of old channel 1.9 mi upstream from Young Creek, and 6.4 mi north of Rexford.
PERIOD OF RECORD.--Water years 1972 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	LIGHT DEPTH TO 1% OF SURFACE LIGHT (FEET) (00034)	LIGHT INCID. 400-700NM INTENS. (U-EINS /SQM/S) (00200)	LIGHT, ATTENUATION COEFFICIENT (ALPHA/METER) (70971)	TRANSPARENCY SECCHI DISC, WATER, UNFLTRD (FEET) (49701)	BAROMETRIC PRESSURE (MM OF HG) (00025)	TEMPERATURE AIR (DEG C) (00020)
OCT 2001								
17...	1000	10	E35.0	291	.12	11.7	698	9.5
17...	1030	62	--	--	--	--	--	--
JUN 2002								
11...	1530	10	18.5	1520	.19	2.8	699	18.5
11...	1600	80	--	--	--	--	--	--
JUL								
16...	1530	10	57.5	1550	.07	8.1	697	25.5
16...	1600	145	--	--	--	--	--	--
AUG								
13...	1530	10	34.0	1830	.12	15.7	698	30.0
13...	1600	135	--	--	--	--	--	--
SEP								
18...	1030	10	38.0	893	.10	14.1	698	14.5
18...	1100	85	--	--	--	--	--	--

DATE	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	ORTHO-PHOSPHATE, DISSOLVED (MG/L AS P) (00671)	PHOSPHORUS TOTAL (MG/L AS P) (00665)
OCT 2001						
17...	2.9	<.015	.023	<.002	<.007	.005
17...	3.4	<.015	.023	<.002	<.007	E.003
JUN 2002						
11...	4.9	E.009	.159	<.002	<.007	.028
11...	4.5	<.015	.165	<.002	<.007	.060
JUL						
16...	4.1	E.010	.028	E.002	<.007	.007
16...	5.0	E.011	.204	.010	<.007	.021
AUG						
13...	2.5	<.015	<.013	<.002	<.007	E.002
13...	5.0	<.015	.210	E.002	<.007	.007
SEP						
18...	1.7	<.015	<.013	<.002	<.007	.004
18...	4.2	<.015	.131	<.002	<.007	.006

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SODIUM ADSORPTION RATIO (00931)
JUN 2002							
11...	1530	10	98	27.6	7.12	.46	.1
11...	1600	80	92	25.9	6.51	.41	.1
AUG							
13...	1530	10	99	27.6	7.29	.43	.1
13...	1600	135	110	30.4	7.66	.46	.1

DATE	SODIUM, DISSOLVED (MG/L AS NA) (00930)	ALKALINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)
JUN 2002							
11...	1.81	87	1.70	<.1	12.9	.15	109
11...	1.36	85	.97	<.1	11.1	.14	103
AUG							
13...	1.89	90	1.74	E.1	13.8	.15	109
13...	1.81	95	1.99	E.1	14.0	.16	119

E--Estimated.

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SAM-PLING DEPTH (FEET) (00003)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	LIGHT INCI-DENT PERCENT REMAIN ING AT DEPTH (00031)
OCT 2001						
17...	0.5	9.7	7.2	248	13.7	81.4
17...	2	9.6	7.3	250	13.7	50.9
17...	5	9.5	7.4	250	13.7	24.9
17...	10	9.5	7.5	250	13.7	24.7
17...	15	9.5	7.6	250	13.7	14.8
17...	20	9.5	7.6	250	13.7	7.22
17...	25	9.4	7.7	250	13.7	3.33
17...	30	9.4	7.8	250	13.7	2.20
17...	35	9.4	7.8	250	13.7	--
17...	40	9.4	7.8	250	13.7	--
17...	45	9.3	7.8	252	13.7	--
17...	50	9.3	7.9	253	13.6	--
17...	60	9.3	7.9	257	13.6	--
17...	62	9.2	7.9	257	13.6	--
JUN 2002						
11...	0.5	8.9	8.7	205	14.7	73.3
11...	2	9.8	8.7	204	11.6	66.5
11...	5	10.0	8.8	203	10.5	21.7
11...	10	9.9	8.7	191	9.8	10.4
11...	15	9.8	8.7	191	9.7	1.88
11...	20	9.8	8.7	191	9.7	.63
11...	25	9.8	8.7	190	9.6	.25
11...	30	9.9	8.7	184	9.3	.08
11...	35	9.9	8.7	184	9.2	.05
11...	40	9.9	8.6	184	9.2	.03
11...	45	9.9	8.6	182	9.1	.01
11...	50	9.9	8.6	182	9.0	.01
11...	55	9.9	8.6	182	8.9	--
11...	60	9.9	8.6	182	8.8	--
11...	65	9.9	8.6	180	8.6	--
11...	70	10.0	8.6	178	8.7	--
11...	75	10.0	8.6	180	8.5	--
11...	80	10.0	8.6	180	8.4	--
JUL 2002						
16...	0.5	8.2	8.8	199	21.5	69.0
16...	2	8.3	8.8	200	21.5	54.8
16...	5	8.6	8.9	199	21.0	41.9
16...	10	8.9	8.9	199	19.7	12.8
16...	15	8.9	8.8	199	18.1	11.5
16...	20	8.8	8.7	196	16.9	7.82
16...	25	8.6	8.5	193	15.4	6.72
16...	30	8.6	8.5	193	14.9	4.97
16...	35	8.3	8.5	192	14.6	4.01
16...	40	8.2	8.5	192	14.5	2.84
16...	45	8.2	8.5	193	14.5	2.20
16...	50	8.2	8.4	192	14.3	1.67
16...	55	8.3	8.4	179	13.4	1.21
16...	60	8.3	8.4	180	13.0	.85
16...	65	8.3	8.4	180	12.9	.65
16...	70	8.2	8.4	182	12.9	.47
16...	75	8.3	8.4	177	12.5	.35
16...	80	8.2	8.3	181	12.2	.25
16...	85	8.3	8.3	183	11.7	.18
16...	90	8.3	8.3	185	11.6	.12
16...	95	8.3	8.4	186	11.4	.08
16...	100	8.3	8.4	185	11.2	.06
16...	105	8.3	8.4	185	10.5	--
16...	110	8.5	8.3	191	9.6	--
16...	115	8.5	8.3	195	9.3	--
16...	120	8.4	8.3	197	9.0	--
16...	125	8.4	8.3	200	8.8	--
16...	130	8.3	8.3	205	8.4	--
16...	135	8.2	8.2	209	8.1	--
16...	140	8.0	8.2	210	8.0	--
16...	145	7.9	8.2	211	7.9	--

KOOTENAI RIVER BASIN

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SAM-PLING DEPTH (FEET) (00003)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	LIGHT INCI-DENT PERCENT REMAIN ING AT DEPTH (00031)
AUG 2002						
13...	0.5	8.1	8.7	200	21.6	71.6
13...	2	8.0	8.7	200	21.7	57.2
13...	5	8.2	8.7	199	21.5	35.6
13...	10	8.3	8.7	200	20.0	19.6
13...	15	8.4	8.8	199	19.8	11.2
13...	20	8.4	8.7	199	19.6	6.06
13...	25	8.2	8.7	199	19.2	3.17
13...	30	7.6	8.4	207	17.8	1.80
13...	35	7.5	8.4	211	17.4	.86
13...	40	7.4	8.3	217	16.7	.52
13...	45	7.3	8.3	222	15.8	.31
13...	50	7.1	8.2	220	15.4	.19
13...	55	7.1	8.2	219	14.5	.13
13...	60	7.0	8.1	213	14.0	.06
13...	65	7.3	8.1	184	12.9	.03
13...	70	7.6	8.1	184	11.8	--
13...	75	7.7	8.1	184	11.4	--
13...	80	7.8	8.0	186	11.0	--
13...	85	7.8	8.0	188	10.8	--
13...	90	7.7	8.0	188	10.7	--
13...	95	7.7	8.0	190	10.4	--
13...	100	7.6	8.0	193	10.0	--
13...	110	7.3	7.8	201	9.2	--
13...	115	7.2	7.9	203	8.9	--
13...	120	7.3	7.9	204	8.8	--
13...	125	7.3	7.8	206	8.7	--
13...	130	7.3	8.0	206	8.7	--
13...	135	7.3	8.0	206	8.6	--
SEP 2002						
18...	0.5	8.5	8.5	204	17.5	61.7
18...	2	8.4	8.6	219	17.6	46.6
18...	5	8.4	8.6	219	17.6	40.5
18...	10	8.4	8.6	219	17.6	19.2
18...	15	8.4	8.6	219	17.6	7.78
18...	20	8.4	8.6	218	17.5	5.90
18...	25	8.4	8.5	217	17.5	3.79
18...	30	8.4	8.6	220	17.4	2.31
18...	35	8.4	8.5	218	17.4	1.26
18...	40	8.4	8.5	218	17.4	.76
18...	45	7.7	8.4	232	17.2	.56
18...	50	7.5	8.3	247	16.8	.39
18...	55	7.3	8.2	255	16.4	.27
18...	60	7.5	8.2	265	15.5	.18
18...	65	7.6	8.2	267	15.2	.10
18...	70	7.4	8.1	266	15.1	--
18...	75	7.1	8.1	263	14.9	--
18...	80	6.0	7.9	225	13.2	--
18...	85	6.1	7.9	200	11.5	--

KOOTENAI RIVER BASIN

12301300 TOBACCO RIVER NEAR EUREKA, MT

LOCATION.--Lat 48°53'37", long 115°05'13" (NAD 27), in NW$^1/_4$SE$^1/_4$SE$^1/_4$ sec.9, T.36 N., R.27 W., Lincoln County, Hydrologic Unit 17010101, on right bank 0.2 mi upstream from Indian Creek, 1.8 mi northwest of Eureka, and 2.8 mi upstream from Lake Koocanusa flow line.

DRAINAGE AREA.--440 mi^2.

PERIOD OF RECORD.--September 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,518.85 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Diversions for irrigation of about 4,500 acres upstream from station. U. S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about May 22, 1948, reached a discharge of 2,810 ft^3/s, from slope-area measurement of peak flow at site 1.5 mi downstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	99	73	48	77	128	161	526	1180	640	163	72
2	47	88	75	48	73	130	149	552	1070	568	153	70
3	50	82	74	54	70	116	152	610	1000	530	148	68
4	50	77	72	58	69	115	154	615	981	503	145	68
5	50	74	69	60	66	111	163	546	978	468	154	76
6	49	73	68	62	68	87	211	486	987	452	152	84
7	50	71	67	70	68	83	299	442	892	451	147	86
8	50	68	67	110	69	92	360	403	813	469	141	102
9	50	68	67	138	67	113	362	374	767	490	135	97
10	52	66	63	136	65	106	356	349	698	451	129	93
11	61	65	64	125	65	116	449	329	639	420	126	90
12	60	62	59	114	58	171	511	324	620	399	123	86
13	59	63	63	103	e54	148	656	357	627	377	119	83
14	59	62	68	94	e54	138	951	453	711	353	115	82
15	59	65	65	78	e54	137	1390	518	800	330	113	79
16	57	68	65	83	e56	122	926	489	891	313	113	78
17	56	96	69	e82	e58	104	672	474	951	298	107	85
18	56	109	58	e83	e60	106	552	479	923	275	92	89
19	56	101	63	83	e62	101	502	498	992	261	88	83
20	56	94	62	81	e64	88	487	705	869	248	85	80
21	56	89	59	80	66	89	508	1050	809	235	83	77
22	59	87	56	76	91	107	578	1540	812	225	82	76
23	68	93	56	73	129	97	600	1440	883	216	79	73
24	66	93	56	73	113	99	538	1070	908	212	77	60
25	64	86	51	e74	121	121	465	939	849	200	79	77
26	62	82	45	e75	111	134	436	935	819	191	83	74
27	61	78	40	77	120	132	423	954	808	200	83	73
28	70	76	36	78	129	127	408	1020	787	189	78	73
29	69	74	44	80	---	124	407	1120	768	181	75	76
30	69	75	e48	e85	---	127	455	1220	745	176	75	90
31	90	---	e48	e85	---	136	---	1250	---	171	75	---
TOTAL	1801	2384	1870	2566	2157	3605	14281	22067	25577	10492	3417	2400
MEAN	58.10	79.47	60.32	82.77	77.04	116.3	476.0	711.8	852.6	338.5	110.2	80.00
MAX	90	109	75	138	129	171	1390	1540	1180	640	163	102
MIN	40	62	36	48	54	83	149	324	620	171	75	60
AC-FT	3570	4730	3710	5090	4280	7150	28330	43770	50730	20810	6780	4760
CFSM	0.13	0.18	0.14	0.19	0.18	0.26	1.08	1.62	1.94	0.77	0.25	0.18
IN.	0.15	0.20	0.16	0.22	0.18	0.30	1.21	1.87	2.16	0.89	0.29	0.20

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2002, BY WATER YEAR (WY)

MEAN	113.1	132.1	114.7	101.8	110.8	156.6	424.3	776.6	741.3	310.8	127.3	108.3
MAX	343	368	415	248	492	422	883	1469	1498	576	235	239
(WY)	1960	1990	1996	1974	1996	1972	1996	1997	1974	1974	1993	1959
MIN	50.7	56.3	60.3	53.5	49.9	66.6	140	371	196	79.7	36.7	28.9
(WY)	1995	1995	2002	1989	1988	2001	1970	2001	1992	1977	1988	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1959 - 2002	
ANNUAL TOTAL	39052		92617			
ANNUAL MEAN	107.0		253.7		268.4	
HIGHEST ANNUAL MEAN					496	1996
LOWEST ANNUAL MEAN					109	2001
HIGHEST DAILY MEAN	588	Apr 29	1540	May 22	2510	May 13 1991
LOWEST DAILY MEAN	23	Sep 1	36	Dec 28	20	Jan 11 1963
ANNUAL SEVEN-DAY MINIMUM	24	Aug 30	44	Dec 26	23	Sep 6 1988
MAXIMUM PEAK FLOW			1680	May 22	3180	May 13 1991
MAXIMUM PEAK STAGE			5.39	May 22	7.16	May 13 1991
INSTANTANEOUS LOW FLOW			32	Oct 1	22	Feb 7 2001
ANNUAL RUNOFF (AC-FT)	77460		183700		194500	
ANNUAL RUNOFF (CFSM)	0.24		0.58		0.61	
ANNUAL RUNOFF (INCHES)	3.30		7.83		8.29	
10 PERCENT EXCEEDS	288		776		713	
50 PERCENT EXCEEDS	65		96		132	
90 PERCENT EXCEEDS	33		58		69	

e--Estimated.

KOOTENAI RIVER BASIN

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT

LOCATION.--Lat 48°35'06", long 115°13'52" (NAD 27), in NW$^1/_4$NE$^1/_4$NW$^1/_4$ sec.33, T.33 N., R.28 W., Lincoln County, Hydrologic Unit 17010101, in middle of old channel at Tenmile Creek, and 20.1 mi northeast of Libby.

PERIOD OF RECORD.--Water years 1972 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	SAM-PLING DEPTH (FEET) (00003)	LIGHT DEPTH TO 1% OF SURFACE LIGHT (FEET) (00034)	LIGHT INCID. 400-700NM INTENS. (U-EINS /SQM/S) (00200)	LIGHT, ATTENU-ATION COEFFI-CIENT (ALPHA/ METER) (70971)	TRANS-PARENCY SECCHI DISC, WATER, UNFLTRD (FEET) (49701)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	TEMPER-ATURE AIR (DEG C) (00020)
OCT								
16...	1230	10	56	1040	.08	29.5	697	11.0
16...	1300	207	--	--	--	--	--	--
MAY								
14...	1200	10	43	673	.10	--	692	13.5
14...	1230	175	--	--	--	--	--	--
JUN								
11...	1100	10	29	1940	.13	4.0	699	14.0
11...	1143	239	--	--	--	--	--	--
JUL								
16...	1030	10	56	675	.07	9.3	697	20.0
16...	1117	315	--	--	--	--	--	--
AUG								
13...	1100	10	33	1640	.11	15.1	698	20.5
13...	1143	260	--	--	--	--	--	--
SEP								
17...	1200	10	50	240	.09	12.6	693	16.0
17...	1230	194	--	--	--	--	--	--

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)
OCT						
16...	3.4	<.015	.023	<.002	<.007	<.004
16...	5.1	<.015	.118	<.002	<.007	<.004
MAY						
14...	5.5	<.015	.066	<.002	<.007	.006
14...	4.7	<.015	.075	<.002	<.007	<.004
JUN						
11...	5.3	E.010	.117	<.002	<.007	.015
11...	4.9	.015	.093	<.002	<.007	.005
JUL						
16...	4.3	<.015	.053	E.002	<.007	.009
16...	5.4	<.015	.111	.003	<.007	.008
AUG						
13...	3.4	<.015	<.013	<.002	<.007	.005
13...	5.5	<.015	.138	<.002	<.007	.010
SEP						
17...	1.4	<.015	<.013	<.002	<.007	.004
17...	5.5	<.015	.162	<.002	<.007	.005

DATE	TIME	SAM-PLING DEPTH (FEET) (00003)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
MAY												
14...	1200	10	120	33.2	9.92	.60	.2	4.70	107	4.41	E.1	27.2
14...	1230	175	130	34.7	10.2	.58	.2	4.32	110	4.20	.1	27.3
AUG												
13...	1100	10	98	27.5	7.20	.45	.1	1.98	85	1.30	E.1	12.3
13...	1143	260	140	38.6	10.9	.59	.2	4.47	113	3.83	.1	26.2

E--Estimated.

DATE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
MAY											
14...	.20	150	13	.4	.04	<.8	.9	E.05	.02	.78	2
14...	.21	152	5	.4	E.03	<.8	.9	E.06	.01	.68	1
AUG											
13...	.14	105	6	.3	.05	<.8	.7	E.05	.02	.40	<1
13...	.22	158	3	.4	<.04	<.8	.8	<.08	.01	.41	<1

DATE	CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L) (70954)
OCT		
16...	1.4	<.1
MAY		
14...	1.4	<.1
JUN		
11...	2.6	<.1
JUL		
16...	1.9	<.1
AUG		
13...	E2.2	<.1
SEP		
17...	E1.0	E.2

DATE	SAM-PLING DEPTH (FEET) (00003)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	LIGHT INCI-DENT PERCENT REMAIN-ING AT DEPTH (00031)
OCT						
16...	0.5	9.3	7.8	236	14.1	70.0
16...	2	9.3	7.8	236	14.1	61.3
16...	5	9.3	7.8	236	14.1	43.8
16...	10	9.3	7.9	236	14.1	30.8
16...	15	9.3	7.9	236	14.1	18.9
16...	20	9.3	7.9	236	14.1	12.7
16...	25	9.3	7.9	236	14.1	8.11
16...	30	9.3	7.9	236	14.1	5.64
16...	35	9.3	7.9	236	14.1	4.17
16...	40	9.3	8.0	237	14.1	2.97
16...	45	9.3	8.0	236	14.1	2.08
16...	50	9.3	8.0	236	14.1	1.49
16...	55	9.3	8.0	236	14.1	1.11
16...	60	9.3	8.0	236	14.1	.72
16...	70	9.3	8.0	236	14.1	.41
16...	75	9.1	8.0	236	14.1	--
16...	80	7.4	8.0	246	12.5	--
16...	90	7.1	7.9	249	11.1	--
16...	100	7.8	7.9	259	10.2	--
16...	110	8.5	7.9	266	9.7	--
16...	120	8.3	7.8	266	8.7	--
16...	130	8.4	7.8	270	7.8	--
16...	140	8.7	7.8	271	7.4	--
16...	150	8.8	7.8	272	7.1	--
16...	160	8.9	7.8	273	6.8	--
16...	170	8.8	7.8	273	6.5	--
16...	180	9.1	7.8	273	6.2	--
16...	190	9.1	7.8	274	5.7	--
16...	200	9.1	7.8	274	5.4	--
16...	207	9.0	7.7	274	5.3	--

E--Estimated.

DATE	SAM-PLING DEPTH (FEET) (00003)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	LIGHT INCI-DENT PERCENT REMAIN-ING AT DEPTH (00031)
MAY						
14...	0.5	11.2	8.4	259	8.6	41.75
14...	2	10.8	8.4	257	8.5	39.23
14...	5	10.6	8.4	258	8.5	23.92
14...	10	11.0	8.4	257	8.4	50.37
14...	15	11.0	8.4	258	8.3	13.28
14...	20	11.0	8.4	257	8.3	13.89
14...	25	11.0	8.4	257	8.2	6.78
14...	30	11.0	8.4	257	8.2	4.01
14...	35	11.0	8.4	257	8.1	2.24
14...	40	11.1	8.3	259	7.2	1.29
14...	50	11.0	8.3	262	6.0	.45
14...	60	11.0	8.2	261	5.7	.16
14...	70	10.8	8.2	261	5.6	.07
14...	80	10.8	8.2	262	5.6	--
14...	90	10.8	8.2	262	5.5	--
14...	100	10.8	8.2	262	5.4	--
14...	110	10.8	8.2	261	5.3	--
14...	120	10.8	8.2	262	5.1	--
14...	130	10.8	8.2	265	4.8	--
14...	140	10.8	8.2	269	4.6	--
14...	150	10.8	8.1	273	4.2	--
14...	160	10.7	8.1	274	4.1	--
14...	170	10.7	8.1	274	4.1	--
14...	175	10.6	8.1	274	4.1	--

DATE	SAM-PLING DEPTH (FEET) (00003)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	LIGHT INCI-DENT PERCENT REMAIN-ING AT DEPTH (00031)
JUN						
11...	0.5	10.0	8.8	228	10.2	27.64
11...	2	10.0	8.8	228	10.2	52.24
11...	5	9.9	8.8	228	10.2	9.28
11...	10	9.9	8.7	228	10.2	9.70
11...	15	9.9	8.7	228	10.2	6.40
11...	20	9.9	8.7	228	10.2	4.06
11...	25	9.9	8.7	228	10.1	2.00
11...	30	9.8	8.7	227	9.7	1.05
11...	35	9.8	8.7	228	9.5	.33
11...	40	9.8	8.7	226	9.5	.20
11...	45	9.8	8.7	228	9.4	.11
11...	50	9.8	8.7	228	9.4	.07
11...	55	9.8	8.7	227	9.3	.04
11...	60	9.8	8.6	229	9.2	.02
11...	65	9.8	8.6	231	9.1	--
11...	70	9.8	8.6	233	9.0	--
11...	75	9.8	8.6	234	8.7	--
11...	80	9.8	8.6	233	8.6	--
11...	85	9.8	8.6	233	8.3	--
11...	90	9.7	8.6	237	8.0	--
11...	95	9.8	8.6	236	7.9	--
11...	100	9.7	8.6	234	7.8	--
11...	105	9.7	8.6	239	7.5	--
11...	110	9.8	8.6	251	6.9	--
11...	115	9.8	8.5	255	6.8	--
11...	120	9.9	8.6	258	6.6	--
11...	125	9.9	8.6	261	6.4	--
11...	130	10.2	8.6	265	6.0	--
11...	140	10.3	8.6	265	5.7	--
11...	150	10.4	8.6	265	5.5	--
11...	160	10.4	8.6	266	5.4	--
11...	170	10.4	8.6	265	5.3	--
11...	180	10.4	8.6	266	5.1	--
11...	190	10.5	8.6	268	4.6	--
11...	200	10.5	8.6	268	4.6	--
11...	210	10.4	8.6	268	4.6	--
11...	220	10.4	8.6	269	4.6	--
11...	230	10.4	8.6	269	4.5	--
11...	239	10.4	8.6	269	4.5	--

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SAM-PLING DEPTH (FEET) (00003)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	LIGHT INCI-DENT PERCENT-REMAIN-ING AT DEPTH (00031)
JUL						
16...	0.5	9.7	8.9	196	18.9	58.81
16...	2	9.7	8.9	202	18.8	50.37
16...	5	10.5	9.0	196	17.2	39.11
16...	10	9.9	8.8	190	15.3	23.70
16...	15	8.9	8.5	188	14.2	15.85
16...	20	8.8	8.5	188	14.0	11.11
16...	25	8.6	8.4	184	13.1	7.64
16...	30	8.6	8.4	184	13.1	5.39
16...	35	8.5	8.4	183	13.1	4.03
16...	40	8.5	8.4	181	12.6	2.80
16...	45	8.5	8.4	180	12.2	1.99
16...	50	8.6	8.4	177	12.0	1.30
16...	55	8.6	8.4	177	11.8	1.04
16...	60	8.6	8.4	178	11.7	.76
16...	65	8.6	8.4	178	11.2	.49
16...	70	8.6	8.4	183	11.1	.34
16...	75	8.6	8.4	188	11.0	.22
16...	80	8.7	8.4	185	10.8	.16
16...	90	8.7	8.4	186	10.5	--
16...	100	8.8	8.4	185	10.2	--
16...	110	8.8	8.4	187	9.9	--
16...	120	8.8	8.3	198	9.4	--
16...	130	8.8	8.3	206	9.0	--
16...	140	8.8	8.3	212	8.4	--
16...	150	8.9	8.3	216	7.9	--
16...	160	8.9	8.3	228	7.4	--
16...	170	8.9	8.3	231	7.2	--
16...	180	9.0	8.2	242	6.7	--
16...	190	9.0	8.2	247	6.6	--
16...	200	9.0	8.2	251	6.2	--
16...	210	9.1	8.2	257	5.9	--
16...	220	9.1	8.2	261	5.6	--
16...	230	9.1	8.2	263	5.4	--
16...	240	9.1	8.3	264	5.3	--
16...	250	9.1	8.3	265	5.2	--
16...	260	9.1	8.2	266	5.0	--
16...	270	9.1	8.3	268	5.0	--
16...	280	8.9	8.2	267	5.0	--
16...	290	8.8	8.2	267	5.0	--
16...	300	8.8	8.2	267	5.0	--
16...	315	8.8	8.2	267	5.0	--

DATE	SAM-PLING DEPTH (FEET) (00003)	OXYGEN, DIS-SOLVED (MG/L) 00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	LIGHT INCI-DENT PERCENT REMAIN-ING AT DEPTH (00031)
AUG						
13...	0.5	8.6	8.9	194	15.6	61.17
13...	2	8.6	8.9	195	18.8	55.49
13...	5	8.6	8.9	195	18.8	28.21
13...	10	8.6	8.9	195	18.8	15.63
13...	15	8.6	8.9	195	18.7	8.49
13...	20	8.6	8.9	195	18.7	4.52
13...	25	8.7	8.9	194	18.5	2.77
13...	30	8.6	8.9	194	18.5	1.64
13...	35	8.6	8.9	194	18.5	.81
13...	40	8.5	8.9	194	18.1	.50
13...	45	7.7	8.4	192	15.7	.30
13...	50	7.6	8.4	190	15.3	.19
13...	55	7.6	8.3	187	13.9	.12
13...	60	7.6	8.2	186	13.6	.07
13...	65	7.6	8.2	185	13.1	--
13...	70	7.7	8.2	184	12.8	--
13...	75	7.7	8.2	185	12.5	--
13...	80	7.7	8.2	183	12.5	--
13...	85	7.8	8.2	181	11.8	--
13...	90	8.0	8.2	181	11.3	--
13...	95	8.1	8.2	182	11.2	--
13...	100	8.2	8.2	185	10.7	--
13...	110	8.3	8.2	187	10.2	--
13...	120	8.4	8.2	191	9.8	--
13...	130	8.5	8.2	199	9.2	--
13...	140	8.6	8.2	211	8.2	--
13...	150	8.6	8.2	214	8.1	--
13...	160	8.6	8.2	222	7.5	--
13...	170	8.6	8.2	228	7.2	--
13...	180	8.7	8.2	234	6.9	--
13...	190	8.7	8.1	245	6.4	--
13...	200	8.7	8.1	253	5.9	--
13...	210	8.7	8.1	259	5.7	--
13...	220	8.8	8.1	262	5.5	--
13...	230	8.8	8.1	264	5.3	--
13...	240	8.8	8.1	267	5.1	--
13...	250	8.7	8.1	268	5.0	--
13...	260	8.6	8.1	268	5.1	--

DATE	SAM-PLING DEPTH (FEET) (00003)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	LIGHT INCI-DENT PERCENT REMAIN-ING AT DEPTH (00031)
SEP						
17...	0.0	8.5	8.6	202	17.3	110.69
17...	2	8.5	8.6	202	17.4	82.71
17...	5	8.4	8.6	202	17.4	53.28
17...	10	8.4	8.6	202	17.4	32.03
17...	15	8.4	8.6	202	17.4	21.67
17...	20	8.4	8.6	203	17.4	15.07
17...	25	8.1	8.5	208	17.1	9.10
17...	30	7.9	8.4	213	16.7	5.93
17...	35	7.5	8.3	211	15.9	3.55
17...	40	7.4	8.2	211	15.4	2.30
17...	45	7.2	8	207	14.5	1.50
17...	50	7.0	7.9	194	13.6	.99
17...	55	7.0	7.9	190	13.3	.71
17...	60	7.3	7.9	185	12.4	.50
17...	65	7.4	7.8	184	12.0	.33
17...	75	7.6	7.8	185	11.5	--
17...	85	7.8	7.9	186	10.8	--
17...	95	8.1	7.9	188	10.3	--
17...	105	8.2	7.9	193	9.9	--
17...	115	8.2	7.9	199	9.4	--
17...	125	8.3	7.9	206	8.8	--
17...	135	8.4	7.9	212	8.3	--
17...	150	8.4	7.9	219	7.8	--
17...	165	8.4	7.9	231	7.2	--
17...	180	8.4	7.9	237	6.8	--
17...	194	8.4	7.9	259	6.4	--

12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT

LOCATION.--Lat 48°24'43", long 115°18'33" (NAD 27), in SW$^1/_4$NW$^1/_4$NE$^1/_4$ sec.33, T.31 N., R.29 W., Lincoln County, Hydrologic Unit 17010101, in middle of old channel 0.2 mi upstream from Libby Dam, and 11.6 mi east of Libby.

PERIOD OF RECORD.--Water years 1972 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	LIGHT DEPTH TO 1% OF SURFACE LIGHT (FEET) (00034)	LIGHT INCID. 400-700NM INTENS. (U-EINS /SQM/S) (00200)	LIGHT, ATTENUATION COEFFICIENT (ALPHA/ METER) (70971)	TRANSPARENCY SECCHI DISC, WATER, UNFLTRD (FEET) (49701)	BAROMETRIC PRESSURE (MM OF HG) (00025)	TEMPERATURE AIR (DEG C) (00020)
OCT								
16...	1430	10	38	1300	.11	17.3	696	12.0
16...	1500	301	--	--	--	--	--	--
MAY								
14...	1500	10	77	171	.05	13.5	692	13.5
14...	1539	300	--	--	--	--	--	--
JUN								
11...	1300	10	48	1360	.08	7.2	699	16.0
11...	1330	315	--	--	--	--	--	--
JUL								
16...	1215	10	69	331	.07	9.6	697	21.5
16...	1245	315	--	--	--	--	--	--
AUG								
13...	1230	10	37	1980	.11	17.0	698	25.5
13...	1300	300	--	--	--	--	--	--
SEP								
17...	1500	10	39	424	.11	12.1	693	16.5
17...	1530	324	--	--	--	--	--	--

DATE	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613)	ORTHO-PHOSPHATE, DISSOLVED (MG/L AS P) (00671)	PHOSPHORUS TOTAL (MG/L AS P) (00665)
OCT 2001						
16...	3.7	<.015	.020	<.002	<.007	<.004
16...	5.2	<.015	.135	<.002	<.007	.005
MAY 2002						
14...	4.5	<.015	.071	<.002	<.007	E.003
14...	4.8	E.010	.092	<.002	<.007	.007
JUN						
11...	5.4	<.015	.074	<.002	<.007	.009
11...	4.8	.016	.092	<.002	<.007	E.003
JUL						
16...	4.5	<.015	.041	E.002	<.007	.007
16...	5.1	E.008	.102	<.002	<.007	E.003
AUG						
13...	--	<.015	<.013	<.002	<.007	.004
13...	5.1	<.015	.126	<.002	<.007	.004
SEP						
17...	1.7	<.015	<.013	<.002	<.007	.005
17...	5.5	<.015	.135	<.002	<.007	.005

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SODIUM ADSORPTION RATIO (00931)	SODIUM, DISSOLVED (MG/L AS NA) (00930)
MAY								
14...	1500	10	130	36.0	9.51	.55	.2	4.05
14...	1539	300	130	35.6	10.5	.56	.2	4.56
AUG								
13...	1230	10	97	27.1	7.03	.42	.1	1.82
13...	1300	300	130	36.6	10.3	.58	.2	4.10

DATE	ALKALINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)
MAY						
14...	112	3.96	E.1	26.6	.21	153
14...	115	4.01	E.1	28.3	.21	158
AUG						
13...	89	1.43	E.1	13.3	.15	107
13...	114	3.19	.1	26.5	.21	155

E--Estimated.

DATE	SAM-PLING DEPTH (FEET) (00003)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	LIGHT INCI-DENT PERCENT REMAIN ING AT DEPTH (00031)
OCT 2001						
16...	0.5	14.2	9.5	7.6	233	70.8
16...	2	14.2	9.4	7.7	232	54.4
16...	5	14.2	9.3	7.7	233	37.2
16...	10	14.1	9.4	7.7	233	19.7
16...	15	14.1	9.4	7.7	233	10.8
16...	20	14.1	9.4	7.8	233	6.34
16...	25	14.1	9.3	7.8	233	3.77
16...	30	14.1	9.3	7.8	233	2.33
16...	35	14.1	9.3	7.8	233	1.41
16...	40	14.1	9.3	7.9	233	.87
16...	45	14.1	9.3	7.9	233	.57
16...	50	14.1	9.3	7.9	233	.36
16...	60	14.1	9.2	7.9	233	--
16...	70	13.2	7.5	7.9	238	--
16...	75	12.5	7.5	7.9	247	--
16...	80	12.1	7.5	7.9	252	--
16...	90	11.0	7.9	7.9	261	--
16...	100	10.0	8.6	7.8	267	--
16...	115	8.4	9.9	7.8	267	--
16...	130	7.5	10.4	7.8	267	--
16...	145	7.0	10.6	7.8	269	--
16...	160	6.6	10.6	7.8	269	--
16...	175	6.1	10.5	7.8	269	--
16...	190	5.6	10.2	7.8	270	--
16...	205	5.1	10.1	7.8	269	--
16...	220	4.9	9.9	7.8	270	--
16...	235	4.7	9.8	7.8	270	--
16...	250	4.6	9.7	7.8	270	--
16...	265	4.6	9.5	7.8	270	--
16...	280	4.6	9.3	7.8	271	--
16...	295	4.5	9.1	7.8	271	--
16...	301	4.4	8.7	7.7	272	--

DATE	SAM-PLING DEPTH (FEET) (00003)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	LIGHT INCI-DENT PERCENT REMAIN ING AT DEPTH (00031)
MAY 2002						
14...	0.5	5.0	11.6	8.4	260	63.7
14...	2	5.0	11.5	8.4	261	57.9
14...	5	5.0	11.5	8.4	260	44.4
14...	10	5.0	11.5	8.4	260	28.1
14...	15	4.9	11.5	8.4	261	20.9
14...	20	4.9	11.5	8.4	260	15.6
14...	25	4.8	11.5	8.4	260	10.0
14...	30	4.7	11.4	8.4	260	9.24
14...	35	4.7	11.4	8.4	261	26.0
14...	40	4.6	11.4	8.4	261	16.4
14...	45	4.6	11.4	8.4	262	11.2
14...	50	4.6	11.3	8.4	261	7.78
14...	55	4.5	11.3	8.3	262	4.91
14...	60	4.4	11.3	8.3	262	3.45
14...	70	4.3	11.2	8.3	262	1.58
14...	80	4.2	11.1	8.3	262	.70
14...	90	4.2	11.1	8.3	263	.33
14...	100	4.2	11.1	8.3	262	--
14...	110	4.1	11.1	8.3	262	--
14...	120	4.1	11.0	8.3	263	--
14...	130	4.1	11.0	8.3	262	--
14...	140	4.1	11.0	8.3	263	--
14...	150	4.0	11.0	8.3	264	--
14...	160	3.9	11.0	8.3	264	--
14...	170	3.9	10.9	8.3	264	--
14...	180	3.8	10.9	8.3	265	--
14...	190	3.8	10.9	8.3	266	--
14...	200	3.7	10.8	8.2	267	--
14...	210	3.7	10.8	8.3	267	--
14...	220	3.7	10.8	8.2	269	--
14...	230	3.7	10.7	8.2	269	--
14...	240	3.7	10.7	8.2	269	--
14...	250	3.7	10.6	8.2	269	--
14...	260	3.7	10.6	8.2	270	--
14...	270	3.7	10.4	8.2	269	--
14...	280	3.7	10.2	8.2	270	--
14...	290	3.7	10.2	8.2	270	--
14...	300	3.7	10.3	8.2	270	--

DATE	SAM-PLING DEPTH (FEET) (00003)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	LIGHT INCI-DENT PERCENT REMAIN ING AT DEPTH (00031)
JUN 2002						
11...	0.5	10.5	10.1	8.8	243	64.6
11...	2	10.6	10.0	8.8	243	65.6
11...	5	10.5	10.1	8.8	243	41.5
11...	10	10.3	10.0	8.8	243	20.9
11...	15	10.3	10.0	8.8	243	6.72
11...	20	10.2	10.0	8.8	244	10.9
11...	25	10.1	10.0	8.8	244	5.24
11...	30	10.2	10.0	8.8	244	5.54
11...	35	10.1	10.0	8.8	244	2.0
11...	40	10.1	10.0	8.8	244	2.04
11...	50	10.0	10.0	8.8	245	.77
11...	60	10.0	10.0	8.8	245	.38
11...	70	10.0	10.0	8.8	245	.19
11...	80	9.9	10.0	8.8	244	.10
11...	90	9.8	10.0	8.8	245	.05
11...	100	9.6	10.0	8.8	246	.03
11...	110	9.4	10.1	8.8	247	--
11...	120	9.2	10.1	8.7	250	--
11...	130	9.0	10.1	8.7	250	--
11...	140	8.1	10.1	8.7	254	--
11...	150	7.2	10.2	8.7	258	--
11...	160	5.5	10.5	8.6	262	--
11...	170	5.1	10.6	8.6	263	--
11...	180	4.8	10.7	8.6	265	--
11...	190	4.6	10.6	8.6	266	--
11...	200	4.5	10.6	8.6	266	--
11...	215	4.3	10.6	8.6	268	--
11...	230	4.3	10.5	8.6	267	--
11...	245	4.3	10.5	8.6	268	--
11...	260	4.2	10.5	8.6	269	--
11...	275	4.2	10.5	8.6	269	--
11...	290	4.2	10.5	8.6	269	--
11...	305	4.2	10.4	8.6	269	--
11...	315	4.2	10.4	8.6	269	--

DATE	SAM-PLING DEPTH (FEET) (00003)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	LIGHT INCI-DENT PERCENT REMAIN ING AT DEPTH (00031)
JUL 2002						
16...	0.5	17.6	9.9	8.8	204	96.1
16...	2	17.5	9.8	8.8	201	84.9
16...	5	16.3	10.0	8.8	202	70.7
16...	10	15.5	9.9	8.8	199	48.6
16...	15	15.3	9.8	8.7	194	37.2
16...	20	14.6	9.1	8.6	195	25.5
16...	25	14.2	8.9	8.5	194	18.4
16...	30	14.0	8.8	8.5	200	13.4
16...	35	13.6	8.7	8.4	196	10.3
16...	40	13.1	8.5	8.4	192	7.10
16...	50	12.9	8.4	8.3	190	3.47
16...	60	12.5	8.4	8.3	191	1.84
16...	70	11.5	8.4	8.3	194	.94
16...	80	11.0	8.5	8.2	191	.48
16...	90	10.5	8.5	8.2	192	.24
16...	100	10.4	8.6	8.2	193	--
16...	110	9.8	8.6	8.2	204	--
16...	120	9.3	8.6	8.2	217	--
16...	135	8.8	8.6	8.2	221	--
16...	150	7.7	8.8	8.2	243	--
16...	165	7.0	9.0	8.2	257	--
16...	180	6.5	9.2	8.2	260	--
16...	195	5.7	9.4	8.2	262	--
16...	210	5.4	9.4	8.2	264	--
16...	225	4.9	9.4	8.2	265	--
16...	240	4.8	9.4	8.2	265	--
16...	255	4.6	9.4	8.2	265	--
16...	270	4.6	9.4	8.2	266	--
16...	285	4.5	9.4	8.2	266	--
16...	300	4.5	9.4	8.2	267	--
16...	315	4.5	9.2	8.2	267	--

DATE	SAM-PLING DEPTH (FEET) (00003)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	LIGHT INCI-DENT PERCENT REMAIN ING AT DEPTH (00031)
AUG 2002						
13...	0.5	19.1	8.5	8.8	195	70.6
13...	2	19.5	8.6	8.8	194	57.0
13...	5	19.4	8.5	8.8	195	37.7
13...	10	19.2	8.6	8.8	195	22.2
13...	15	19.0	8.7	8.8	195	12.0
13...	20	18.8	8.7	8.8	194	6.85
13...	25	18.5	8.8	8.8	194	3.83
13...	30	17.9	8.7	8.7	193	2.22
13...	35	17.5	8.6	8.7	193	1.21
13...	40	17.5	8.5	8.6	193	.68
13...	50	16.1	8.0	8.4	190	.41
13...	60	13.9	7.8	8.2	188	.10
13...	70	13.1	7.7	8.1	185	.04
13...	80	12.5	7.7	8.1	183	--
13...	90	11.4	7.9	8.1	183	--
13...	100	10.8	8.1	8.1	187	--
13...	110	10.2	8.3	8.1	190	--
13...	120	9.7	8.4	8.1	202	--
13...	135	8.9	8.4	8.1	216	--
13...	150	8.3	8.5	8.0	225	--
13...	165	7.9	8.5	8.0	236	--
13...	180	6.9	8.8	8.0	255	--
13...	195	6.2	9.0	8.1	259	--
13...	210	5.7	9.1	8.1	263	--
13...	225	5.3	9.1	8.1	265	--
13...	240	4.9	9.1	8.1	266	--
13...	255	4.8	9.1	8.1	267	--
13...	270	4.7	9.1	8.1	267	--
13...	285	4.6	9.0	8.1	267	--
13...	300	4.6	9.0	8.1	267	--

DATE	SAM-PLING DEPTH (FEET) (00003)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	LIGHT INCI-DENT PERCENT REMAIN ING AT DEPTH (00031)
SEP 2002						
17...	0.5	17.1	8.6	8.7	199	86.6
17...	2	17.2	8.7	8.7	200	63.0
17...	5	17.2	8.5	8.7	200	44.0
17...	10	17.1	8.5	8.7	201	25.8
17...	15	16.8	8.2	8.5	204	15.8
17...	20	16.7	8.1	8.5	208	9.02
17...	25	16.5	8.0	8.4	207	4.96
17...	30	16.3	7.8	8.4	210	2.81
17...	35	15.9	7.3	8.2	204	1.61
17...	40	15.5	7.1	8.1	199	.92
17...	45	14.8	6.9	8.0	194	.54
17...	50	14.3	6.9	7.9	191	.35
17...	55	13.7	7.1	7.9	188	--
17...	60	13.0	7.2	7.9	187	--
17...	70	11.9	7.5	7.9	184	--
17...	80	11.3	7.8	7.9	184	--
17...	90	10.6	8.1	7.9	189	--
17...	105	9.8	8.4	7.9	196	--
17...	120	9.2	8.5	7.9	211	--
17...	135	8.7	8.6	7.9	217	--
17...	150	7.8	8.8	7.9	230	--
17...	165	7.4	8.9	7.9	241	--
17...	180	6.9	9.0	7.9	249	--
17...	195	6.1	9.1	7.9	257	--
17...	210	5.5	9.1	7.9	263	--
17...	225	5.2	9.1	7.9	266	--
17...	240	4.9	9.1	7.9	267	--
17...	255	4.8	9.1	7.9	268	--
17...	270	4.8	9.0	7.9	268	--
17...	285	4.7	8.9	7.9	269	--
17...	300	4.7	8.8	7.9	269	--
17...	315	4.6	8.4	7.9	271	--
17...	324	4.6	7.6	7.8	274	--

KOOTENAI RIVER BASIN

12301920 LAKE KOOCANUSA NEAR LIBBY, MT

LOCATION.--Lat 48°24'38", long 115°18'47" (NAD 27), in NW$^1/_4$ sec.33, T.31 N., R.29 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, in block 18 of Libby Dam on Kootenai River, 11 mi east of Libby and at river mile 221.8.

DRAINAGE AREA.--8,985 mi^2, approximately.

PERIOD OF RECORD.--March 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,201.5 (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to July 2, 1973, nonrecording gage on upstream face of dam at same datum.

REMARKS.--Reservoir and flow completely controlled by gravity type dam with taintor gated spillway; construction began in 1967; completed in 1973. Storage began Mar. 21, 1972. Usable capacity, 5,748,000 acre-ft between elevation 2,201.5 ft, bottom of sluice gate, and 2,459 ft, controlled spillway elevation. Dead storage, 121,200 acre-ft below elevation 2,201.5 ft. Minimum operating level, 768,700 acre-ft, elevation 2,287.0 ft for on-site power generation. All elevations are referenced to the National Geodetic Vertical Datum of 1929. Figures given herein represent usable contents. Water is used for power production, flood control, irrigation, and recreation.

COOPERATION.--Capacity table and elevations provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 5,753,000 acre-ft, Aug. 6, 1976 and Aug. 16, 1982, maximum elevation, 2,459.12 ft, Aug. 16, 1982; minimum contents observed since normal low operating level reached in May 1972, 139,600 acre-ft, Dec. 16-21, 1972, elevation, 2,226.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 5,730,000 acre-ft, July 15, elevation, 2,458.61 ft; minimum, 2,502,000 acre-ft, Apr. 5, elevation, 2,370.42 ft.

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

Elevation	Contents
2,360	2,232,000
2,380	2,765,000
2,400	3,367,000
2,420	4,085,000
2,440	4,899,000
2,460	5,795,000

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2430.90	2425.83	2420.90	2410.14	2391.63	2375.79	2370.73	2379.31	2415.07	2457.28	2454.76	2441.86
2	2430.71	2425.69	2420.58	2409.69	2390.94	2375.42	2370.57	2379.75	2417.57	2457.33	2454.37	2441.74
3	2430.55	2425.53	2420.23	2409.23	2390.14	2375.05	2370.53	2380.33	2419.89	2457.15	2454.03	2441.78
4	2430.38	2425.34	2419.90	2408.84	2389.41	2374.56	2370.49	2381.00	2422.00	2456.86	2453.49	2441.77
5	2430.23	2425.20	2419.52	2408.42	2388.24	2374.22	2370.42	2381.54	2424.02	2456.71	2453.02	2441.83
6	2430.07	2424.97	2419.18	2407.98	2387.05	2373.83	2370.43	2382.20	2426.14	2456.60	2452.50	2441.85
7	2429.88	2424.85	2418.85	2407.63	2385.72	2373.41	2370.45	2382.50	2428.18	2456.57	2451.90	2441.88
8	2429.69	2424.67	2418.45	2407.30	2384.52	2373.07	2370.58	2382.87	2429.73	2456.60	2451.44	2441.87
9	2429.56	2424.50	2418.15	2407.10	2383.42	2372.82	2370.67	2383.15	2430.81	2457.13	2451.21	2441.87
10	2429.43	2424.35	2417.80	2406.66	2382.65	2372.56	2370.77	2383.38	2431.62	2457.59	2450.55	2441.83
11	2429.25	2424.20	2417.44	2406.11	2382.08	2372.46	2370.97	2383.66	2432.28	2457.91	2450.12	2441.80
12	2429.06	2424.00	2417.07	2405.56	2381.72	2372.42	2371.23	2383.91	2432.67	2458.14	2449.67	2441.75
13	2428.90	2423.80	2416.70	2404.94	2381.26	2372.34	2371.66	2384.21	2433.15	2458.34	2449.24	2441.72
14	2428.76	2423.67	2416.36	2404.31	2380.84	2372.28	2372.58	2384.71	2434.10	2458.52	2448.86	2441.71
15	2428.58	2423.51	2416.02	2403.65	2380.50	2372.20	2373.73	2385.22	2435.42	2458.61	2448.42	2441.59
16	2428.44	2423.42	2415.62	2403.07	2380.05	2372.17	2374.44	2385.62	2437.13	2458.60	2448.01	2441.53
17	2428.26	2423.38	2415.34	2402.34	2379.67	2371.98	2374.95	2386.02	2439.15	2458.57	2447.61	2441.52
18	2428.04	2423.31	2414.97	2401.62	2379.23	2371.94	2375.27	2386.43	2441.32	2458.59	2447.25	2441.45
19	2427.88	2423.21	2414.65	2400.93	2378.85	2371.89	2375.52	2386.74	2443.08	2458.53	2446.85	2441.38
20	2427.70	2423.08	2414.28	2400.25	2378.50	2371.69	2375.83	2387.82	2444.44	2458.49	2446.46	2441.34
21	2427.50	2422.96	2413.92	2399.54	2378.20	2371.54	2376.18	2390.30	2445.46	2458.44	2445.88	2441.23
22	2427.40	2422.87	2413.50	2398.89	2377.80	2371.43	2376.54	2393.98	2446.60	2458.22	2445.44	2441.16
23	2427.17	2422.72	2413.12	2398.17	2377.78	2371.28	2377.01	2397.20	2447.81	2457.88	2445.00	2441.10
24	2427.14	2422.68	2412.81	2396.45	2377.45	2371.16	2377.32	2399.30	2449.39	2457.65	2444.50	2441.06
25	2426.92	2422.47	2412.50	2396.84	2377.10	2371.06	2377.63	2400.79	2450.93	2457.37	2444.00	2440.93
26	2426.75	2422.30	2412.17	2396.16	2376.76	2370.95	2377.97	2402.06	2452.25	2456.99	2443.53	2440.87
27	2426.55	2422.11	2411.85	2395.47	2376.37	2370.91	2378.12	2403.32	2453.50	2456.66	2443.16	2440.75
28	2426.41	2421.86	2411.50	2394.73	2375.81	2370.88	2378.35	2404.92	2454.80	2456.34	2442.81	2440.62
29	2426.30	2421.50	2411.19	2394.00	---	2370.80	2378.61	2406.95	2455.85	2455.90	2442.43	2440.52
30	2426.16	2421.20	2410.00	2393.23	---	2370.73	2378.99	2409.55	2456.79	2455.46	2442.09	2440.54
31	2425.97	---	2410.51	2392.42	---	2370.66	---	2412.36	---	2455.15	2441.92	---
MAX	2430.90	2425.83	2420.90	2410.14	2391.63	2375.79	2378.99	2412.36	2456.79	2458.61	2454.76	2441.88
MIN	2425.97	2421.20	2410.00	2392.42	2375.81	2370.66	2370.42	2379.31	2415.07	2455.15	2441.92	2440.52

CONTENTS IN THOUSANDS OF ACRE-FEET, AT END OF MONTH

4319	4131	3730	3127	2648	2508	2736	3797	5646	5571	4982	4922

CHANGE IN CONTENTS, IN ACRE-FEET

-204000	-188000	-401000	-603000	-479000	-140000	+228000	+1061000	+1849000	-75000	-589000	-60000

CAL YR 2001. . . . . -34000
WTR YR 2002. . . . . .+399000

KOOTENAI RIVER BASIN

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT

LOCATION.--Lat 48°24'03", long 115°19'11" (NAD 27), in SW$^1/_4$SW$^1/_4$SW$^1/_4$ sec.33, T.31 N., R.29 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, on right bank 0.7 mi downstream from Libby Dam, 2.8 mi upstream from Fisher River, 11 mi east of Libby, and at river mile 221.4.

DRAINAGE AREA.--8,985 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,100 ft (NGVD 29) (U.S. Army Corps of Engineers bench mark). Prior to Feb. 13, 1974, nonrecording gage at site 0.4 mi upstream at same datum.

REMARKS.--Water-discharge records good. Flow completely regulated by Lake Koocanusa since Mar. 21, 1972 . Diversions for irrigation of about 13,000 acres, revised, from tributaries upstream from station in Canada and the United States. U.S. Army Corps of Engineers satellite telemetry at station.

AVERAGE DISCHARGE.--31 years, 11,150 ft^3/s, 16.85 in/yr, 8,078,000 acre-ft/yr, adjusted for change in contents in Lake Koocanusa since Mar. 21, 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,200 ft^3/s, Aug. 5, 1974, gage height, 27.50 ft; minimum daily, 1,900 ft^3/s, Jan. 29, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40,400 ft^3/s, July 1, gage height, 26.28 ft; minimum daily, 3,990 ft^3/s, Apr. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6150	6140	9590	8210	14700	8020	4060	4070	8060	38700	20600	8760
2	6180	6120	9600	9570	14600	8030	4070	4110	8050	39700	19400	7750
3	6150	6110	9620	10200	14700	8030	4070	4040	8070	38900	19300	6880
4	6110	6110	9640	10300	14700	8060	4060	4110	8080	36600	19300	6040
5	6070	6110	9660	10300	18100	8060	4070	4110	11700	32600	21100	6020
6	6070	6130	9620	10200	22800	8070	4120	4090	16200	28900	21600	6040
7	6070	6110	9580	10200	24200	8070	4140	4050	18000	25800	21600	6010
8	6110	6100	9600	10200	24200	7150	4100	4060	18000	23100	19900	6020
9	6080	6100	9610	10100	19600	6340	4080	4100	18000	23800	17900	6030
10	6080	6120	9620	12900	14400	5640	4080	4080	19000	23900	17900	6340
11	6070	6130	9630	14600	12100	5050	4080	4090	20200	25100	17900	6040
12	6080	6130	9660	14600	10100	4520	4070	4080	23900	26500	17700	6050
13	6080	6130	9620	14600	9090	4090	4080	4070	26000	27100	16900	6030
14	6050	6130	9650	14600	8170	4040	4080	4090	25800	27200	17000	6030
15	6030	6130	9650	14600	8050	4070	4100	7030	25800	28700	17000	6040
16	6020	6150	9660	14700	8050	4090	4100	7960	25700	28500	17000	6040
17	6060	6140	9650	14600	8060	4090	4010	8000	25800	24600	15800	6050
18	6050	6140	9640	14600	8080	4090	4050	8020	24600	21900	15700	6040
19	6060	6150	9650	14600	8080	4100	4170	8010	25300	21900	16600	6040
20	6060	6130	9660	14600	8010	4110	4090	8030	25300	22000	17000	6030
21	6090	6110	9680	14700	8020	4110	4100	8010	25200	20500	17000	6040
22	6080	6130	9650	14700	8040	4110	4090	7980	25100	20500	17100	6050
23	6070	6130	9500	14500	8040	4110	4060	7990	25100	22000	17000	6050
24	6060	6130	8070	14700	8050	4120	3990	8040	24900	22000	17000	6050
25	6060	6130	8060	14600	8090	4090	4050	8070	25900	22000	17000	6050
26	6070	6140	8070	14800	8110	4070	4050	8030	30100	22000	17000	6070
27	6080	6140	8090	14700	8020	4070	4040	8010	32000	22000	15200	6070
28	6090	8560	8100	14600	8050	4080	4040	8030	32100	22100	14600	6020
29	6100	9560	8090	14700	---	4060	4080	8050	35000	22100	14700	6010
30	6110	9580	8070	14700	---	4070	4080	8050	36200	22100	12700	5960
31	6110	---	8070	14700	---	4070	---	8050	---	18800	11000	---
TOTAL	188550	193120	286060	409680	334210	162680	122260	192510	673160	801600	537500	186650
MEAN	6082	6437	9228	13220	11940	5248	4075	6210	22440	25860	17340	6222
MAX	6180	9580	9680	14800	24200	8070	4170	8070	36200	39700	21600	8760
MIN	6020	6100	8060	8210	8010	4040	3990	4040	8050	18800	11000	5960
AC-FT	374000	383100	567400	812600	662900	322700	242500	381800	1335000	1590000	1066000	370200
CFSM	0.68	0.72	1.03	1.47	1.33	0.58	0.45	0.69	2.50	2.88	1.93	0.69
IN.	0.78	0.80	1.18	1.70	1.38	0.67	0.51	0.80	2.79	3.32	2.23	0.77
MEAN †	2765	3279	2706	3409	3311	2971	7907	23460	53510	24640	7758	5213
CFSM †	.31	.36	.30	.38	.37	.33	.88	2.61	5.96	2.74	.86	.58
IN †	.35	.41	.35	.44	.38	.38	.98	3.01	6.64	3.16	1.00	.65
AC-FT†	170000	195100	166400	209600	183900	182700	470500	1442800	3184000	1515000	477000	310200

OBSERVED

CAL YR	2001	TOTAL	2216030	MEAN	6071	MAX	15000	MIN	3860	AC-FT	4395000
WTR YR	2002	TOTAL	4087980	MEAN	11190	MAX	39700	MIN	3990	AC-FT	8109000

ADJUSTED

CAL YR	2001	TOTAL	2198942	MEAN	6024	CFSM	.67	IN	9.10	AC-FT	4361000
WTR YR	2002	TOTAL	4288984	MEAN	11750	CFSM	1.31	IN	17.75	AC-FT	8508000

†--Adjusted for change in contents in Lake Koocanusa.

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967 to current year. Prior to March 25, 1974, at site, 3.2 mi downstream.
PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1967 to September 1969.
WATER TEMPERATURE: October 1967 to September 1977; seasonal records, April 2001 to current year.
SUSPENDED SEDIMENT DISCHARGE: October 1967 to January 1976.
INSTRUMENTATION.--The temperature sensing probe is owned and maintained by the U.S. Army Corps of Engineers.
REMARKS.--During June, July, and August, problems occurred with the temperature probe. During this period, some temperature data could be estimated from available partial-day data. Insufficient data was available for July 2, 6-10, and 27. Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1968-69): Maximum daily, 525 microsiemens per centimeter (µS/cm) at 25.0°C, Dec. 24, 1967; minimum daily, 174 µS/cm at 25.0°C, May 26, 1969.
WATER TEMPERATURE (water years 1967-77, 2001): Maximum, 21.5°C, Aug. 6, 1970; minimum 0.0°C on many days during winter periods most years prior to Libby Dam.
SEDIMENT CONCENTRATION (water years 1967-76): Maximum daily mean, 1,200 mg/L, June 5, 1968; minimum daily mean, 1 mg/L on many days in 1968, 1969, 1972-75.
SEDIMENT LOAD (water years 1967-76): Maximum daily, 200,000 tons, June 5, 1968; minimum daily, 5.4 tons, Jan. 28, 1972.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum, 16.0°C, Aug. 16, 17, 30 and Sept. 5-7; minimum 2.5°C, Apr. 1-5.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)
OCT											
17..	1400	6080	630	9.4	106	7.5	248	6.5	12.0	4.0	<.015
DEC											
27..	1200	8050	713	9.8	85	7.3	253	-5.0	6.5	4.4	<.015
MAR											
01..	0945	8020	710	11.1	91	7.4	251	1.5	4.0	4.5	<.015
APR											
19..	0930	4220	711	--	--	8.4	270	5.0	4.0	4.4	<.015
MAY											
15..	0745	7610	706	11.0	92	7.4	263	3.0	4.5	5.4	<.015
JUN											
12..	0900	23500	709	9.3	88	8.8	251	9.5	9.5	5.3	E.009
JUL											
17..	0745	26900	697	9.4	94	8.1	206	17.5	11.5	5.6	E.010
AUG											
14..	1030	17000	698	8.6	92	8.5	198	22.0	14.5	3.7	<.015
SEP											
18..	1415	6030	706	8.2	84	7.6	206	20.5	13.0	3.9	<.015

DATE	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT								
17...	--	.065	<.002	<.007	E.004	--	--	--
DEC								
27...	--	.097	<.002	<.007	E.002	--	--	--
MAR								
01...	--	.095	<.002	<.007	E.003	--	--	--
APR								
19...	--	.077	<.002	<.007	.004	88	3	34.2
MAY								
15...	E.07	.077	<.002	<.007	E.003	95	2	41.1
JUN								
12...	.13	.076	<.002	<.007	.008	92	3	190
JUL								
17...	.11	.108	E.002	<.007	.007	97	2	145
AUG								
14...	E.09	.071	.005	<.007	.004	85	2	91.8
SEP								
18...	--	.081	<.002	<.007	.004	--	--	--

E--Estimated.

KOOTENAI RIVER BASIN

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
MAY											
15...	0745	130	34.9	10.2	.56	.2	4.32	97	3.01	E.1	5.4
JUL											
17...	0745	100	29.2	7.77	.46	.1	2.36	79	1.61	E.1	5.6

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)
MAY											
15...	.6	.19	2890	141	2	.4	<2	E.03	<.1	<.8	<.8
JUL											
17...	13.8	.15	7910	109	10	.3	<2	.04	<.1	<.8	<.8

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
MAY									
15...	.7	.8	<.08	<1	<.01	.86	<1	2	5
JUL									
17...	1.2	1.6	.39	<1	.01	.39	<1	2	2

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	2.5	2.5	2.5	4.0	3.5	4.0	5.0	4.5	5.0	9.5	9.0	9.0
2	3.0	2.5	2.5	4.0	3.5	3.5	6.0	5.0	5.5	---	---	---
3	3.0	2.5	2.5	4.0	3.5	3.5	6.0	5.5	6.0	10.0	9.5	9.5
4	3.0	2.5	3.0	3.5	3.5	3.5	6.0	4.5	5.0	10.0	10.0	10.0
5	3.0	2.5	3.0	4.0	3.5	3.5	6.5	5.0	5.5	e11.0	e10.0	e10.5
6	3.0	3.0	3.0	4.0	3.5	3.5	6.5	5.5	6.0	---	---	---
7	3.0	3.0	3.0	4.0	3.5	3.5	6.5	6.0	6.5	---	---	---
8	3.0	3.0	3.0	4.0	3.5	4.0	7.0	6.5	7.0	---	---	---
9	3.0	3.0	3.0	4.5	4.0	4.0	7.5	6.0	6.5	---	---	---
10	3.0	3.0	3.0	4.5	4.0	4.0	9.0	7.5	8.5	---	---	---
11	3.5	3.0	3.0	4.5	4.0	4.0	9.0	9.0	9.0	11.5	11.0	11.0
12	3.5	3.0	3.0	4.5	4.0	4.5	9.0	8.5	9.0	11.5	11.0	11.5
13	3.5	3.0	3.0	4.5	4.0	4.0	9.0	8.5	8.5	e11.5	e11.0	e11.0
14	3.5	3.0	3.0	4.5	4.0	4.0	9.0	8.5	9.0	e11.5	e11.5	e11.5
15	3.5	3.0	3.0	4.5	4.0	4.0	9.0	8.5	9.0	11.5	11.5	11.5
16	3.5	3.0	3.5	4.5	4.0	4.0	9.0	8.5	9.0	11.5	11.5	11.5
17	3.5	3.0	3.5	4.0	4.0	4.0	9.0	8.5	8.5	11.5	11.0	11.5
18	4.0	3.0	3.5	4.5	4.0	4.0	8.5	8.0	8.5	11.5	11.5	11.5
19	4.0	3.5	3.5	5.0	4.0	4.5	8.5	8.0	8.5	11.5	11.0	11.5
20	4.0	3.5	3.5	5.5	4.5	5.0	8.5	8.0	8.5	11.5	11.0	11.5
21	4.0	3.5	3.5	5.0	4.5	4.5	8.5	8.0	8.5	12.0	11.5	11.5
22	4.0	3.5	3.5	5.5	4.5	5.0	9.5	8.5	8.5	14.0	12.0	13.0
23	4.0	3.5	3.5	5.5	5.0	5.0	10.0	9.0	9.5	14.0	13.0	13.5
24	4.0	3.5	3.5	5.0	4.5	5.0	9.5	9.0	9.5	13.5	13.0	13.0
25	4.0	3.5	3.5	5.0	4.5	5.0	---	e9.0	---	13.0	12.5	13.0
26	4.0	3.5	4.0	4.5	4.5	4.5	e10.5	---	---	13.0	12.0	12.5
27	4.5	4.0	4.0	5.0	4.0	4.5	10.5	10.0	10.0	---	---	---
28	4.0	3.5	4.0	5.0	4.5	4.5	10.0	10.0	10.0	12.5	11.5	12.0
29	4.0	3.5	4.0	5.0	4.5	4.5	10.0	9.5	9.5	12.0	11.0	11.5
30	4.0	3.5	3.5	4.5	4.5	4.5	9.5	9.0	9.5	12.0	11.0	11.5
31	---	---	---	5.0	4.5	5.0	---	---	---	e12.0	e11.5	---
MONTH	4.5	2.5	3.5	5.5	3.5	4.0	---	---	---	---	---	---

e--Estimated.

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
	AUGUST			SEPTEMBER		
1	e13.5	e11.5	e12.5	14.5	13.0	13.5
2	13.5	13.5	13.5	15.0	13.0	14.0
3	14.5	13.0	13.5	14.0	13.5	14.0
4	15.5	14.5	15.0	15.0	13.5	14.5
5	15.5	14.5	14.5	16.0	15.0	15.5
6	14.5	13.5	14.0	16.0	15.5	16.0
7	13.5	13.0	13.5	16.0	15.5	15.5
8	13.5	13.0	13.0	15.5	14.5	15.0
9	13.5	12.5	13.0	14.5	14.0	14.5
10	13.5	12.5	13.0	14.0	13.5	13.5
11	14.0	12.5	13.0	14.5	14.0	14.0
12	14.0	13.5	14.0	15.0	13.5	14.5
13	15.0	14.0	14.5	15.0	14.5	15.0
14	15.0	14.0	14.5	15.0	14.5	15.0
15	15.5	14.0	14.5	15.0	14.5	14.5
16	16.0	13.5	14.5	14.5	14.0	14.5
17	e16.0	e14.0	e15.0	14.0	13.5	14.0
18	e15.5	e14.5	e15.0	13.5	13.0	13.0
19	15.5	14.0	14.5	14.0	13.0	13.0
20	15.0	14.0	14.5	13.5	12.5	13.0
21	14.5	14.0	14.5	13.5	12.5	13.0
22	14.5	14.0	14.0	13.5	13.0	13.5
23	14.5	14.0	14.0	14.0	13.5	13.5
24	14.5	14.0	14.5	14.0	13.5	14.0
25	14.5	14.5	14.5	14.5	14.0	14.0
26	15.0	14.0	14.5	14.0	14.0	14.0
27	15.5	14.5	15.0	14.0	14.0	14.0
28	15.5	15.0	15.0	14.0	14.0	14.0
29	15.5	15.0	15.5	14.0	13.5	13.5
30	16.0	15.0	15.5	13.5	13.0	13.5
31	15.5	13.5	15.0	---	---	---
MONTH	16.0	11.5	14.0	16.0	12.5	14.0

e--Estimated.

KOOTENAI RIVER BASIN

12302055 FISHER RIVER NEAR LIBBY, MT

LOCATION.--Lat 48°21'20", long 115°18'50" (NAD 27), in NW$^1/_4$ NE$^1/_4$NW$^1/_4$ sec.21, T.30 N., R.29 W., Lincoln County, Hydrologic Unit 17010102, on left bank 0.8 mi upstream from mouth and 11.4 mi east of Libby.
DRAINAGE AREA.--838 mi^2.
PERIOD OF RECORD.--September 1967 to current year.

WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 2,134.10 ft (NGVD 29) (U.S. Army Corps of Engineers bench mark).
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Diversions of about 700 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about May 22, 1948, reached a discharge of 6,560 ft^3/s, by slope-area measurement at site 0.5 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	265	128	e104	e171	519	653	1570	2270	734	203	125
2	56	186	e132	e103	e166	453	685	1670	2080	653	196	121
3	56	165	e134	100	163	422	665	1820	1960	605	189	119
4	56	161	e132	100	166	396	652	1860	1850	572	185	119
5	56	152	128	102	153	e357	672	1700	1830	540	186	120
6	57	150	125	106	157	e296	804	1530	1860	504	188	124
7	58	142	122	122	155	e248	1120	1350	1630	478	188	130
8	58	131	118	712	160	e268	1420	1210	1430	477	180	131
9	59	123	115	1040	155	e284	1470	1090	1420	521	174	124
10	60	117	111	705	149	e284	1470	994	1320	473	166	120
11	64	112	110	533	149	305	1720	915	1220	453	159	117
12	68	108	106	444	134	508	2010	881	1180	454	154	115
13	69	106	110	413	e127	507	2680	933	1240	436	149	112
14	71	106	120	358	e122	463	4680	1200	1340	414	144	109
15	70	183	129	311	e125	442	6330	1420	1400	395	139	107
16	69	184	120	289	130	430	4420	1370	1460	367	135	106
17	68	239	130	268	140	411	3180	1330	1440	347	134	107
18	67	239	e124	248	141	386	2480	1330	1330	333	132	109
19	68	199	e132	240	139	379	2090	1320	1430	319	129	108
20	68	176	e133	231	140	363	1880	1850	1210	308	127	104
21	68	165	129	227	140	317	1780	2670	1070	293	126	100
22	70	163	123	207	333	320	1790	3740	1050	281	130	97
23	88	161	119	203	2180	326	1790	3980	1100	269	131	97
24	114	159	116	199	1430	312	1670	2940	1110	263	127	97
25	103	152	113	217	931	316	1550	2390	1020	252	126	97
26	92	145	e104	252	703	339	1490	2150	958	244	125	97
27	88	137	e88	217	643	390	1450	2200	933	237	133	97
28	104	132	e95	195	590	407	1370	2470	909	231	133	97
29	119	132	e100	157	---	426	1310	2750	866	224	128	97
30	105	130	e104	e166	---	448	1400	2780	913	216	138	97
31	161	---	104	e168	---	513	---	2520	---	211	132	---
TOTAL	2368	4720	3654	8737	9892	11835	56681	57933	40829	12104	4686	3300
MEAN	76.39	157.3	117.9	281.8	353.3	381.8	1889	1869	1361	390.5	151.2	110.0
MAX	161	265	134	1040	2180	519	6330	3980	2270	734	203	131
MIN	56	106	88	100	122	248	652	881	866	211	125	97
AC-FT	4700	9360	7250	17330	19620	23470	112400	114900	80980	24010	9290	6550
CFSM	0.09	0.19	0.14	0.34	0.42	0.46	2.25	2.23	1.62	0.47	0.18	0.13
IN.	0.11	0.21	0.16	0.39	0.44	0.53	2.52	2.57	1.81	0.54	0.21	0.15

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2002, BY WATER YEAR (WY)

MEAN	136.0	231.3	244.3	258.2	353.6	594.1	1228	1418	834.3	296.3	140.2	119.9
MAX	305	819	1174	1272	1965	2401	2752	3300	1796	532	244	204
(WY)	1986	1996	1996	1974	1996	1972	1997	1997	1974	1971	1997	1968
MIN	76.4	87.0	90.4	77.9	95.0	134	318	482	221	92.7	56.0	54.6
(WY)	2002	1980	1993	1979	1993	2001	2001	1977	1977	1977	1994	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1968 - 2002	
ANNUAL TOTAL	68201		216739			
ANNUAL MEAN	186.9		593.8		487.6	
HIGHEST ANNUAL MEAN					938	1996
LOWEST ANNUAL MEAN					169	1977
HIGHEST DAILY MEAN	1410	Apr 29	6330	Apr 15	7790	Feb 9 1996
LOWEST DAILY MEAN	52	Sep 4	56	Oct 2	35	Jan 2 1977
ANNUAL SEVEN-DAY MINIMUM	53	Aug 31	57	Oct 1	50	Aug 18 1994
MAXIMUM PEAK FLOW			6910	Apr 15	a12000	Feb 9 1996
MAXIMUM PEAK STAGE			8.58	Apr 15	10.35	Feb 9 1996
INSTANTANEOUS LOW FLOW			56	Oct 2	29	Jan 2 1977
ANNUAL RUNOFF (AC-FT)	135300		429900		353200	
ANNUAL RUNOFF (CFSM)	0.22		0.71		0.58	
ANNUAL RUNOFF (INCHES)	3.03		9.62		7.91	
10 PERCENT EXCEEDS	424		1670		1290	
50 PERCENT EXCEEDS	110		203		210	
90 PERCENT EXCEEDS	58		99		98	

a--From indirect measurement.
e--Estimated.

12302055 FISHER RIVER NEAR LIBBY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967-85, May 1999 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1967 to September 1985.
SUSPENDED SEDIMENT DISCHARGE: October 1967 to January 1976.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (water years 1967-77): Maximum, 21.5°C, Aug. 6, 1970; minimum 0.0°C on many days during winter periods most years.
SEDIMENT CONCENTRATION (water years 1967-76): Maximum daily mean, 4,600 mg/L, June 5, 1968; minimum daily mean, 1 mg/L on many days in 1970-76.
SEDIMENT LOAD (water years 1967-76): Maximum daily, 91,200 tons, Jan. 16, 1974; minimum daily, 0.17 tons, Sept. 7, 1973.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV 2001									
05...	1145	153	8.3	174	11.0	8.0	<.10	<.013	<.002
APR 2002									
16...	1600	4130	8.1	87	9.5	5.0	.30	.056	<.002
MAY									
15...	0945	1430	7.7	82	6.5	6.5	.17	<.013	<.002
JUN									
12...	0745	1180	8.3	98	10.0	10.0	.19	<.013	<.002
JUL									
17...	1015	344	8.3	150	18.5	17.0	.10	<.013	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001					
05...	<.007	E.003	72	6	2.5
APR 2002					
16...	.007	.23	89	588	6560
MAY					
15...	<.007	.042	90	85	328
JUN					
12...	<.007	.034	94	49	156
JUL					
17...	<.007	.009	99	8	7.4

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
NOV 2001											
05...	1145	84	20.6	7.81	.65	.1	2.68	89	.77	<.1	9.18
MAY 2002											
15...	0945	40	10.5	3.45	.63	.1	1.77	41	.44	<.1	10.5

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
NOV 2001											
05...	4.1	.13	40.9	99	<4	<.1	<.8	E.6	<1	<1	1
MAY 2002											
15...	2.1	.07	208	54	<2	<.1	.9	4.3	2	1	6

E--Estimated.

KOOTENAI RIVER BASIN

12304500 YAAK RIVER NEAR TROY, MT

LOCATION.--Lat 48°33'43", long 115°58'09" (NAD 27), in NE$^1/_4$SE$^1/_4$SE$^1/_4$ sec.5, T.32 N., R.34 W., Lincoln County, Hydrologic Unit 17010103, Kootenai National Forest, on right bank 500 ft upstream from bridge on U.S. Highway 2, 0.3 mi upstream from mouth, and 7.7 mi northwest of Troy.

DRAINAGE AREA.--766 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1910 to September 1916 (fragmentary record), March 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,839.2 ft (NGVD 29). Oct. 15, 1910, to Sept. 30, 1916, nonrecording gage at several sites within 11 mi of present site at various datums.

REMARKS.--Water-discharge records good. Minor diversions for irrigation upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May to June 1948 reached a stage of 11.0 ft, from floodmarks; discharge, 12,500 ft^3/s. Flood in May 1954 reached a stage of 11.4 ft, from floodmarks; discharge, 13,400 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	235	174	e166	273	665	835	2650	5520	965	206	117
2	58	188	189	e178	259	575	875	2930	4930	855	200	110
3	57	163	181	e173	246	541	806	3290	4570	772	193	105
4	56	142	172	e170	242	529	780	3170	4230	713	187	105
5	54	132	160	e171	230	518	833	2770	4180	664	185	107
6	54	141	153	e180	234	462	1120	2420	3870	617	182	113
7	54	129	148	349	240	424	1570	2130	3200	582	178	131
8	57	118	147	2010	239	420	1750	1900	2760	599	174	128
9	60	107	147	1780	227	428	1660	1730	2460	646	167	121
10	63	100	134	1130	218	423	1620	1590	2200	575	165	113
11	79	96	135	827	219	427	1900	1500	2050	520	158	109
12	87	91	119	690	193	602	2450	1520	2080	482	153	105
13	86	91	140	600	193	600	3880	1750	2190	449	148	101
14	83	145	172	515	203	544	7660	2390	2350	420	140	98
15	79	367	153	424	198	507	7240	2560	2420	393	134	97
16	75	421	157	392	204	478	4840	2420	2450	366	131	94
17	77	545	220	365	214	436	3400	2380	2310	344	129	102
18	79	448	190	338	208	426	2710	2430	2330	329	129	103
19	77	333	194	353	206	420	2370	2630	2350	311	127	103
20	75	276	172	353	214	398	2220	4370	1920	295	124	103
21	73	257	171	347	208	346	2280	7670	1720	282	122	98
22	80	248	161	322	661	375	2650	10900	1660	271	122	96
23	105	259	154	303	2190	379	2650	10000	1700	260	120	94
24	107	248	148	298	1600	376	2340	7240	1620	255	117	93
25	99	226	142	338	1110	394	2090	5650	1440	244	117	93
26	89	207	e138	346	e840	435	1970	5120	1310	256	114	91
27	85	190	e142	307	783	508	1870	5440	1230	249	122	91
28	175	181	e154	291	734	522	1800	6050	1130	251	121	91
29	147	181	e170	254	---	527	1880	6730	1130	238	118	91
30	138	173	e188	264	---	536	2250	6880	1160	221	116	109
31	216	---	e172	275	---	597	---	6380	---	213	122	---
TOTAL	2683	6438	4997	14509	12586	14818	72299	126590	74470	13637	4521	3112
MEAN	86.55	214.6	161.2	468.0	449.5	478.0	2410	4084	2482	439.9	145.8	103.7
MAX	216	545	220	2010	2190	665	7660	10900	5520	965	206	131
MIN	54	91	119	166	193	346	780	1500	1130	213	114	91
AC-FT	5320	12770	9910	28780	24960	29390	143400	251100	147700	27050	8970	6170
CFSM	0.11	0.28	0.21	0.61	0.59	0.62	3.15	5.33	3.24	0.57	0.19	0.14
IN.	0.13	0.31	0.24	0.70	0.61	0.72	3.51	6.15	3.62	0.66	0.22	0.15

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2002, BY WATER YEAR (WY)

MEAN	200.4	323.3	324.5	296.0	358.6	597.9	1932	3533	1943	500.7	197.3	164.1
MAX	833	1192	1630	1552	1626	1872	3754	6463	4992	970	373	506
(WY)	1960	1996	1996	1974	1996	1972	1969	1997	1974	1969	1993	1959
MIN	84.0	93.2	96.8	94.6	83.0	134	421	1026	377	151	80.9	53.2
(WY)	1988	1980	2001	1988	2001	2001	2001	1977	1992	1977	2001	2001

KOOTENAI RIVER BASIN

12304500 YAAK RIVER NEAR TROY, MT

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1957 - 2002	
ANNUAL TOTAL	107381		350660			
ANNUAL MEAN	294.2		960.7		865.7	
HIGHEST ANNUAL MEAN					1562	1974
LOWEST ANNUAL MEAN					278	1977
HIGHEST DAILY MEAN	2190	May 25	10900	May 22	11600	May 16 1997
LOWEST DAILY MEAN	49	Sep 19	a54	Oct 5	49	Sep 19 2001
ANNUAL SEVEN-DAY MINIMUM	49	Sep 19	56	Oct 2	49	Sep 19 2001
MAXIMUM PEAK FLOW			12100	May 22	b12600	May 17 1997
MAXIMUM PEAK STAGE			9.37	May 22	c9.70	May 21 1956
INSTANTANEOUS LOW FLOW			54	Oct 5	47	Sep 22 2001
ANNUAL RUNOFF (AC-FT)	213000		695500		627200	
ANNUAL RUNOFF (CFSM)	0.38		1.25		1.13	
ANNUAL RUNOFF (INCHES)	5.21		17.03		15.36	
10 PERCENT EXCEEDS	897		2450		2590	
50 PERCENT EXCEEDS	135		260		289	
90 PERCENT EXCEEDS	60		97		121	

a--Also Oct. 6,7.
b--Gage height, 9.58 ft.
c--Gage height in well; 10.8 ft. from outside gage.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963-73, 1975-85, May 1999 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Seasonal records 1963-73, 1975-85, April 2000 to current year.
INSTRUMENTATION.--Water temperature probe installed by U.S. Army Corps of Engineers.
REMARKS.--Prior to March 25, 1975, temperature records furnished by U.S. Army Corps of Engineers. Missing maximum temperature data for Aug. 29 due to equipment problems. Unpublished records of instantaneous water temperature are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records 1963-73, 1975-85, 2001): Maximum, 31.0°C, Aug. 11, 2001; minimum 0.0°C on many days during winter periods.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum, 25.0°C, July 24; minimum 0.5°C on May 9.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV 2001									
05...	0945	129	8.3	112	8.0	7.5	.12	<.013	<.002
APR 2002									
16...	1015	4910	7.8	46	10.0	4.0	.26	.044	<.002
MAY									
15...	1145	2570	7.5	52	10.0	5.5	.11	<.013	<.002
JUN									
12...	1215	2050	8.0	56	15.5	8.5	.11	<.013	<.002
JUL									
17...	1200	344	8.1	97	21.5	17.5	E.10	<.013	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001					
05...	<.007	E.003	70	4	1.4
APR 2002					
16...	<.007	.031	76	29	384
MAY					
15...	<.007	.006	85	3	20.8
JUN					
12...	<.007	.005	80	3	16.6
JUL					
17...	<.007	.004	88	1	.93

E--Estimated.

KOOTENAI RIVER BASIN

12304500 YAAK RIVER NEAR TROY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
NOV 2001											
05...	0945	52	15.4	3.21	.81	.1	2.42	58	.58	<.1	9.97
MAY 2002											
15...	1145	26	7.64	1.65	.51	.1	1.21	29	E.27	<.1	10.4

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
NOV 2001											
05...	1.9	.09	24	69	<4	<.1	<.8	.7	<1	<1	1
MAY 2002											
15...	1.0	E.04	E207	E30	<2	<.1	<.8	3.1	<1	<1	4

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	10.5	5.5	7.5	9.0	3.0	5.5	11.0	6.0	8.5	16.5	11.0	14.0
2	6.5	2.0	4.5	9.5	3.5	6.5	11.5	8.5	10.0	17.5	11.5	14.5
3	11.0	3.0	6.5	7.5	2.0	5.5	13.0	8.5	10.5	17.5	11.5	15.0
4	11.5	3.5	6.5	5.5	3.0	4.0	13.0	8.5	11.0	17.0	12.5	14.5
5	11.0	3.0	6.5	3.5	1.5	2.5	13.0	8.0	10.0	18.5	11.5	15.0
6	10.5	5.5	8.0	7.5	2.5	4.0	11.5	6.5	8.5	19.0	12.0	15.0
7	8.0	5.0	7.0	5.0	2.5	3.5	11.0	6.0	8.0	18.0	13.0	15.5
8	8.0	5.0	6.5	4.0	1.0	2.5	8.5	4.5	5.5	18.0	12.0	14.0
9	8.0	4.0	5.5	6.5	0.5	3.5	9.5	4.0	7.0	20.5	11.5	16.0
10	10.5	6.0	8.0	7.5	1.5	4.5	9.5	6.0	8.0	22.0	14.5	18.0
11	9.0	4.5	6.5	8.5	2.0	5.5	12.0	6.5	8.5	23.0	15.5	19.5
12	7.5	4.5	5.5	9.5	4.0	6.5	12.5	6.5	9.5	24.0	17.5	21.0
13	8.0	4.5	6.0	11.0	5.5	8.0	15.0	9.0	12.0	24.0	18.0	21.5
14	7.5	5.0	7.0	9.5	6.5	8.0	16.0	11.0	13.5	24.0	20.0	22.5
15	6.5	4.5	5.5	9.0	4.5	7.0	14.5	9.5	12.5	24.0	18.5	21.5
16	8.0	4.0	5.5	9.0	5.0	7.5	15.5	10.0	12.5	22.5	17.0	20.0
17	8.5	6.5	7.5	7.5	5.5	6.5	14.0	9.0	12.0	23.5	17.5	20.0
18	10.5	5.0	7.5	6.5	3.0	5.0	14.0	8.0	10.5	24.5	19.0	22.0
19	10.5	6.0	8.0	9.5	4.0	6.5	10.5	8.0	9.5	23.0	19.0	20.5
20	10.5	6.0	8.0	8.0	5.0	6.5	12.5	6.0	9.0	22.5	17.0	20.0
21	9.5	7.0	8.0	7.0	2.5	3.5	17.0	9.5	12.5	22.0	16.5	19.5
22	8.0	5.0	6.5	5.0	1.0	3.0	17.0	9.5	13.0	22.0	17.0	19.5
23	5.5	3.0	4.5	4.5	1.0	2.0	18.5	11.0	14.5	22.5	18.5	20.5
24	5.5	1.5	3.5	4.5	2.0	3.0	17.0	12.5	14.5	25.0	20.0	22.0
25	6.0	2.0	4.0	7.5	3.0	4.5	18.5	10.5	14.0	24.5	20.0	22.5
26	8.0	3.0	5.0	7.0	3.5	5.0	20.5	15.0	17.0	24.0	20.5	22.5
27	9.5	3.0	5.0	10.0	5.0	7.0	19.5	13.0	16.0	23.0	18.0	20.5
28	9.5	3.0	6.0	7.0	5.0	6.0	18.0	13.0	15.5	19.5	16.0	18.0
29	8.5	3.5	6.0	9.0	4.5	6.5	16.0	12.0	13.5	20.0	16.0	18.0
30	7.0	4.5	5.5	9.0	5.0	6.5	16.0	9.0	12.5	19.5	14.5	17.0
31	---	---	---	10.0	6.5	8.5	---	---	---	19.0	14.0	16.5
MONTH	11.5	1.5	6.0	11.0	0.5	5.3	20.5	4.0	11.5	25.0	11.0	18.5

KOOTENAI RIVER BASIN

12304500 YAAK RIVER NEAR TROY, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER	
1	19.0	12.5	16.0	20.0	15.5	17.5
2	21.0	14.5	17.0	19.5	14.0	16.5
3	19.5	13.5	16.0	20.0	14.5	17.0
4	18.0	14.0	16.0	20.5	13.0	16.5
5	19.5	13.0	16.5	18.0	16.0	17.0
6	17.5	14.0	16.0	19.0	15.0	16.5
7	20.0	13.5	16.0	20.0	15.0	17.0
8	19.5	13.0	15.5	17.0	14.0	15.5
9	21.0	15.0	17.5	19.5	13.5	16.0
10	22.0	15.0	18.5	20.5	14.5	17.0
11	23.5	16.5	19.0	20.0	13.5	17.0
12	23.5	15.0	19.0	21.0	14.0	16.5
13	24.0	15.0	19.0	21.0	14.5	17.5
14	23.5	16.0	19.5	20.5	14.5	17.0
15	23.0	16.0	18.5	18.5	14.5	16.5
16	21.5	16.0	17.5	16.5	14.5	15.5
17	20.5	13.5	16.5	18.0	14.5	16.0
18	21.5	14.5	17.5	18.5	14.0	16.0
19	21.0	13.5	17.0	18.5	12.5	15.0
20	21.5	14.5	17.0	17.0	12.0	15.0
21	19.0	14.0	16.5	16.0	10.0	12.5
22	21.5	13.0	16.5	15.5	9.0	12.0
23	22.5	14.5	18.0	15.5	10.0	12.0
24	22.0	15.5	18.5	17.5	9.0	12.5
25	22.0	15.5	18.0	17.0	11.5	13.5
26	21.5	16.5	18.5	15.0	12.0	13.5
27	20.0	13.5	16.5	15.5	11.5	13.0
28	22.5	14.0	17.0	15.0	9.5	11.5
29	18.5	---	17.0	14.0	11.0	12.0
30	20.0	16.0	17.5	12.5	10.0	11.5
31	21.5	14.0	17.5	---	---	---
MONTH	24.0	---	17.5	21.0	9.0	15.0

KOOTENAI RIVER BASIN

12305000 KOOTENAI RIVER AT LEONIA, ID

LOCATION.--Lat 48°37'04", long 116°02'47" (NAD 27), in NW$^1/_4$NW$^1/_4$NW$^1/_4$ sec. 20, T.33 N., R.34 W., principal Meridian, Lincoln County, Mont., Hydrologic Unit l70l0l04, on right bank at Leonia, 450 ft east of Montana-Idaho State line, 0.5 mi upstream from Boulder Creek, and at mile 171.6.

DRAINAGE AREA.--11,740 mi^2, approximately.

PERIOD OF RECORD.--March 1928 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,790.25 ft (NGVD 29). Prior to Oct. 1, 1970, at datum 90 ft lower. Prior to Nov. 13, 1928, nonrecording gage on bridge 250 ft upstream at datum 90.41 ft lower.

REMARKS.--Records good good those for May to September and daily discharges above 25,00 ft^3/s, which are fair. Station equipment includes satellite telemetry. Diversions above station for irrigation of about 14,600 acres. Flow regulated by Lake Koocanusa since Mar. 21, 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (1929-71), 123,000 ft^3/s May 28, 1948, gage height, 33.40 ft; minimum, 996 ft^3/s, Dec. 9, 1936, minimum gage height, 7.56 ft, Dec. 10, 1929. Maximum discharge since regulation (1972 to current year), 62,000 ft^3/s, Jan. 16, 1974, gage height, 24.15 ft; maximum gage height, 25.06 ft, Feb. 9, 1996; minimum daily, 2,270 ft^3/s, Dec. 9, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of June 1894 and 1916 reached stages of 34.6 and 31.6 ft, respectively, present datum, from information by Great Northern Railway.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 48,400 ft^3/s, July 2; minimum daily, 5,790 ft^3/s, Mar. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6830	8030	10500	8910	15600	10900	7340	12400	25200	47000	20300	10700
2	6890	7600	10500	9330	15500	10600	7600	13200	23000	48400	21400	9340
3	6880	7440	10500	10700	15400	10400	7390	14200	22000	47600	20500	8330
4	6830	7290	10500	10800	15400	10400	7260	14100	21300	45000	20500	7350
5	6790	7240	10500	10800	17300	10300	7340	13000	23800	40300	21400	6870
6	6780	7240	10500	10800	22300	10200	8030	12000	28400	34800	23100	6850
7	6780	7130	10300	11600	25300	10000	9260	11100	29700	31600	22900	6890
8	6800	6990	10300	18400	25400	9440	10200	10400	28000	28100	22300	6830
9	6850	6900	10300	18300	21900	8710	10200	9900	27000	27400	19000	6820
10	6850	6840	10300	16500	16700	7980	10200	9500	26500	27800	18900	6870
11	6960	6780	10300	18100	13600	7350	11000	9210	27900	28300	18900	7030
12	6940	6730	10300	17500	11800	7870	12500	9210	30500	30100	18800	6780
13	6920	6700	10400	17100	10500	7400	16500	9830	35600	30900	17900	6720
14	6910	6940	10500	16700	9710	6850	29100	11600	36500	30800	17800	6700
15	6860	8030	10400	16400	9160	6580	30600	13700	37000	31600	17800	6690
16	6850	8190	10500	16300	9150	6500	21900	15700	37500	33100	17800	6680
17	6860	9010	10700	16100	9200	6310	16700	15700	37200	29000	17800	6780
18	6870	8550	10600	15900	9210	6190	14200	15800	36500	24600	15400	6740
19	6870	7990	10600	15900	9210	6170	13000	16400	35200	24300	17300	6720
20	6860	7690	10500	15900	9160	6080	12200	21600	34300	24200	17800	6690
21	6870	7560	10500	15900	9160	5790	12200	28500	33500	23500	17800	6680
22	6920	7530	10400	15800	10300	5830	12600	35700	33400	21400	17800	6670
23	7020	7490	10300	15600	17600	5840	12600	33100	33600	23800	17800	6670
24	7000	7400	9430	15700	15200	5800	11900	26100	33500	23800	17700	6680
25	6980	7290	8880	16000	12900	5820	11300	22600	32700	23800	17800	6680
26	6930	7210	8830	16200	12000	5880	11000	21400	37400	23800	17800	6670
27	6950	7140	8770	16000	11500	6120	10800	22900	40800	23800	16600	6690
28	7270	8010	8790	15700	11300	6240	10500	25700	39800	23700	15500	6660
29	7160	10400	8850	15600	---	6300	10600	29200	44500	23700	15400	6650
30	7140	10400	8840	15600	---	6350	11400	29800	45300	23600	14200	6650
31	7720	---	8840	15600	---	6610	---	27700	---	22100	12600	---
TOTAL	215140	229740	311430	465740	391460	232810	377420	561250	977600	921900	568600	211080
MEAN	6940	7658	10050	15020	13980	7510	12580	18100	32590	29740	18340	7036
MAX	7720	10400	10700	18400	25400	10900	30600	35700	45300	48400	23100	10700
MIN	6780	6700	8770	8910	9150	5790	7260	9210	21300	21400	12600	6650
AC-FT	426700	455700	617700	923800	776500	461800	748600	1113000	1939000	1829000	1128000	418700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1971, BY WATER YEAR (WY)(UNREGULATED)*

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	6511	5700	4765	4024	4338	4896	14480	38710	45100	22770	9926	7020
MAX	15540	11280	13700	11330	10630	10390	39940	61770	74280	47510	16910	16560
(WY)	1948	1934	1934	1934	1951	1934	1934	1956	1967	1954	1954	1959
MIN	3532	2748	2477	1922	1994	2693	4334	18630	20630	9819	6142	4744
(WY)	1937	1937	1945	1937	1936	1944	1945	1944	1941	1944	1941	1936

SUMMARY STATISTICS	WATER YEARS 1929 - 1971*	
ANNUAL TOTAL		
ANNUAL MEAN	14050	
HIGHEST ANNUAL MEAN	19240	1956
LOWEST ANNUAL MEAN	7416	1944
HIGHEST DAILY MEAN	122000	May 28 1948
LOWEST DAILY MEAN	1070	Dec 8 1936
ANNUAL SEVEN-DAY MINIMUM	1310	Jan 2 1937
ANNUAL RUNOFF (AC-FT)	10180000	
10 PERCENT EXCEEDS	37400	
50 PERCENT EXCEEDS	6710	
90 PERCENT EXCEEDS	3230	

12305000 KOOTENAI RIVER AT LEONIA, ID--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2002,BY WATER YEAR (WY)(REGULATED, UNADJUSTED)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	14690	16660	16120	15600	13010	8934	11100	15550	17190	12970	11370	11180
MAX	31980	26400	28140	28610	24790	15160	25570	31670	39200	29740	20310	20960
(WY)	1973	1992	1991	1976	1990	1990	1996	1997	1972	2002	1976	1972
MIN	5635	5004	3423	3109	3724	4350	5588	8352	5374	4139	3956	5539
(WY)	1972	1972	1972	1972	1973	1973	2001	1977	1977	1988	1975	1994

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1972 - 2002**	
ANNUAL TOTAL	2683430		5464170			
ANNUAL MEAN	7352		14970		13700	
HIGHEST ANNUAL MEAN					20400	1996
LOWEST ANNUAL MEAN					7466	2001
HIGHEST DAILY MEAN	15600	Feb 13	48400	Jul 2	56200	Jan 16 1974
LOWEST DAILY MEAN	4290	Mar 9	5790	Mar 21	2270	Dec 9 1972
ANNUAL SEVEN-DAY MINIMUM	4350	Mar 8	5860	Mar 20	2420	Dec 7 1972
ANNUAL RUNOFF (AC-FT)	5323000		10840000		9926000	
10 PERCENT EXCEEDS	10500		29400		24400	
50 PERCENT EXCEEDS	6860		10700		11900	
90 PERCENT EXCEEDS	4700		6760		5040	

*--Unregulated
**--Regulated, unadjusted.

PEND OREILLE RIVER BASIN

12323230 BLACKTAIL CREEK AT HARRISON AVENUE AT BUTTE, MT

LOCATION.--Lat 45°59'07", long 112°30'26" (NAD 27), in NE$^1/_4$SE$^1/_4$NE$^1/_4$ sec.30, T.3 N., R.7 W., Silver Bow County, Hydrologic Unit 17010201, at culvert on Harrison Avenue near interchange off Interstate 90, at Butte.

PERIOD OF RECORD.--March 1993 to August 1995, December 1996 to current year. Formerly published as 4558531123026.

GAGE.--None. Elevation at site is 5,455 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)
NOV 2001											
06...	1415	3.8	7.9	326	14.5	8.5	130	35.9	8.67	1.4	2
MAR 2002											
14...	0810	3.1	7.7	321	.5	3.5	120	35.5	8.83	1.1	<2
APR											
08...	0900	9.2	7.7	235	3.0	3.0	90	25.6	6.41	3.3	4
MAY											
06...	0935	4.8	8.0	303	2.5	7.0	120	32.7	8.58	2.2	2
29...	0910	4.7	7.8	300	18.5	10.5	120	34.3	8.19	2.7	3
JUN											
03...	1720	15	7.8	250	15.5	14.0	94	27.3	6.40	4.6	6
24...	1210	E4.8	7.9	315	23.5	14.0	120	34.8	8.42	2.9	3
AUG											
20...	1220	8.5	8.1	338	22.0	12.5	130	38.6	9.34	2.0	2

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
NOV 2001										
06...	<.1	<.1	E.8	4.6	18	580	<1	1	34.5	50
MAR 2002										
14...	<.1	<.1	<1.0	3.6	44	430	<.08	<1	39.8	52
APR										
08...	.1	<.1	4.8	9.2	231	860	.23	2	144	173
MAY										
06...	.1	<.1	2.8	4.4	72	340	E.08	<1	47.9	58
29...	E.02	E.02	2.1	3.2	73	290	<.08	<1	38.6	45
JUN										
03...	E.03	.06	6.0	10.0	184	780	.22	2	30.4	58
24...	.08	E.03	2.1	3.2	47	260	E.05	<1	36.7	42
AUG										
20...	E.02	<.04	1.1	1.7	15	150	<.08	<1	26.3	29

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001					
06...	2	7	81	11	.11
MAR 2002					
14...	3	6	80	21	.18
APR					
08...	4	8	80	15	.37
MAY					
06...	4	9	77	7	.09
29...	2	3	65	6	.08
JUN					
03...	4	9	78	15	.60
24...	3	3	82	4	E.05
AUG					
20...	1	2	80	2	.05

E--Estimated.

PEND OREILLE RIVER BASIN

12323240 BLACKTAIL CREEK AT BUTTE, MT

LOCATION.--Lat 45°54'38", long 112°31'38" (NAD 27), in SW$^1/_4$NE$^1/_4$SE$^1/_4$ sec.24, T.3 N., R.8 W., Silver Bow County, Hydrologic Unit 17010201, on left bank, 70 feet upstream from George Street culvert in Butte, and 0.2 mi upstream from Silver Bow Creek.
DRAINAGE AREA.--95.4 mi^2.
PERIOD OF RECORD.--October 1988 to current year.
REVISED RECORDS.--WDR-MT-93-1: 1989-92 (M).
GAGE.--Water-stage recorder. Elevation of gage is 5,430 ft (NGVD 29).
REMARKS.--Records good except those for July through August, which are fair. Slight regulation by Basin Creek Reservoir. Diversions for irrigation of about 1,400 acres upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	7.1	7.4	7.3	6.9	7.4	10	9.4	19	5.6	7.8	6.8
2	5.8	7.2	7.3	7.4	6.9	e7.0	8.8	9.2	22	5.3	8.3	6.7
3	6.2	7.1	7.3	7.4	6.9	e7.2	8.8	8.8	20	5.4	8.3	6.9
4	6.3	7.1	7.3	7.5	6.9	7.5	8.9	8.7	14	5.7	8.2	6.9
5	6.6	7.1	7.1	7.5	7.0	8.7	9.7	8.5	11	5.7	8.2	6.7
6	7.0	7.3	7.1	7.5	7.0	7.2	12	8.6	9.0	6.0	6.9	7.7
7	7.1	7.4	7.0	8.2	7.4	7.2	12	9.6	8.2	7.4	15	11
8	7.0	7.3	7.0	7.8	7.0	7.0	12	9.2	17	7.8	19	7.7
9	6.4	7.5	7.1	7.1	7.0	6.9	13	9.2	16	6.3	9.4	7.6
10	6.5	7.3	6.9	7.1	7.0	7.3	14	9.8	18	6.0	7.6	7.0
11	7.5	7.3	6.8	7.1	7.0	8.5	13	9.2	16	5.6	6.3	7.0
12	6.8	7.3	6.9	7.3	7.0	8.2	14	8.8	14	5.5	5.9	6.8
13	6.8	7.3	7.0	7.0	7.1	7.7	14	8.8	12	5.4	5.5	6.6
14	10	7.4	7.1	7.0	7.1	7.3	19	8.5	10	6.0	4.6	6.3
15	7.3	7.5	7.1	6.9	7.0	7.1	17	8.5	9.3	5.7	4.5	6.3
16	6.9	7.4	7.1	6.9	7.1	7.0	15	8.6	8.7	5.9	4.4	6.4
17	6.6	8.3	7.1	7.0	7.2	6.9	13	8.1	8.5	6.1	4.7	9.6
18	6.4	9.3	7.0	7.1	7.1	6.9	12	9.1	9.0	5.1	5.6	7.6
19	6.8	7.7	7.0	7.1	7.1	6.9	11	8.0	8.8	5.4	6.2	7.0
20	7.3	7.6	7.1	7.1	7.1	6.8	9.8	8.0	8.7	5.7	6.2	6.7
21	6.5	7.9	7.1	7.1	7.3	6.6	10	9.2	14	5.7	12	6.4
22	6.7	8.0	7.1	7.0	7.7	9.0	11	13	9.7	5.4	7.8	6.3
23	8.8	7.7	7.0	7.0	7.6	13	12	11	7.8	6.1	6.4	6.3
24	6.9	7.7	7.0	7.1	7.3	15	11	11	7.1	6.1	7.8	6.4
25	6.8	7.7	e6.8	7.1	e7.8	14	10	9.6	6.7	6.3	6.5	6.5
26	6.9	7.6	e6.8	7.2	e7.2	16	9.6	9.0	8.9	6.5	6.0	6.6
27	7.0	7.7	7.2	7.1	7.7	19	9.9	8.7	5.9	8.1	17	7.6
28	7.7	7.5	7.2	7.0	7.5	12	9.6	9.1	6.3	7.5	8.9	7.4
29	7.6	7.4	7.2	6.9	---	9.9	9.1	8.1	6.4	7.2	15	7.2
30	7.3	7.5	7.1	6.8	---	9.5	9.2	9.3	5.9	7.6	7.0	7.3
31	7.2	---	7.2	6.8	---	10	---	9.0	---	7.8	6.8	---
TOTAL	216.5	226.2	219.4	222.4	200.9	280.7	348.4	283.6	337.9	191.9	253.8	213.3
MEAN	6.984	7.540	7.077	7.174	7.175	9.055	11.61	9.148	11.26	6.190	8.187	7.110
MAX	10	9.3	7.4	8.2	7.8	19	19	13	22	8.1	19	11
MIN	5.8	7.1	6.8	6.8	6.9	6.6	8.8	8.0	5.9	5.1	4.4	6.3
AC-FT	429	449	435	441	398	557	691	563	670	381	503	423

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 2002, BY WATER YEAR (WY)

MEAN	10.23	10.09	9.229	9.003	11.10	14.42	16.75	19.91	20.79	12.26	9.935	9.170
MAX	15.0	13.9	12.6	12.6	25.5	29.9	28.6	41.9	61.5	26.0	17.7	13.6
(WY)	1998	1999	1999	1999	1995	1997	1996	1995	1995	1997	1997	1995
MIN	6.98	6.90	7.08	6.96	6.33	7.42	9.36	7.31	8.11	6.45	5.28	5.98
(WY)	2002	2001	2002	1993	1993	1991	1992	1992	2000	2002	2000	1992

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1989 - 2002	
ANNUAL TOTAL	3174.4		2995.0			
ANNUAL MEAN	8.697		8.205		12.74	
HIGHEST ANNUAL MEAN					19.9	1995
LOWEST ANNUAL MEAN					8.35	2002
HIGHEST DAILY MEAN	25	Apr 29	22	Jun 2	211	Feb 20 1995
LOWEST DAILY MEAN	4.5	Aug 14	4.4	Aug 16	4.2	Aug 22 2000
ANNUAL SEVEN-DAY MINIMUM	4.8	Aug 12	5.0	Aug 12	4.4	Aug 19 2000
MAXIMUM PEAK FLOW			62	Aug 7	a303	Feb 19 1995
MAXIMUM PEAK STAGE			2.73	Aug 7	5.28	Feb 19 1995
ANNUAL RUNOFF (AC-FT)	6300		5940		9230	
10 PERCENT EXCEEDS	14		12		21	
50 PERCENT EXCEEDS	7.4		7.3		10	
90 PERCENT EXCEEDS	6.1		6.3		7.0	

a--From indirect measurement.
e--Estimated.

12323248 SILVER BOW CREEK ABOVE WASTEWATER TREATMENT PLANT OUTFLOW, AT BUTTE, MT

LOCATION.--Lat 45°59'49", long 112°33'43" (NAD 27), in SW$^1/_4$SE$^1/_4$NW$^1/_4$ sec. 23, T.3 N., R.8 W., Silver Bow County, Hydrologic Unit 17010201, on left bank, 120 feet upstream from Interstate Highway 90 overpass in Butte, 0.8 mi upstream from Whiskey Gulch, 1.3 mi downstream from Blacktail Creek, and at river mile 20.2

DRAINAGE AREA.--103 mi^2.

PERIOD OF RECORD.--July 1998 to September 2002 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 5,411.18 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are fair and those for discharges greater than 30 ft^3/s, which are poor. Most flow above 40 ft^3/s is diverted into temporary bypass channel about 1 mi upstream until newly reconstructed channel stabilizes. U.S.Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	9.5	9.5	e8.8	8.1	e8.0	14	12	26	8.0	7.1	9.2
2	6.5	9.6	9.5	e9.0	8.1	e7.6	12	12	31	7.3	7.7	8.9
3	6.5	9.7	9.5	9.1	e8.0	e8.0	12	11	21	7.3	7.9	8.7
4	6.7	9.4	9.7	9.1	8.0	8.2	13	11	16	7.3	8.8	8.1
5	7.0	9.3	9.8	9.2	8.0	11	13	11	14	7.2	8.9	7.7
6	7.2	9.5	8.9	9.2	8.2	8.8	15	11	12	7.6	7.3	8.9
7	7.3	9.2	8.8	11	8.9	8.3	15	13	11	9.1	26	13
8	7.9	9.2	8.7	10	8.3	e8.0	14	12	25	10	33	8.4
9	7.8	9.4	8.9	9.4	7.9	e8.4	16	12	21	7.9	13	8.2
10	7.9	9.0	e8.6	9.0	7.8	9.0	16	13	21	7.7	9.9	7.5
11	10	9.0	e8.2	9.1	7.8	11	16	12	18	7.2	8.6	7.5
12	8.9	9.0	8.3	9.4	7.8	11	16	12	16	7.1	8.7	7.5
13	8.7	9.0	8.5	8.9	7.7	9.5	16	12	15	7.1	8.5	7.1
14	13	8.9	8.7	8.6	7.8	8.3	21	12	13	7.8	7.8	6.9
15	9.7	9.2	8.3	8.4	e7.4	7.7	19	12	12	8.0	8.0	6.9
16	9.0	9.0	8.4	8.3	7.4	7.5	17	12	11	8.5	7.5	7.1
17	8.6	10	8.5	8.6	7.7	e7.0	15	11	11	8.8	7.4	12
18	8.4	12	e8.2	8.7	7.7	6.7	15	11	12	7.5	8.1	8.9
19	9.1	9.5	8.3	8.8	7.7	7.3	14	10	11	7.8	8.1	7.7
20	10	9.3	8.3	8.8	7.6	7.4	13	9.3	11	7.3	7.7	7.3
21	8.9	9.8	8.3	8.4	7.8	e7.2	13	12	20	7.5	18	6.9
22	8.8	9.9	8.0	e8.2	8.7	11	13	16	14	7.2	11	6.8
23	12	9.6	e7.8	e8.2	8.6	17	14	14	10	8.3	8.9	6.6
24	9.4	9.5	e7.8	8.1	8.4	20	14	13	9.4	7.9	11	6.8
25	9.1	9.6	e7.6	8.1	e8.2	16	13	12	8.6	8.0	9.5	7.0
26	9.0	9.4	e7.8	8.5	e7.8	19	12	12	12	8.3	8.5	7.0
27	9.1	9.5	e8.2	8.4	8.3	22	13	11	9.5	11	23	8.8
28	10	9.4	8.4	e8.2	8.2	15	12	12	9.7	9.2	13	7.7
29	11	9.3	8.4	e8.0	---	13	11	10	9.6	7.6	21	7.3
30	9.7	9.6	8.4	e7.8	---	13	12	12	8.8	7.6	10	7.5
31	9.7	---	8.7	8.1	---	14	---	12	---	7.4	9.4	---
TOTAL	273.5	284.3	265.0	271.4	223.9	335.9	429	367.3	439.6	246.5	353.3	239.9
MEAN	8.823	9.477	8.548	8.755	7.996	10.84	14.30	11.85	14.65	7.952	11.40	7.997
MAX	13	12	9.8	11	8.9	22	21	16	31	11	33	13
MIN	6.5	8.9	7.6	7.8	7.4	6.7	11	9.3	8.6	7.1	7.1	6.6
AC-FT	542	564	526	538	444	666	851	729	872	489	701	476

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2002, BY WATER YEAR (WY)

MEAN	10.34	10.60	10.39	10.15	10.20	13.83	16.11	15.78	15.60	10.29	9.912	9.138
MAX	12.5	13.7	13.2	13.0	13.2	18.9	19.8	24.1	24.5	15.3	12.2	11.8
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1999	1998	1998	1998
MIN	8.82	7.29	8.08	7.74	7.81	10.8	14.3	11.8	9.54	7.95	6.88	8.00
(WY)	2002	2001	2001	2001	2001	2002	2002	2002	2000	2002	2001	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1998 - 2002	
ANNUAL TOTAL	3720.1		3729.6			
ANNUAL MEAN	10.19		10.22		11.65	
HIGHEST ANNUAL MEAN					15.4	1999
LOWEST ANNUAL MEAN					9.97	2001
HIGHEST DAILY MEAN	31	Jun 3	33	Aug 8	37	Jun 4 1999
LOWEST DAILY MEAN	5.2	Sep 4	6.5	Oct 2	5.2	Sep 4 2001
ANNUAL SEVEN-DAY MINIMUM	5.5	Aug 29	6.8	Oct 1	5.5	Aug 29 2001
MAXIMUM PEAK FLOW			91	Aug 7	b130	Jul 30 1998
MAXIMUM PEAK STAGE			2.77	Aug 7	c4.94	Nov 26 1999
INSTANTANEOUS LOW FLOW			a5.6	Oct 3	d4.8	Aug 13 2000
ANNUAL RUNOFF (AC-FT)	7380		7400		8440	
10 PERCENT EXCEEDS	15		14		17	
50 PERCENT EXCEEDS	9.0		9.0		11	
90 PERCENT EXCEEDS	6.6		7.4		7.4	

a--Gage height, 1.00 ft.
b--Gage height, 4.47 ft, from indirect measurement of peak flow.
c--Backwater from downstream channel reconstruction.
d--Gage height, 0.99 ft.
e--Estimated.

PEND OREILLE RIVER BASIN

12323250 SILVER BOW CREEK BELOW BLACKTAIL CREEK, AT BUTTE, MT

LOCATION.--Lat 45°59'47", long 112°33'45" (NAD 27), in SW$^1/_4$SE$^1/_4$NW$^1/_4$ sec. 23, T.3 N., R.8 W., Silver Bow County, Hydrologic Unit 17010201, on right bank at Interstate 90 overpass in Butte, 0.8 mi upstream from Whiskey Gulch, 1.3 mi downstream from Blacktail Creek, and at river mile 20.2.

DRAINAGE AREA.--103 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1983 to current year.

REVISED RECORDS.--WDR-MT-92-1: 1984-90 (M). WDR-MT-98-1: Drainage area. WDR-MT-2000-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,409.47 ft (NGVD 29). October 1983 to Sept. 14, 1997, water-stage recorder 150 ft upstream at datum 1.40 ft higher. Sept. 15, 1997 to Dec. 3, 1997, no gage in operation due to channel reconstruction during EPA Superfund cleanup operations. Dec. 3, 1997 to Aug. 16, 1999, water-stage recorder 0.8 mi downstream at different datum. Aug. 16, 1999 to May 10, 2000, water-stage recorder 2.1 mi downstream at different datum.

REMARKS.--Water-discharge records good. Flow slightly regulated by Silver Bow County sewage treatment plant. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	17	16	15	15	15	18	16	31	14	12	13
2	16	17	16	15	15	19	17	16	37	13	12	13
3	15	17	16	15	15	15	17	15	28	13	12	14
4	15	17	17	15	15	15	17	16	23	13	14	13
5	15	17	17	15	15	18	17	16	19	12	14	12
6	15	17	15	15	15	16	19	16	17	13	12	14
7	15	17	15	17	15	15	20	17	16	15	34	19
8	16	16	15	16	15	15	20	16	31	16	43	14
9	16	16	16	16	14	15	21	16	28	13	19	14
10	16	16	15	15	15	16	22	17	30	13	15	13
11	18	16	16	15	15	18	21	16	25	13	14	13
12	17	16	15	16	15	18	21	16	23	12	14	13
13	17	16	15	16	15	17	21	16	20	12	14	13
14	23	16	16	16	14	16	27	16	18	13	14	13
15	18	16	15	15	14	16	25	15	16	14	13	13
16	17	16	15	15	15	16	22	15	15	14	14	13
17	17	17	15	15	15	16	21	15	16	14	13	19
18	17	20	15	15	15	16	20	16	17	13	14	15
19	17	17	15	15	15	15	18	15	16	14	14	14
20	18	17	15	16	15	15	17	14	15	13	14	14
21	17	17	15	15	15	15	18	17	25	13	27	14
22	17	17	15	15	15	18	18	22	19	12	18	14
23	21	16	15	15	15	24	19	18	15	13	14	14
24	18	16	16	15	16	25	18	17	15	13	16	15
25	17	16	15	14	16	22	17	16	14	13	15	15
26	17	16	15	15	16	24	16	15	18	13	14	15
27	17	16	15	15	15	27	17	16	14	15	32	16
28	18	16	15	15	15	19	16	16	15	14	17	15
29	18	16	15	15	---	18	16	15	15	13	27	15
30	17	16	15	15	---	17	16	17	14	13	14	15
31	17	---	15	15	---	18	---	17	---	13	14	---
TOTAL	527	496	476	472	420	549	572	501	605	412	533	427
MEAN	17.00	16.53	15.35	15.23	15.00	17.71	19.07	16.16	20.17	13.29	17.19	14.23
MAX	23	20	17	17	16	27	27	22	37	16	43	19
MIN	15	16	15	14	14	15	16	14	14	12	12	12
AC-FT	1050	984	944	936	833	1090	1130	994	1200	817	1060	847

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2002, BY WATER YEAR (WY)

MEAN	20.35	19.89	18.62	18.16	20.29	24.80	28.10	30.51	29.98	22.08	20.50	19.18
MAX	26.7	25.7	24.0	25.6	38.0	40.7	42.2	53.5	75.2	37.0	28.7	25.9
(WY)	1984	1984	1998	1984	1995	1997	1998	1995	1995	1995	1993	1995
MIN	15.6	16.3	15.4	13.4	14.2	17.2	14.9	12.6	15.5	13.0	14.0	13.9
(WY)	2001	2001	2002	1989	2001	1991	1992	1992	2000	2002	2001	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1984 - 2002	
ANNUAL TOTAL	6220		5990			
ANNUAL MEAN	17.04		16.41		22.71	
HIGHEST ANNUAL MEAN					30.8	1995
LOWEST ANNUAL MEAN					16.4	2002
HIGHEST DAILY MEAN	39	Sep 6	43	Aug 8	258	Feb 20 1995
LOWEST DAILY MEAN	12	Aug 28	12	Jul 5	8.0	May 8 1992
ANNUAL SEVEN-DAY MINIMUM	12	Aug 28	13	Jul 28	11	May 2 1992
MAXIMUM PEAK FLOW			137	Aug 7	b447	Jul 30 1998
MAXIMUM PEAK STAGE			2.60	Aug 7	c8.11	Jul 30 1998
INSTANTANEOUS LOW FLOW			a9.7	Sep 6	6.4	Aug 27 1996
ANNUAL RUNOFF (AC-FT)	12340		11880		16450	
10 PERCENT EXCEEDS	22		20		33	
50 PERCENT EXCEEDS	16		16		20	
90 PERCENT EXCEEDS	14		13		15	

a--Gage height, 1.68 ft.
b--From culvert computation.
c--Site and datum then in use.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1993 to August 1995, December 1996 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)
NOV 2001											
06...	1440	18	7.6	590	14.0	9.5	180	50.7	12.7	7.5	11
MAR 2002											
14...	0920	18	7.5	561	-1.0	4.5	170	47.9	12.0	7.8	9
APR											
08...	1015	21	7.6	443	7.0	5.0	130	37.5	9.49	4.3	6
MAY											
06...	1040	18	7.5	500	5.5	8.5	140	40.7	10.3	4.6	4
29...	1015	18	7.7	516	20.5	12.5	160	46.0	11.1	5.5	6
JUN											
03...	1820	27	7.7	418	17.0	15.5	130	38.5	9.13	7.3	9
24...	1245	16	8.0	519	27.0	17.0	170	48.6	12.0	7.7	8
AUG											
20...	1250	16	7.8	574	22.5	17.5	170	49.4	12.4	7.4	9

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
NOV 2001										
06...	1.2	1.5	13.8	36.0	17	390	<1	4	262	298
MAR 2002										
14...	E.1	.4	4.5	28.3	28	640	.24	7	144	179
APR										
08...	.2	.3	10.5	23.3	80	530	.32	4	151	171
MAY										
06...	.2	.3	8.9	18.8	34	290	.20	2	177	194
29...	.12	.21	5.3	16.0	27	280	.15	1	166	188
JUN										
03...	.14	.36	10.9	23.6	117	690	.46	5	113	149
24...	.20	.24	9.2	16.6	14	260	.12	2	148	165
AUG										
20...	.11	.18	8.1	13.5	14	90	.17	<1	21.4	29

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001					
06...	309	374	92	14	.68
MAR 2002					
14...	90	128	87	19	.92
APR					
08...	94	106	85	12	.68
MAY					
06...	86	107	71	11	.53
29...	82	91	75	7	.34
JUN					
03...	60	93	92	14	1.0
24...	66	88	89	11	.48
AUG					
20...	71	86	81	5	.22

E--Estimated.

PEND OREILLE RIVER BASIN

12323600 SILVER BOW CREEK AT OPPORTUNITY, MT

LOCATION.--Lat 46°06'28", long 112°48'17" (NAD 27), in SE$^1/_4$SW$^1/_4$SE$^1/_4$ sec.11, T.4 N., R.10 W., Deer Lodge County, Hydrologic Unit 17010201, on left bank 200 ft downstream from Stuart Street bridge, 0.5 mi east of Opportunity, and 1.0 mi upstream from Mill Creek.
DRAINAGE AREA.--363 mi^2. Prior to water year 2001, drainage area published as 284 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1988 to current year. Prior to October 1991, seasonal records only.
REVISED RECORDS.--WDR MT-2001-01: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 4,912.37 ft (NGVD 29).
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Numerous diversions upstream from station for irrigation and municipal use. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	28	e24	e21	e25	e27	38	36	74	38	14	18
2	21	27	e24	e22	e25	e31	e35	36	117	36	14	17
3	22	27	e24	e23	e25	e28	33	37	98	32	14	18
4	23	27	e25	e23	e25	e28	33	37	84	34	16	19
5	23	27	e25	e25	e25	e30	37	38	74	30	15	19
6	23	27	e24	e28	e26	e28	45	39	71	29	14	19
7	23	27	e23	e33	e27	e27	46	40	65	29	15	27
8	23	26	e23	e31	e26	e27	43	38	76	35	47	23
9	24	26	e23	e28	e25	e27	42	37	88	31	44	21
10	24	26	e22	e26	e25	e28	44	39	92	31	24	20
11	25	25	e22	e27	e25	e31	43	40	87	29	20	19
12	26	26	e23	e28	e25	e31	43	38	82	25	20	19
13	25	26	e23	e27	e25	e30	45	39	74	25	19	20
14	27	26	e24	e26	e24	e29	55	43	72	22	18	21
15	33	27	e24	e26	e24	e29	60	44	67	21	18	21
16	28	26	e23	e25	e25	e29	48	42	64	20	17	19
17	27	26	e23	e25	e26	e29	45	42	63	19	17	22
18	26	32	e22	e25	e26	e29	42	44	63	19	15	28
19	26	28	e23	e26	e26	e28	42	50	64	22	16	23
20	29	27	e23	e26	e26	e28	41	56	58	22	14	23
21	27	27	e23	e25	e26	e28	40	61	54	19	16	22
22	26	28	e23	e25	e25	e30	40	67	68	17	23	22
23	32	28	e22	e25	e25	e33	42	60	55	16	16	19
24	28	25	e22	e25	e26	e36	38	54	49	16	16	19
25	27	e25	e22	e25	e27	41	37	50	46	15	16	19
26	26	e24	e22	e25	e28	39	36	50	42	16	15	19
27	26	e24	e22	e25	e30	51	38	51	43	18	15	20
28	27	e24	e22	e24	e28	41	36	56	43	19	29	23
29	31	e24	e23	e24	---	36	36	60	44	16	27	21
30	29	e24	e22	e25	---	35	36	72	41	15	20	23
31	29	---	e22	e25	---	36	---	78	---	14	18	---
TOTAL	806	790	712	794	721	980	1239	1474	2018	730	602	623
MEAN	26.00	26.33	22.97	25.61	25.75	31.61	41.30	47.55	67.27	23.55	19.42	20.77
MAX	33	32	25	33	30	51	60	78	117	38	47	28
MIN	20	24	22	21	24	27	33	36	41	14	14	17
AC-FT	1600	1570	1410	1570	1430	1940	2460	2920	4000	1450	1190	1240

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2002, BY WATER YEAR (WY)

MEAN	38.37	38.10	35.08	37.29	53.87	54.07	65.33	96.91	100.7	48.11	30.94	32.88
MAX	55.8	49.5	49.2	68.6	184	86.6	120	261	281	107	69.5	59.8
(WY)	1998	1996	1998	1997	1996	1997	1996	1997	1997	1995	1993	1993
MIN	26.0	26.3	23.0	22.2	21.9	31.6	41.3	31.3	23.6	17.5	14.5	20.8
(WY)	2002	2002	2002	2001	2001	2002	2002	1992	2000	2000	2000	2002

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1988 - 2002	
ANNUAL TOTAL	10944		11489			
ANNUAL MEAN	29.98		31.48		54.67	
HIGHEST ANNUAL MEAN					99.0	1997
LOWEST ANNUAL MEAN					30.4	2001
HIGHEST DAILY MEAN	77	Apr 29	117	Jun 2	d1300	Feb 11 1996
LOWEST DAILY MEAN	12	Aug 29	14	Jul 31	12	Aug 29 2001
ANNUAL SEVEN-DAY MINIMUM	13	Aug 28	14	Jul 31	13	Aug 28 2001
MAXIMUM PEAK FLOW			a144	Jun 2	d1300	Feb 11 1996
MAXIMUM PEAK STAGE			b4.35	Dec 11	b6.91	Feb 11 1996
INSTANTANEOUS LOW FLOW			c13	Jul 31	f11	Aug 7 1990
ANNUAL RUNOFF (AC-FT)	21710		22790		39600	
10 PERCENT EXCEEDS	50		50		99	
50 PERCENT EXCEEDS	25		26		42	
90 PERCENT EXCEEDS	18		19		23	

a--Gage height, 3.15 ft.
b--Backwater from ice.
c--Gage height, 2.07 ft.
d--Estimated daily discharge during period of ice effect.
e--Estimated.
f--Gage height, 1.55 ft.

12323600 SILVER BOW CREEK AT OPPORTUNITY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1993 to August 1995, December 1996 to current year.
PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: March 1993 to September 1995.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 563 mg/L, July 13, 1995; minimum daily mean, 3 mg/L, Sep. 16, 1993; Feb. 3-7, July 22, 1994.
SEDIMENT LOAD: Maximum daily, 495 tons, June 6, 1995; minimum daily, 0.19 ton, Feb. 4-7, 1994.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)
NOV 2001											
07...	0810	27	8.1	555	-4.0	1.5	190	57.0	12.6	9.1	16
MAR 2002											
14...	1030	E29	7.8	555	3.0	0.0	190	54.4	12.3	13.0	16
APR											
08...	1110	42	8.2	395	10.0	5.0	130	38.9	8.81	15.2	63
MAY											
06...	1140	39	8.9	433	4.5	7.5	160	46.5	9.77	11.3	16
29...	1125	60	8.5	364	22.0	12.0	140	43.0	7.78	10.3	15
JUN											
03...	1915	94	8.2	322	14.0	14.0	130	38.4	7.21	11.3	21
24...	1405	49	8.9	368	25.5	19.5	140	43.1	8.28	11.9	16
AUG											
20...	1400	14	9.5	527	23.0	20.0	190	53.4	12.8	18.7	23

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
NOV 2001										
07...	1.3	2.0	30.1	101	<10	410	<1	12	478	508
MAR 2002										
14...	1.4	1.6	43.7	102	12	530	.30	14	372	436
APR										
08...	.8	1.8	61.2	283	22	1770	.61	101	492	612
MAY										
06...	.4	.8	29.3	85.8	17	550	.33	15	336	424
29...	.25	.69	19.5	86.2	21	620	.28	15	192	285
JUN										
03...	.38	1.34	31.5	154	45	1140	.88	32	234	439
24...	.22	.61	19.9	76.9	14	490	.25	12	141	208
AUG										
20...	.46	.89	40.7	98.5	17	280	.40	7	140	196

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001					
07...	487	656	78	13	.95
MAR 2002					
14...	343	405	56	14	E1.1
APR					
08...	224	416	91	43	4.9
MAY					
06...	77	221	78	14	1.5
29...	59	162	74	17	2.8
JUN					
03...	95	287	74	35	8.9
24...	34	143	85	13	1.7
AUG					
20...	29	151	57	7	.26

E--Estimated.

PEND OREILLE RIVER BASIN

12323750 SILVER BOW CREEK AT WARM SPRINGS, MT

LOCATION.--Lat 46°10'50", long 112°46'46" (NAD 27), in SW$^1/_4$SE$^1/_4$SW$^1/_4$ sec.18, T.5 N., R.9 W., Deer Lodge County, Hydrologic Unit 17010201, on left bank 1.0 mi upstream from confluence with Warm Springs Creek, 1.1 mi upstream from county highway bridge, and 0.5 mi east of Warm Springs.

DRAINAGE AREA (revised).--473 mi^2; area at site used prior to May 24, 1994, 483 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1972 to September 1979, April 1993 to current year.

GAGE.--Water-stage recorder. Datum of gage is 4,800.31 ft (NGVD 29). Prior to May 24, 1994, gage located at sites 0.8 mi downstream at different datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Flow is regulated by dam on tailing ponds about 0.2 mi upstream from gage. Diversions for irrigation of about 4,650 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	31	35	e30	36	41	53	52	167	80	26	25
2	21	33	36	e32	35	39	52	53	189	72	25	24
3	21	34	36	e33	35	37	50	50	191	70	25	24
4	21	34	33	e33	36	37	51	51	183	72	28	24
5	22	33	32	e35	36	42	50	51	165	63	32	25
6	22	33	33	e37	37	41	49	52	157	60	30	25
7	23	33	33	42	37	42	50	56	145	61	30	31
8	23	36	34	42	37	44	50	56	149	59	38	32
9	24	34	32	42	37	45	55	55	173	53	38	32
10	26	33	e31	41	38	43	57	58	195	48	33	31
11	27	34	30	40	37	44	55	58	169	44	31	29
12	27	33	31	41	37	48	51	56	159	43	30	28
13	28	33	31	40	37	47	50	56	150	40	29	27
14	30	34	30	40	37	46	54	52	141	39	27	27
15	32	31	29	40	37	45	59	56	140	38	26	26
16	33	30	30	38	37	45	54	59	147	36	25	25
17	32	30	31	38	38	45	54	59	157	35	24	25
18	32	32	29	37	39	44	54	60	163	33	23	28
19	32	35	32	35	39	43	53	68	158	33	23	28
20	32	36	31	37	39	41	50	79	134	34	22	26
21	32	35	32	37	40	41	44	104	127	31	23	25
22	30	36	31	36	41	42	43	114	153	30	25	26
23	27	35	30	35	42	42	49	112	156	30	24	25
24	28	35	e29	37	39	45	62	106	142	30	24	25
25	29	37	e27	37	e35	49	70	102	127	30	24	25
26	29	38	e25	37	e36	52	69	101	116	31	23	26
27	29	37	e25	e36	38	55	68	101	106	32	23	25
28	29	32	e27	e33	38	56	65	101	97	31	24	26
29	28	38	e30	e35	---	57	59	106	93	28	24	26
30	29	35	e32	37	---	56	54	138	90	27	24	25
31	31	---	e32	36	---	55	---	168	---	27	24	---
TOTAL	851	1020	959	1149	1050	1409	1634	2390	4439	1340	827	796
MEAN	27.45	34.00	30.94	37.06	37.50	45.45	54.47	77.10	148.0	43.23	26.68	26.53
MAX	33	38	36	42	42	57	70	168	195	80	38	32
MIN	21	30	25	30	35	37	43	50	90	27	22	24
AC-FT	1690	2020	1900	2280	2080	2790	3240	4740	8800	2660	1640	1580

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2002, BY WATER YEAR (WY)*

MEAN	73.03	79.61	73.61	77.52	82.16	110.1	131.2	246.3	279.5	120.9	69.10	63.66
MAX	193	161	156	152	130	207	281	586	770	356	201	137
(WY)	1976	1976	1976	1974	1996	1976	1976	1976	1975	1975	1975	1975
MIN	27.5	31.7	30.9	37.1	36.9	45.5	54.4	70.2	57.2	28.8	16.8	20.1
(WY)	2002	2001	2002	2002	2001	2002	2000	2000	2000	2000	2000	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1972 - 2002*	
ANNUAL TOTAL	15921		17864			
ANNUAL MEAN	43.62		48.94		116.6	
HIGHEST ANNUAL MEAN					228	1975
LOWEST ANNUAL MEAN					43.0	2000
HIGHEST DAILY MEAN	119	May 16	195	Jun 10	1220	Jun 20 1975
LOWEST DAILY MEAN	17	Aug 19	21	Oct 2	15	Sep 12 1973
ANNUAL SEVEN-DAY MINIMUM	17	Aug 19	22	Oct 1	16	Aug 4 2000
MAXIMUM PEAK FLOW			a207	Jun 3	b1320	Jun 20 1975
MAXIMUM PEAK STAGE			2.77	Jun 10	c8.64	Jan 16 1974
ANNUAL RUNOFF (AC-FT)	31580		35430		84500	
10 PERCENT EXCEEDS	81		101		232	
50 PERCENT EXCEEDS	36		37		80	
90 PERCENT EXCEEDS	23		25		35	

*--During periods of operation (March 1972 to September 1979, April 1993 to current year).
a--Gage height, 2.75 ft.
b--Gage height, 7.47 ft, site and datum then in use.
c--Backwater from ice, site and datum then in use.
e--Estimated.

12323750 SILVER BOW CREEK AT WARM SPRINGS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1993 to current year.
PERIOD OF DAILY RECORD.--
SUSPENDED-SEDIMENT DISCHARGE: April 1993 to September 1995.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATION: Maximum daily mean, 429 mg/L, Mar. 15, 1994; minimum daily mean, 1 mg/L, several days in October 1995.
SEDIMENT LOAD: Maximum daily, 302 tons, June 6, 1995; minimum daily, 0.12 ton, several days in August 1995.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)
NOV 2001											
06...	1620	34	9.0	637	14.5	7.0	270	75.1	19.0	17.4	22
MAR 2002											
14...	1130	46	8.3	675	5.5	4.0	290	83.4	19.0	11.8	13
APR											
08...	1225	51	8.4	581	12.0	7.5	240	69.9	16.1	8.5	13
MAY											
06...	1230	53	8.4	541	5.5	10.0	220	64.3	14.4	13.3	17
29...	1225	107	8.8	376	26.0	15.5	150	41.7	10.0	23.8	28
JUN											
04...	0835	186	8.5	372	12.0	10.0	140	39.7	10.4	34.1	38
24...	1505	140	9.0	287	25.0	18.5	110	29.1	8.00	31.3	34
AUG											
20...	1500	22	9.2	555	25.5	20.0	240	69.4	17.3	26.2	30

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
NOV 2001										
06...	<.1	<.1	2.5	5.2	<10	140	<1	<1	33.8	74
MAR 2002										
14...	E.1	.1	7.4	9.9	17	160	E.05	<1	301	333
APR										
08...	<.1	.5	3.3	24.8	<10	540	E.05	4	135	207
MAY										
06...	<.1	.1	3.6	10.5	12	300	E.07	2	126	219
29...	.05	.16	5.5	13.0	15	330	.10	2	45.5	137
JUN										
04...	.06	.17	7.3	12.7	25	250	.12	2	38.0	82
24...	.07	.13	6.7	10.6	23	180	.15	1	23.0	69
AUG										
20...	E.03	.06	3.7	5.6	E8	120	E.07	<1	40.5	109

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001					
06...	2	9	75	7	.64
MAR 2002					
14...	21	27	87	4	.50
APR					
08...	7	75	97	6	.83
MAY					
06...	6	22	90	10	1.4
29...	4	18	86	13	3.8
JUN					
04...	6	17	87	9	4.5
24...	3	11	90	5	1.9
AUG					
20...	2	6	83	7	.42

E--Estimated.

12323760 WARM SPRINGS CREEK NEAR ANACONDA, MT

LOCATION.--Lat 46°08'01", long 112°54'48" (NAD 27), in SW$^1/_4$NW$^1/_4$NE$^1/_4$ sec. 1, T.4N., R.11W., Deer Lodge County, Hydrologic Unit 17010201, on left bank 0.3 mi downstream from Arbiter Bridge on private road, 1.0 mi upstream from Dutchman Creek, 1.2 mi northeast of Anaconda, and at river mile 9.5.

DRAINAGE AREA.--157 mi^2.

PERIOD OF RECORD.--October 1997 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,150 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Some regulation by Storm King Lake. Minor diversions upstream from station for irrigation and municipal use. U. S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	61	47	e35	42	e38	43	45	200	162	76	94
2	49	59	48	e36	42	e38	42	43	235	148	79	92
3	51	58	48	38	42	e39	42	44	215	136	78	91
4	52	57	46	39	41	39	44	43	176	132	80	91
5	53	57	46	40	40	40	45	44	158	121	81	87
6	53	57	45	41	41	39	48	45	183	116	81	90
7	53	56	45	43	41	e39	48	46	228	126	92	108
8	53	54	44	46	42	e38	47	46	176	120	118	103
9	56	56	44	47	41	e39	47	45	166	112	117	97
10	57	55	42	45	40	40	48	46	157	96	102	94
11	59	55	e42	47	41	41	47	45	141	90	94	94
12	59	55	43	47	40	42	47	44	136	87	90	93
13	61	55	44	47	40	41	50	44	129	86	85	91
14	63	55	46	44	40	40	63	46	133	83	83	89
15	63	55	44	45	41	40	61	48	155	89	80	89
16	60	54	44	43	40	40	53	46	196	85	78	90
17	61	55	e44	44	41	41	50	45	243	80	76	93
18	59	57	e42	44	40	e40	50	47	240	77	73	100
19	60	54	44	43	40	41	48	56	219	94	74	96
20	64	55	43	44	40	40	48	78	184	97	85	87
21	60	55	44	44	40	e40	48	102	176	83	98	83
22	59	55	e42	44	41	42	47	105	218	77	101	83
23	62	55	e40	e43	40	45	46	87	210	83	97	82
24	60	52	e36	43	40	45	46	79	205	71	98	74
25	59	53	e34	44	e38	42	45	73	196	73	99	70
26	58	52	e35	45	e38	44	44	73	200	77	96	69
27	59	51	e35	44	e42	43	47	83	188	82	99	71
28	59	46	e35	e43	40	42	46	93	184	81	102	69
29	60	48	36	e42	---	42	44	117	182	76	97	64
30	59	48	37	e42	---	42	44	201	175	73	96	66
31	61	---	36	42	---	42	---	212	---	73	96	---
TOTAL	1793	1635	1301	1334	1134	1264	1428	2171	5604	2986	2801	2600
MEAN	57.84	54.50	41.97	43.03	40.50	40.77	47.60	70.03	186.8	96.32	90.35	86.67
MAX	64	61	48	47	42	45	63	212	243	162	118	108
MIN	49	46	34	35	38	38	42	43	129	71	73	64
AC-FT	3560	3240	2580	2650	2250	2510	2830	4310	11120	5920	5560	5160

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2002, BY WATER YEAR (WY)

MEAN	84.02	67.71	54.77	52.01	51.06	51.37	54.51	110.3	181.0	112.9	84.81	80.21
MAX	113	99.5	78.6	71.0	68.0	67.3	66.5	159	260	196	99.0	95.1
(WY)	1998	1998	1998	1998	1998	1998	1998	1998	1999	1998	1999	1999
MIN	57.8	44.9	42.0	42.6	40.5	40.8	46.2	70.0	93.0	65.2	63.2	68.4
(WY)	2001	2001	2002	2001	2001	2002	2001	2002	2000	2000	2000	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1998 - 2002	
ANNUAL TOTAL	24016		26051			
ANNUAL MEAN	65.80		71.37		82.14	
HIGHEST ANNUAL MEAN					112	1998
LOWEST ANNUAL MEAN					64.7	2000
HIGHEST DAILY MEAN	216	May 26	243	Jun 17	334	Jun 19 1999
LOWEST DAILY MEAN	34	Dec 25	34	Dec 25	34	Dec 25 2001
ANNUAL SEVEN-DAY MINIMUM	35	Dec 24	35	Dec 24	35	Dec 24 2001
MAXIMUM PEAK FLOW			a264	Jun 17	d354	Jun 19 1999
MAXIMUM PEAK STAGE			b4.24	Dec 28	b4.89	Dec 26 1998
INSTANTANEOUS LOW FLOW			c30	Feb 25	c30	Feb 25 2002
ANNUAL RUNOFF (AC-FT)	47640		51670		59510	
10 PERCENT EXCEEDS	106		127		131	
50 PERCENT EXCEEDS	55		54		66	
90 PERCENT EXCEEDS	41		40		43	

a--Gage height, 3.39 ft.
b--Backwater from ice.
c--Gage height, 2.03 ft, but may have been lower during period of ice effect.
d--Gage height, 3.66 ft.
e--Estimated.

PEND OREILLE RIVER BASIN

12323770 WARM SPRINGS CREEK AT WARM SPRINGS, MT

LOCATION (REVISED).--Lat 46°10'50", long 112°47'04" (NAD 27), in SW$^1/_4$SW$^1/_4$SW$^1/_4$ sec.18, T.5 N., R.9 W., Deer Lodge County, Hydrologic Unit 17010201, on left bank at county road bridge 0.2 mi southeast of Warm Springs post office, and at river mile 0.9.

DRAINAGE AREA.--163 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1983 to current year. October 1983 to June 26, 2002 at site 200 ft upstream.

GAGE.--Water-stage recorder. Datum of gage is 4,810 ft (NGVD 29).

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Numerous diversions upstream from station for irrigation and municipal use. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	43	e34	e25	e28	e18	32	32	106	84	16	46
2	27	42	e35	e27	e26	e17	e30	29	120	76	18	46
3	29	41	35	e30	e25	e25	31	28	116	72	24	45
4	26	40	33	e30	e28	e35	33	28	97	72	27	45
5	36	40	e32	e35	e28	e30	33	29	87	66	27	43
6	36	40	e34	e40	e30	e25	34	31	99	62	25	44
7	36	40	e35	e38	e32	e22	36	32	121	66	30	59
8	37	38	34	e36	34	e20	34	32	101	61	52	59
9	38	41	e31	36	34	e25	34	31	98	58	54	50
10	38	40	e30	36	34	e35	35	32	97	51	42	44
11	41	41	e30	35	34	e45	34	32	86	45	37	44
12	42	41	e31	36	e33	e40	34	30	82	36	33	44
13	41	42	e33	36	e33	35	36	29	75	32	29	45
14	41	42	e35	34	e33	35	40	30	70	26	26	44
15	42	42	e33	e30	e32	34	46	28	76	25	25	44
16	40	42	e33	e28	e33	34	43	27	96	23	23	44
17	41	42	e31	e25	34	e33	41	25	114	21	23	47
18	43	43	e30	e27	33	e30	41	28	116	20	21	55
19	42	42	e33	e30	32	e31	39	34	110	22	19	54
20	45	42	e35	e30	32	e30	40	38	87	30	23	48
21	42	41	e35	e29	32	e30	40	56	82	23	37	44
22	42	39	e33	e28	34	e35	38	63	100	19	53	45
23	44	39	e30	e30	34	37	37	54	98	21	49	41
24	42	38	e25	e32	e25	38	37	45	96	18	50	34
25	41	39	e22	e35	e15	34	37	44	91	18	52	35
26	40	38	e20	e30	e16	32	34	43	96	19	50	41
27	42	38	e20	e25	e20	33	34	49	99	21	49	42
28	41	e33	e22	e22	e19	32	33	50	95	22	53	43
29	41	e35	e25	e22	---	32	32	55	94	18	47	38
30	40	34	e27	e25	---	31	31	88	95	15	47	39
31	41	---	e27	e28	---	32	---	109	---	15	46	---
TOTAL	1201	1198	943	950	823	965	1079	1261	2900	1157	1107	1352
MEAN	38.74	39.93	30.42	30.65	29.39	31.13	35.97	40.68	96.67	37.32	35.71	45.07
MAX	45	43	35	40	34	45	46	109	121	84	54	59
MIN	24	33	20	22	15	17	30	25	70	15	16	34
AC-FT	2380	2380	1870	1880	1630	1910	2140	2500	5750	2290	2200	2680

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2002, BY WATER YEAR (WY)

MEAN	44.84	45.02	34.19	36.77	36.24	35.53	41.90	82.78	135.9	54.26	25.33	31.97
MAX	95.2	84.5	77.8	82.1	63.0	53.5	62.8	196	362	170	125	81.6
(WY)	1998	1998	1985	1985	1986	1998	1986	1997	1997	1997	1997	1997
MIN	10.6	13.1	5.89	4.21	4.54	18.9	13.3	19.3	7.05	0.42	0.46	2.61
(WY)	1988	1993	1993	1993	1993	1991	1991	1992	1992	1985	1988	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1984 - 2002	
ANNUAL TOTAL	12754		14936			
ANNUAL MEAN	34.94		40.92		50.36	
HIGHEST ANNUAL MEAN					108	1997
LOWEST ANNUAL MEAN					16.6	1992
HIGHEST DAILY MEAN	97	May 26	121	Jun 7	475	Jun 6 1997
LOWEST DAILY MEAN	14	Sep 4	15	Feb 25	0.00	Aug 4 1988
ANNUAL SEVEN-DAY MINIMUM	17	Aug 29	18	Jul 27	0.05	Aug 3 1988
MAXIMUM PEAK FLOW			a133	Jun 7	d494	Jun 5 1997
MAXIMUM PEAK STAGE			b3.52	Feb 3	b5.70	Feb 2 1986
INSTANTANEOUS LOW FLOW			c14	Jul 31		
ANNUAL RUNOFF (AC-FT)	25300		29630		36480	
10 PERCENT EXCEEDS	47		68		97	
50 PERCENT EXCEEDS	31		35		38	
90 PERCENT EXCEEDS	23		24		6.5	

a--Gage height, 2.43 ft. Site and datum then in use.
b--Backwater from ice.
c--Gage height, 2.53 ft.
d--Gage height, 4.55 ft. Site and datum then in use.
e--Estimated.

12323770 WARM SPRINGS CREEK AT WARM SPRINGS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1993 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: July 2000 to current year.
INSTRUMENTATION.--Temperature recorder installed July 6, 2000.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 23.5°C, July 21, 29, 2000, July 14, 2002; minimum 0.0°C, many days during winter period.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 23.5°C, July 14; minimum 0.0°C, many days November through April.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)
NOV 2001											
06...	1605	41	8.5	331	14.5	5.5	160	47.5	9.53	4.2	5
APR 2002											
08...	1210	34	8.4	358	12.0	5.5	170	51.6	10.5	4.6	5
MAY											
29...	1210	59	8.4	260	26.0	14.0	130	38.7	7.07	5.3	5
JUN											
04...	0810	101	8.0	191	10.0	7.5	89	27.7	4.92	3.9	5
24...	1440	95	8.3	186	25.0	15.5	40	10.5	3.29	4.8	7
AUG											
20...	1440	27	8.6	317	25.5	16.5	150	47.7	8.67	7.5	9

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
NOV 2001										
06...	E.1	<.1	E1.1	3.9	<10	40	<1	<1	95.2	118
APR 2002										
08...	<.1	<.1	2.9	6.2	<10	60	<.08	<1	173	206
MAY										
29...	E.03	.07	3.6	14.4	<10	200	<.08	1	63.8	205
JUN										
04...	E.03	.07	2.9	14.8	E9	270	E.05	1	67.8	157
24...	.04	.05	3.1	11.0	E8	140	E.05	<1	45.3	115
AUG										
20...	E.03	.04	3.1	7.3	E6	70	E.05	<1	22.6	99

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001					
06...	1	3	57	3	.33
APR 2002					
08...	2	2	80	3	.28
MAY					
29...	<1	5	66	10	1.6
JUN					
04...	2	7	61	14	3.8
24...	1	4	62	10	2.6
AUG					
20...	1	2	76	3	.22

E--Estimated.

PEND OREILLE RIVER BASIN

12323770 WARM SPRINGS CREEK AT WARM SPRINGS, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	14.0	8.0	11.0	7.5	5.0	6.0	0.5	0.0	0.0	0.0	0.0	0.0
2	13.0	8.5	10.5	7.5	5.0	6.0	1.0	0.0	0.5	0.0	0.0	0.0
3	12.0	8.0	10.0	7.0	4.0	5.5	2.0	0.5	1.0	0.0	0.0	0.0
4	9.5	5.0	7.5	7.0	3.5	5.0	1.0	0.0	0.0	0.0	0.0	0.0
5	8.0	2.5	5.0	6.5	3.5	5.0	0.5	0.0	0.0	0.0	0.0	0.0
6	9.0	3.5	6.0	6.5	3.0	4.5	0.5	0.0	0.0	0.0	0.0	0.0
7	9.0	5.5	7.5	5.5	2.5	4.0	0.5	0.0	0.0	1.0	0.0	0.0
8	9.5	7.0	8.0	4.0	0.5	2.5	0.5	0.0	0.5	3.0	1.0	2.5
9	8.0	5.5	6.5	4.0	1.5	2.5	1.5	0.0	0.5	2.5	1.0	2.0
10	8.5	4.0	6.0	4.0	0.5	2.5	0.5	0.0	0.0	1.0	0.0	0.5
11	7.0	5.5	6.0	4.5	1.0	3.0	0.0	0.0	0.0	2.5	0.5	1.5
12	5.5	4.0	5.0	5.5	2.5	4.0	0.0	0.0	0.0	3.0	1.5	2.0
13	8.5	5.0	6.5	6.0	3.5	4.5	0.5	0.0	0.0	2.0	0.5	1.5
14	6.5	5.0	6.0	6.0	3.5	5.0	0.5	0.0	0.5	1.0	0.0	0.5
15	7.5	3.0	5.0	6.5	3.5	5.0	0.5	0.0	0.0	1.0	0.0	0.0
16	8.0	3.5	5.5	6.0	4.5	5.0	0.5	0.0	0.0	0.0	0.0	0.0
17	8.0	5.0	6.5	6.5	4.5	5.5	0.5	0.0	0.0	0.0	0.0	0.0
18	5.5	3.0	4.5	5.5	3.0	4.5	0.5	0.0	0.0	0.0	0.0	0.0
19	6.5	4.5	5.5	4.0	2.0	3.0	0.5	0.0	0.0	0.0	0.0	0.0
20	7.5	5.0	6.0	5.0	2.5	4.0	0.0	0.0	0.0	0.0	0.0	0.0
21	6.5	3.5	5.0	5.0	3.5	4.5	0.5	0.0	0.0	0.5	0.0	0.0
22	6.5	4.5	5.5	4.5	2.5	3.5	0.5	0.0	0.0	0.5	0.0	0.0
23	6.0	3.5	5.0	4.0	3.0	3.5	0.5	0.0	0.0	0.0	0.0	0.0
24	5.0	2.5	3.5	3.0	1.0	2.0	0.5	0.0	0.0	0.0	0.0	0.0
25	4.0	2.0	3.0	2.5	1.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
26	6.5	2.0	4.0	1.0	0.0	0.5	0.0	0.0	0.0	1.5	0.0	0.5
27	7.5	4.0	5.5	1.5	0.0	0.5	0.0	0.0	0.0	1.0	0.0	0.5
28	7.0	6.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	8.0	5.5	6.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	8.0	6.5	7.0	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
31	7.5	6.5	7.0	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0
MONTH	14.0	2.0	6.0	7.5	0.0	3.5	2.0	0.0	0.0	3.0	0.0	0.5

		FEBRUARY			MARCH			APRIL			MAY	
1	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.5	4.0	13.5	4.5	8.5
2	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	2.0	15.0	5.0	9.5
3	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0	3.0	14.0	7.0	10.0
4	0.0	0.0	0.0	0.0	0.0	0.0	10.0	2.0	5.5	14.0	5.0	9.5
5	0.0	0.0	0.0	0.0	0.0	0.0	11.5	3.0	7.0	10.0	7.0	8.5
6	0.0	0.0	0.0	0.0	0.0	0.0	12.0	6.5	9.0	11.0	5.5	7.5
7	1.0	0.0	0.0	0.0	0.0	0.0	7.5	5.0	6.5	7.5	4.5	6.0
8	1.5	0.5	1.5	0.0	0.0	0.0	11.0	3.5	7.0	8.0	3.0	5.5
9	2.0	0.0	0.5	0.0	0.0	0.0	7.5	4.5	6.0	10.0	3.0	6.5
10	1.5	0.0	0.5	0.0	0.0	0.0	10.5	5.0	7.5	10.0	5.0	7.5
11	1.5	0.0	0.5	0.0	0.0	0.0	10.0	4.5	7.0	12.0	4.5	8.0
12	1.5	0.0	0.5	3.0	0.0	1.0	11.0	5.0	7.5	16.0	5.5	10.5
13	0.5	0.0	0.0	3.5	0.0	1.5	11.0	5.5	8.0	17.0	8.0	12.5
14	2.5	0.0	1.0	4.0	1.0	2.0	11.0	6.5	8.5	16.0	9.5	12.5
15	1.5	0.0	0.5	3.5	0.0	1.5	6.5	2.5	4.5	12.5	7.0	10.0
16	2.5	0.0	0.5	4.5	0.5	2.0	8.5	2.5	5.0	16.0	7.0	11.0
17	4.0	1.0	2.0	1.5	0.0	0.5	5.5	3.5	4.5	15.5	7.0	11.0
18	3.0	0.5	1.5	1.0	0.0	0.0	7.0	1.5	4.0	15.0	8.0	11.0
19	2.0	0.0	1.0	3.0	0.0	1.0	9.5	1.5	5.5	19.0	9.5	14.0
20	4.0	1.0	2.0	2.0	0.0	1.0	11.0	2.5	6.5	16.5	11.0	13.5
21	4.0	0.0	2.0	0.0	0.0	0.0	9.0	4.0	6.5	12.5	7.5	9.5
22	5.5	2.5	3.5	4.0	0.0	1.5	13.5	5.5	9.0	7.5	5.5	6.5
23	4.0	0.0	2.0	7.5	2.0	4.5	10.5	5.0	8.0	9.5	3.5	6.0
24	0.0	0.0	0.0	7.5	3.5	5.0	10.5	2.0	5.5	13.0	5.5	9.0
25	0.0	0.0	0.0	6.0	3.5	4.5	11.0	3.5	7.0	14.0	7.5	11.0
26	0.0	0.0	0.0	9.0	2.0	5.0	12.0	4.5	8.0	16.0	9.0	12.0
27	0.0	0.0	0.0	8.0	3.5	5.5	7.0	3.5	5.5	15.5	9.5	12.5
28	0.0	0.0	0.0	7.0	2.5	4.5	12.5	3.5	7.5	15.5	9.5	12.0
29	---	---	---	8.5	2.5	4.5	14.0	4.5	9.0	17.5	10.0	13.5
30	---	---	---	8.0	3.0	5.0	13.5	6.0	9.0	14.0	10.0	11.5
31	---	---	---	8.5	2.5	5.5	---	---	---	14.0	7.5	10.5
MONTH	5.5	0.0	0.5	9.0	0.0	2.0	14.0	0.0	6.5	19.0	3.0	10.0

PEND OREILLE RIVER BASIN

12323770 WARM SPRINGS CREEK AT WARM SPRINGS, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	11.0	8.0	9.5	16.5	10.5	13.5	20.0	10.5	15.0	15.5	11.5	13.5
2	9.0	8.0	8.5	17.0	10.0	13.5	19.0	11.5	15.0	17.5	11.5	14.5
3	11.5	6.5	8.5	15.5	11.5	13.5	18.5	10.5	14.5	16.5	12.0	14.0
4	12.0	7.0	9.5	18.5	12.0	15.0	18.0	13.0	15.0	16.5	11.5	14.0
5	14.5	8.0	11.0	18.0	10.5	14.0	18.0	12.0	15.0	15.5	12.5	14.0
6	15.0	9.0	11.5	19.0	11.5	15.0	17.5	13.0	15.0	14.0	12.5	13.0
7	12.0	7.5	9.5	18.0	12.5	15.0	14.5	12.0	13.0	13.0	11.0	12.0
8	10.5	7.0	8.5	18.0	12.5	15.0	12.0	10.0	11.0	11.5	9.0	10.5
9	7.0	4.0	5.5	18.0	10.5	14.0	15.0	8.5	11.5	14.0	7.5	10.5
10	7.5	3.5	5.5	20.0	11.5	15.5	18.0	10.5	14.0	15.0	8.5	11.5
11	12.5	5.0	8.5	22.0	13.5	17.5	16.5	12.0	14.5	16.5	9.5	13.0
12	12.0	7.5	9.5	22.5	14.5	18.5	19.0	11.5	15.0	16.5	10.0	13.0
13	15.5	7.0	11.0	22.5	15.0	18.5	19.5	11.5	15.5	16.0	10.0	13.0
14	16.0	9.5	12.5	23.5	16.0	19.0	20.0	12.5	15.5	15.5	9.5	12.5
15	17.5	10.0	13.5	22.5	16.0	19.0	19.5	11.0	15.0	15.5	10.5	13.0
16	15.0	10.5	12.5	20.0	15.5	17.5	18.0	11.5	14.5	14.5	10.5	12.5
17	13.0	10.0	11.5	23.0	13.5	18.0	17.5	10.0	13.5	12.5	10.5	11.5
18	11.5	8.5	10.0	21.5	15.0	18.0	18.5	10.5	14.0	12.5	9.0	10.5
19	12.0	6.5	9.0	21.0	14.5	17.5	18.5	10.5	14.0	13.5	8.0	10.5
20	15.0	7.0	11.0	20.5	13.0	16.5	17.5	11.0	14.0	13.5	9.5	11.0
21	16.5	10.0	13.0	21.5	13.0	17.0	14.5	10.5	12.5	11.5	6.5	9.0
22	13.5	10.0	12.0	22.0	13.0	17.5	15.5	9.0	12.0	11.5	5.5	8.5
23	14.5	10.5	12.5	21.0	14.5	17.5	16.0	9.5	12.5	13.0	6.5	9.5
24	16.5	10.0	13.0	23.0	14.0	18.0	16.0	11.0	13.0	13.0	7.5	10.0
25	17.5	11.0	14.5	21.0	14.0	17.0	16.5	11.0	13.5	12.0	7.5	9.5
26	17.5	12.0	14.5	18.0	13.5	15.5	15.5	11.0	13.0	10.5	6.5	8.5
27	18.0	12.5	15.0	18.0	13.0	15.5	15.5	11.0	13.0	9.0	7.0	8.0
28	17.0	12.0	14.5	19.5	12.0	15.5	17.5	11.0	14.0	11.5	6.5	8.5
29	15.0	12.5	13.5	21.0	13.0	17.0	15.5	12.0	13.5	11.5	7.0	9.0
30	16.5	10.0	13.0	18.5	13.0	16.0	15.5	11.0	13.0	9.5	5.5	7.0
31	---	---	---	20.0	12.5	16.0	15.5	11.0	13.5	---	---	---
MONTH	18.0	3.5	11.0	23.5	10.0	16.5	20.0	8.5	14.0	17.5	5.5	11.0
YEAR	23.5	0.0	7.0									

PEND OREILLE RIVER BASIN

12323800 CLARK FORK NEAR GALEN, MT

LOCATION.--Lat 46°12'30", long 112°45'59" (NAD 27), in NE$^1/_4$NE$^1/_4$NE$^1/_4$ sec.7, T.5 N., R.9 W., Deer Lodge County, Hydrologic Unit 17010201, on right bank at upstream side of bridge on county road, 2.6 mi downstream from Silver Bow Creek and Warm Springs Creek, 2 mi south of Galen, and at river mile 482.7.

DRAINAGE AREA.--651 mi^2, area at site used prior to Oct. 1, 1994, 793 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,749.24 ft (NGVD 29).

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Some regulation by settling ponds on Silver Bow Creek near Warm Springs. Numerous diversions upstream from station for irrigation and municipal use. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	87	e75	e60	61	e58	89	85	271	175	41	72
2	49	89	e78	e60	63	e55	87	84	301	160	42	71
3	50	87	80	e65	e60	60	84	80	311	154	49	70
4	44	86	78	e70	68	68	88	77	288	156	56	70
5	55	86	e70	e75	75	82	87	72	267	141	62	69
6	56	85	e75	e80	76	80	88	76	264	133	56	70
7	56	84	e75	e85	79	77	90	80	270	138	61	93
8	58	85	e75	e80	80	73	90	82	258	130	92	97
9	60	86	e70	e76	77	e65	95	80	277	118	97	87
10	62	85	e60	78	76	74	100	84	301	105	80	79
11	67	85	e62	78	76	91	99	85	273	94	71	76
12	71	85	e65	81	73	103	95	82	259	81	66	76
13	73	83	e65	79	75	99	96	80	243	75	62	75
14	77	83	e62	77	73	98	103	76	226	66	56	73
15	82	80	e60	77	72	94	116	77	232	64	53	73
16	81	78	e65	71	72	92	109	79	254	61	49	72
17	81	77	e65	e68	74	88	107	77	278	57	47	75
18	81	82	e60	e65	74	83	106	80	288	55	45	87
19	81	84	e65	e67	74	84	104	94	282	56	40	87
20	86	85	e68	69	75	80	101	108	244	67	44	79
21	87	83	e68	72	75	82	95	149	228	57	58	74
22	84	84	e65	69	78	81	91	172	271	51	82	74
23	82	82	e60	e65	78	82	93	164	279	51	77	71
24	82	81	e55	70	64	87	105	151	261	47	76	64
25	82	83	e50	75	e50	86	113	144	241	47	77	62
26	81	83	e45	78	e52	87	109	141	230	50	74	70
27	83	83	e45	e75	57	91	106	146	215	54	72	71
28	82	e70	e50	e65	59	90	104	147	200	54	78	74
29	81	e75	e55	e55	---	91	95	156	194	47	72	68
30	82	80	e65	e57	---	90	88	212	193	43	72	69
31	85	---	e65	59	---	90	---	270	---	43	72	---
TOTAL	2228	2486	1996	2201	1966	2561	2933	3490	7699	2630	1979	2248
MEAN	71.87	82.87	64.39	71.00	70.21	82.61	97.77	112.6	256.6	84.84	63.84	74.93
MAX	87	89	80	85	80	103	116	270	311	175	97	97
MIN	44	70	45	55	50	55	84	72	193	43	40	62
AC-FT	4420	4930	3960	4370	3900	5080	5820	6920	15270	5220	3930	4460

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2002, BY WATER YEAR (WY)

MEAN	92.39	97.00	83.67	85.41	93.60	114.2	136.7	253.4	360.1	142.9	72.81	71.63
MAX	170	159	132	169	174	167	257	668	974	381	233	184
(WY)	1998	1998	1998	1997	1996	1997	1996	1997	1997	1997	1997	1993
MIN	40.6	50.7	40.7	42.5	43.5	77.2	80.5	68.6	51.1	21.4	10.2	20.3
(WY)	1989	1993	1993	1993	1993	1991	1991	1992	1992	1988	1988	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1988 - 2002	
ANNUAL TOTAL	29407		34417			
ANNUAL MEAN	80.57		94.29		135.0	
HIGHEST ANNUAL MEAN					288	1997
LOWEST ANNUAL MEAN					59.6	1992
HIGHEST DAILY MEAN	212	May 16	311	Jun 3	1210	Jun 7 1997
LOWEST DAILY MEAN	33	Aug 23	40	Aug 19	9.7	Aug 11 1988
ANNUAL SEVEN-DAY MINIMUM	34	Aug 20	46	Jul 28	9.8	Aug 15 1988
MAXIMUM PEAK FLOW			324	Jun 2	1240	Jun 7 1997
MAXIMUM PEAK STAGE			2.98	Jun 2	5.07	Jun 7 1997
INSTANTANEOUS LOW FLOW			a36	Feb 16	b9.0	Aug 9 1988
ANNUAL RUNOFF (AC-FT)	58330		68270		97810	
10 PERCENT EXCEEDS	127		158		278	
50 PERCENT EXCEEDS	75		78		92	
90 PERCENT EXCEEDS	46		56		42	

a--Gage height, 1.72 ft.
b--Gage height, 1.39 ft.
e--Estimated.

12323800 CLARK FORK NEAR GALEN, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971-74, 1988 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1991 to September 1998, October 2000 to current year.
INSTRUMENTATION.--Water temperature recorder since 1991.
REMARKS.--Sampling conducted since 1988 as part of EPA Superfund program. Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 25.5°C, June 23, 1991; minimum, 0.0°C, on many days during winter period.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 24.0°C, July 12, 14; minimum, 0.0°C, on many days November through April.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)
NOV 2001											
06...	1640	87	8.8	480	13.5	5.5	210	61.4	14.0	10.4	13
MAR 2002											
14...	1230	96	8.3	554	10.0	3.0	240	71.7	15.8	8.3	9
APR											
08...	1315	91	8.4	496	12.0	7.5	210	62.2	13.5	6.9	9
MAY											
06...	1310	76	8.6	481	6.0	9.0	210	62.2	13.4	10.4	11
29...	1320	164	8.9	342	23.0	16.0	140	42.1	9.31	17.9	22
JUN											
04...	0715	300	8.2	308	7.0	10.5	120	35.7	8.39	24.3	28
24...	1605	255	8.9	252	25.5	18.0	99	28.5	6.82	22.1	24
AUG											
20...	1605	49	8.8	457	21.5	18.0	210	61.4	13.2	16.2	18

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
NOV 2001										
06...	<.1	<.1	2.3	5.1	<10	70	<1	<1	41.2	64.9
MAR 2002										
14...	<.1	E.1	5.8	10.3	E6	130	E.04	<1	204	248
APR										
08...	<.1	.2	3.4	13.3	<10	270	E.06	2	113	170
MAY										
06...	<.1	<.1	3.4	7.6	E6	140	E.05	<1	101	142
29...	.04	.14	5.1	15.8	E8	310	E.06	2	42.6	167
JUN										
04...	.06	.23	6.2	28.8	22	510	.10	4	45.0	217
24...	.12	.10	6.6	13.6	14	190	.17	1	27.5	98
AUG										
20...	E.04	.06	3.9	6.7	E5	70	E.04	<1	29.8	70

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001					
06...	2	5	71	4	.94
MAR 2002					
14...	13	18	76	5	1.3
APR					
08...	7	31	86	5	1.2
MAY					
06...	5	10	84	5	1.0
29...	2	16	78	13	5.8
JUN					
04...	5	29	66	24	19.4
24...	3	11	78	9	6.2
AUG					
20...	2	5	80	3	.40

E--Estimated.

PEND OREILLE RIVER BASIN

12323800 CLARK FORK NEAR GALEN, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	14.0	9.5	12.5	8.0	5.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0
2	13.5	10.0	12.0	7.0	5.0	6.0	0.5	0.0	0.0	0.0	0.0	0.0
3	12.5	9.0	11.5	7.0	4.5	6.0	1.5	0.0	1.0	0.5	0.0	0.5
4	11.5	7.0	9.0	7.0	4.0	5.5	1.0	0.0	0.0	1.5	0.0	0.5
5	8.0	4.0	6.5	6.5	4.0	5.5	0.0	0.0	0.0	1.0	0.0	0.5
6	9.5	4.5	7.0	6.0	3.5	5.0	0.0	0.0	0.0	1.5	0.0	1.0
7	9.5	6.5	8.5	5.5	3.5	4.5	0.0	0.0	0.0	2.0	1.0	1.5
8	10.0	7.5	8.5	4.0	1.0	2.5	0.0	0.0	0.0	2.0	0.5	1.0
9	9.0	6.5	8.0	4.0	2.0	3.0	0.5	0.0	0.0	2.5	0.5	1.5
10	8.5	5.0	7.0	3.5	0.5	2.5	0.0	0.0	0.0	1.0	0.0	0.5
11	8.0	6.5	7.0	4.5	1.0	3.0	0.0	0.0	0.0	2.5	0.5	1.5
12	6.5	4.5	5.5	5.0	2.5	4.0	0.0	0.0	0.0	3.0	1.5	2.0
13	8.5	5.5	7.0	5.5	3.0	4.5	0.0	0.0	0.0	2.5	1.0	1.5
14	8.0	5.5	6.5	6.0	3.5	5.0	0.5	0.0	0.0	1.5	0.5	1.0
15	7.5	4.0	6.0	6.5	4.0	5.0	0.0	0.0	0.0	1.5	0.0	0.5
16	8.5	4.0	6.5	6.0	4.5	5.5	0.5	0.0	0.0	2.0	0.0	0.5
17	8.0	6.0	7.0	6.0	4.5	5.5	1.0	0.0	0.0	1.5	0.0	0.5
18	6.0	4.0	5.0	5.5	3.5	4.5	0.0	0.0	0.0	1.5	0.0	0.5
19	6.5	5.0	5.5	4.0	2.0	3.0	1.0	0.0	0.0	1.5	0.0	0.5
20	7.5	5.0	6.0	5.0	3.0	4.0	1.0	0.0	0.0	1.5	0.0	0.5
21	6.5	4.0	5.5	5.0	3.5	4.0	1.0	0.0	0.5	1.5	0.0	0.5
22	6.5	4.5	5.5	4.0	2.5	3.5	1.0	0.0	0.0	2.0	0.0	0.5
23	6.0	4.0	5.5	3.5	2.5	3.5	0.0	0.0	0.0	1.5	0.0	0.0
24	5.0	2.5	4.0	2.5	1.0	2.0	0.0	0.0	0.0	1.5	0.0	1.0
25	4.0	2.5	3.0	2.0	1.0	1.5	0.0	0.0	0.0	2.0	0.5	1.0
26	6.0	2.0	4.0	1.5	0.0	0.5	0.0	0.0	0.0	2.0	0.0	1.0
27	7.5	4.0	5.5	1.5	0.0	0.5	0.0	0.0	0.0	1.5	0.0	0.5
28	7.0	6.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
29	8.0	5.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	7.5	6.5	7.0	1.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
31	7.5	6.5	7.0	---	---	---	0.5	0.0	0.0	1.5	0.0	0.5
MONTH	14.0	2.0	7.0	8.0	0.0	3.5	1.5	0.0	0.0	3.0	0.0	0.5
		FEBRUARY			MARCH			APRIL			MAY	
1	2.0	0.0	0.5	2.5	0.0	0.5	6.0	1.0	4.0	13.5	6.5	9.5
2	2.5	0.0	1.0	3.0	0.0	0.5	5.5	0.0	2.5	14.5	7.0	10.5
3	2.5	0.0	0.5	3.0	0.0	0.5	7.0	0.0	3.5	13.5	8.5	11.0
4	2.5	0.0	1.0	3.5	0.0	1.0	9.5	1.5	5.0	14.0	7.0	10.5
5	3.0	0.0	1.0	4.5	0.5	1.5	10.5	3.0	6.5	11.5	8.5	9.5
6	3.0	0.0	1.0	2.5	0.0	0.5	11.5	6.0	8.5	11.0	7.0	9.0
7	2.5	0.5	1.0	1.5	0.0	0.5	8.0	5.0	6.5	9.0	6.5	7.5
8	1.5	0.5	1.0	4.0	0.0	1.0	10.5	4.0	7.0	9.5	5.0	7.0
9	3.0	0.0	1.5	4.0	0.0	1.0	8.0	5.0	6.5	11.0	4.5	7.5
10	3.0	0.0	1.0	4.5	0.0	2.0	10.5	5.5	8.0	11.0	6.5	8.5
11	2.0	0.5	1.0	3.5	0.5	1.5	10.0	5.5	7.5	13.0	6.0	9.5
12	3.0	0.0	1.0	2.5	1.0	1.5	10.5	6.5	8.5	16.0	7.0	11.0
13	3.5	0.0	1.0	3.5	0.0	1.5	10.5	6.5	8.5	16.5	9.5	13.0
14	3.0	0.0	1.5	4.5	1.5	2.5	11.0	8.0	9.0	15.5	10.5	13.0
15	3.0	0.0	1.0	4.0	0.0	2.0	8.5	4.5	6.0	13.0	8.5	11.0
16	3.5	0.0	1.5	5.0	1.0	2.5	8.5	4.0	6.0	16.0	8.5	12.0
17	4.5	1.0	2.5	3.5	0.0	1.5	7.0	4.5	5.5	15.0	9.0	12.0
18	3.5	1.0	2.0	4.0	0.0	1.5	7.0	2.5	4.5	15.5	9.5	12.0
19	3.0	0.5	1.5	3.5	0.5	2.0	9.5	2.5	5.5	19.0	11.0	14.5
20	4.5	1.0	2.5	2.5	0.0	1.0	11.0	3.5	7.0	17.0	13.0	15.0
21	4.0	1.0	2.5	4.0	0.0	1.0	9.0	4.5	7.0	14.0	9.0	11.0
22	5.5	3.0	4.0	4.5	0.0	2.5	13.0	6.0	9.0	9.0	7.5	8.5
23	4.5	0.5	2.0	8.0	2.0	5.0	10.0	7.0	8.5	10.0	6.0	8.0
24	1.0	0.0	0.5	8.0	3.5	5.5	10.5	4.5	7.0	13.5	7.5	10.0
25	2.0	0.0	0.5	6.0	4.0	5.0	11.0	5.0	7.5	14.0	9.0	11.5
26	1.5	0.0	0.5	9.0	2.5	5.5	12.0	6.0	8.5	15.5	10.5	12.5
27	3.0	0.0	1.0	8.0	3.5	5.5	8.5	5.5	7.0	16.0	11.0	13.5
28	3.0	0.0	1.0	6.5	3.5	5.0	12.0	5.0	8.0	16.0	11.5	13.5
29	---	---	---	8.0	3.5	5.0	13.5	6.0	9.5	18.5	12.0	15.0
30	---	---	---	7.5	3.5	5.0	13.0	7.0	9.5	15.5	12.5	13.5
31	---	---	---	8.5	3.0	5.5	---	---	---	16.0	10.0	13.0
MONTH	5.5	0.0	1.5	9.0	0.0	2.5	13.5	0.0	7.0	19.0	4.5	11.0

PEND OREILLE RIVER BASIN

12323800 CLARK FORK NEAR GALEN, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	14.0	11.0	12.0	18.5	13.0	16.0	20.0	13.0	17.0	16.0	12.5	14.5
2	11.5	10.5	11.0	19.0	12.5	15.5	19.0	14.5	17.0	18.0	12.5	15.5
3	14.0	9.5	11.5	17.5	13.5	15.5	18.5	13.0	16.0	17.5	13.0	15.5
4	14.5	10.5	12.5	20.5	14.0	17.0	18.5	15.0	17.0	17.5	13.5	15.5
5	16.0	11.5	13.5	19.5	13.0	16.5	18.5	14.0	16.5	17.0	14.0	15.5
6	16.5	12.0	14.0	20.5	14.0	17.0	18.5	14.0	16.5	15.0	13.0	14.0
7	14.0	10.5	12.5	20.0	15.0	17.0	16.5	13.5	14.5	14.5	12.5	13.0
8	13.0	10.0	11.0	20.0	15.0	17.0	13.5	11.5	12.5	14.0	10.0	12.0
9	10.5	7.0	8.5	20.0	13.0	16.5	17.0	9.5	13.0	15.0	9.0	12.0
10	9.5	6.5	8.0	22.0	14.0	17.5	19.0	12.0	15.5	16.0	10.0	13.0
11	13.0	8.0	10.0	23.5	16.0	19.5	18.5	14.0	16.0	17.0	11.0	14.0
12	13.0	10.0	11.5	24.0	17.0	20.5	19.5	13.0	16.5	17.0	11.5	14.5
13	16.0	9.5	12.5	23.5	17.5	20.5	20.0	13.5	17.0	17.0	12.0	14.5
14	17.0	12.0	14.5	24.0	18.5	21.5	19.5	14.0	17.0	16.5	11.0	14.0
15	18.0	13.0	15.5	23.5	18.5	21.0	19.5	13.0	16.5	16.0	12.0	14.0
16	17.0	13.0	15.0	21.5	18.0	20.0	18.5	13.5	16.0	15.0	12.0	13.5
17	15.5	13.0	14.5	23.5	16.5	20.0	17.0	12.0	15.0	14.0	12.0	12.5
18	14.0	11.5	13.0	22.0	17.5	20.0	18.5	12.5	15.5	13.0	10.5	11.5
19	13.5	9.5	11.0	21.5	17.0	19.5	18.0	13.0	16.0	14.5	9.0	11.5
20	16.5	9.5	13.0	21.5	16.0	19.0	17.5	13.5	16.0	14.0	10.5	12.0
21	18.0	12.5	15.0	22.0	15.5	19.0	16.0	12.5	14.5	12.0	8.0	10.5
22	15.5	12.5	14.5	22.5	15.5	19.0	16.5	10.5	13.5	12.0	7.0	9.5
23	17.0	13.0	15.0	21.5	17.0	19.5	17.0	11.0	14.0	13.0	8.0	10.5
24	18.5	12.5	15.5	23.0	16.5	19.5	17.0	12.5	15.0	13.5	9.0	11.5
25	19.5	14.0	16.5	21.0	16.0	19.0	17.0	12.0	14.5	12.5	9.0	11.0
26	19.0	15.0	17.0	19.0	15.0	17.0	16.5	12.0	14.5	11.5	8.0	10.0
27	20.5	15.5	17.5	19.0	15.5	17.0	16.0	12.0	14.5	10.5	8.0	9.0
28	19.5	15.0	17.0	20.0	14.0	17.0	18.0	12.0	15.0	12.0	7.5	9.5
29	17.5	15.0	16.0	21.5	15.0	18.5	17.0	13.5	15.0	11.5	7.5	10.0
30	19.0	13.0	15.5	19.5	15.5	18.0	16.5	12.0	14.5	10.5	7.0	8.5
31	---	---	---	20.0	15.0	17.5	17.0	12.5	15.0	---	---	---
MONTH	20.5	6.5	13.5	24.0	12.5	18.5	20.0	9.5	15.5	18.0	7.0	12.5

PEND OREILLE RIVER BASIN

12324200 CLARK FORK AT DEER LODGE, MT

LOCATION.--Lat 46°23'52", long 112°44'31" (NAD 27), in SW$^1/_4$SW$^1/_4$SW$^1/_4$ sec.33, T.8 N., R.9 W., Powell County, Hydrologic Unit 17010201, on left bank 35 ft upstream from Milwaukee Avenue Bridge in Deer Lodge, 0.05 mi upstream from Taylor Creek, 0.24 mi downstream from Tin Cup Joe Creek, and at river mile 461.2.

DRAINAGE AREA.--995 mi^2, area at site used prior to Oct. 1, 1994, 1,005 mi^2. Area used Octobert 1994 to September 2000, 916 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,502.24 ft (NGVD 29).

REMARKS.--Water-discharge records good except for estimated daily discharges, which are fair. Diversions upstream from station for irrigation of about 31,000 acres. Some regulation by settling ponds on Silver Bow Creek near Warm Springs. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	96	177	157	e150	148	e150	201	156	287	219	63	99
2	95	177	189	e140	164	e150	187	155	363	195	60	99
3	93	176	188	e140	e150	162	188	147	389	181	59	100
4	87	175	179	e150	164	176	191	147	311	182	66	97
5	110	175	154	e160	e160	182	190	127	273	171	77	89
6	127	174	188	170	181	181	197	131	252	160	81	90
7	124	175	180	191	177	170	198	136	251	157	82	132
8	145	175	177	201	177	e150	191	140	263	158	135	142
9	153	177	177	186	172	e160	190	125	296	147	168	129
10	155	175	e150	e165	171	169	201	127	429	134	140	119
11	157	174	160	e160	176	195	200	131	388	116	116	117
12	160	175	164	e170	166	220	196	126	308	104	106	115
13	162	176	160	178	165	210	192	118	278	97	92	115
14	168	177	e150	173	175	203	201	109	243	87	82	115
15	178	175	e145	176	161	192	235	100	236	81	73	111
16	176	172	150	176	169	193	218	85	248	78	74	111
17	176	172	182	171	174	182	211	83	284	77	72	112
18	177	180	162	167	170	180	214	74	325	74	70	126
19	176	177	168	157	168	186	208	76	344	69	66	129
20	185	180	175	162	173	183	200	83	293	78	65	123
21	182	180	174	e160	169	160	193	120	258	76	77	113
22	178	181	e150	e155	183	189	181	191	286	66	103	115
23	177	180	e135	e150	186	191	165	197	339	62	113	118
24	174	177	e120	160	e135	204	175	185	322	69	110	106
25	175	179	e110	174	e100	208	183	163	286	71	100	103
26	175	184	e95	176	e110	199	186	144	260	73	102	112
27	174	185	e95	e160	e130	212	178	139	251	83	99	124
28	172	160	e110	e140	153	202	182	147	232	90	103	132
29	172	164	e125	e120	---	200	168	145	239	83	106	130
30	173	192	e140	e130	---	199	160	175	246	72	104	132
31	176	---	e150	e140	---	199	---	278	---	69	99	---
TOTAL	4828	5296	4759	5008	4527	5757	5780	4260	8780	3379	2863	3455
MEAN	155.7	176.5	153.5	161.5	161.7	185.7	192.7	137.4	292.7	109.0	92.35	115.2
MAX	185	192	189	201	186	220	235	278	429	219	168	142
MIN	87	160	95	120	100	150	160	74	232	62	59	89
AC-FT	9580	10500	9440	9930	8980	11420	11460	8450	17420	6700	5680	6850

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 2002, BY WATER YEAR (WY)

MEAN	242.6	252.4	224.0	223.7	247.3	266.8	281.4	392.1	498.6	222.3	107.4	175.6
MAX	421	384	353	342	481	387	422	971	1450	593	337	315
(WY)	1983	1981	1981	1983	1982	1979	1982	1981	1997	1982	1997	1993
MIN	115	156	122	140	137	185	161	80.2	57.8	29.9	27.8	57.8
(WY)	1989	1989	1993	1992	1989	1991	1992	1992	1992	1985	1988	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1979 - 2002	
ANNUAL TOTAL	53833		58692			
ANNUAL MEAN	147.5		160.8		260.8	
HIGHEST ANNUAL MEAN					465	1997
LOWEST ANNUAL MEAN					130	1992
HIGHEST DAILY MEAN	279	Jun 4	429	Jun 10	2390	May 23 1981
LOWEST DAILY MEAN	31	Aug 14	59	Aug 3	22	Aug 18 1988
ANNUAL SEVEN-DAY MINIMUM	33	Aug 9	67	Jul 30	23	Aug 9 1991
MAXIMUM PEAK FLOW			a461	Jun 10	d2500	May 23 1981
MAXIMUM PEAK STAGE			b4.33	Dec 28	b5.92	Nov 1 1991
INSTANTANEOUS LOW FLOW			c56	Aug 1	f21	Aug 6 1991
ANNUAL RUNOFF (AC-FT)	106800		116400		189000	
10 PERCENT EXCEEDS	200		213		408	
50 PERCENT EXCEEDS	170		165		225	
90 PERCENT EXCEEDS	56		86		93	

a--Gage height, 3.34 ft.
b--Backwater from ice.
c--Gage height, 2.36 ft.
d--Gage height, 5.35 ft.
e--Estimated.
f--Gage height, 2.19 ft.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963, 1969-71, 1979-83, 1985 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1978 to September 1983, October 1991 to September 1998, May to September, 2001 (seasonal records).
SUSPENDED-SEDIMENT DISCHARGE: March 1985 through August 1986, April 1987 to current year.

INSTRUMENTATION.--Temperature recorder installed May 3, 2001.

REMARKS.--Missing temperature data for June 5, 6 and July 29, 30 due to equipment problems. Unpublished records of instantaneous water temperature and specific conductance for many days are available in files of District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE : Maximum, 24.5°C, July 26, 1998, July 11-14, 2002; minimum, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATION: Maximum daily mean, 835 mg/L, Feb. 8, 1996; minimum daily mean, 1 mg/L, Aug. 19, 2002.
SEDIMENT LOAD: Maximum daily, 2,840 tons, Feb. 24, 1986; minimum daily, 0.18 ton, Aug. 19, 2002.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum, 24.5°C, July 11-14; minimum, 0.0°C, Apr. 2
SEDIMENT CONCENTRATION: Maximum daily mean, 128 mg/L, June 3; minimum daily mean, 1 mg/L, Aug. 19.
SEDIMENT LOAD: Maximum daily, 134 tons, June 3; minimum daily, .18 ton, Aug. 19.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)
NOV											
07...	0915	172	8.3	551	3.0	3.0	240	70.5	16.3	8.3	11
MAR											
14...	1330	201	8.4	551	13.5	3.0	240	71.9	15.6	10.1	14
APR											
08...	1410	190	8.4	524	13.0	9.0	220	66.0	14.3	9.7	15
MAY											
06...	1410	132	8.6	527	7.0	10.5	230	68.6	14.8	10.6	11
29...	1415	141	8.8	445	23.0	17.5	190	57.3	12.1	16.6	19
JUN											
04...	0945	305	8.1	360	15.0	12.0	150	43.9	9.82	18.7	32
24...	1705	325	8.9	334	26.5	20.0	140	40.0	9.20	22.2	26
AUG											
22...	0735	97	8.0	541	9.0	12.0	230	68.2	14.4	12.7	13

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
NOV										
07...	<.1	E.1	3.2	15.4	<10	190	<1	2	29.4	79
MAR										
14...	<.1	.2	7.2	44.8	E10	700	.09	6	50.1	157
APR										
08...	E.1	E.1	6.5	37.0	<10	510	E.08	5	48.9	126
MAY										
06...	<.1	E.1	6.1	15.5	<10	170	E.04	2	47.7	78
29...	.04	.11	7.8	20.4	<10	220	<.08	2	27.8	82
JUN										
04...	.05	.57	9.6	92.4	21	1450	.21	13	23.1	328
24...	.06	.17	9.4	33.8	E9	390	.09	4	18.1	95
AUG										
22...	.08	.06	10.7	15.7	E5	100	E.05	<1	8.5	16

E--Estimated.

PEND OREILLE RIVER BASIN

12324200 CLARK FORK AT DEER LODGE, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)
NOV					
07...	7	22	74	14	6.5
MAR					
14...	13	44	72	39	21.2
APR					
08...	8	33	79	23	11.8
MAY					
06...	5	15	80	10	3.6
29...	2	16	82	11	4.2
JUN					
04...	9	90	68	69	56.8
24...	2	25	78	23	20.2
AUG					
22...	8	11	85	4	1.0

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
			APRIL			MAY			JUNE			JULY
1	6.5	1.5	5.0	13.5	7.0	10.0	16.0	12.5	14.0	20.0	14.0	17.0
2	5.0	0.0	2.0	14.5	7.5	11.0	13.0	11.5	12.0	20.0	13.5	17.0
3	7.0	1.0	4.0	13.5	8.5	11.0	15.0	10.0	12.5	19.0	15.0	17.0
4	8.5	3.0	5.5	13.0	7.0	10.5	15.5	11.0	13.5	21.0	15.0	18.0
5	10.5	4.5	7.5	11.5	8.5	10.0	17.0	12.5	14.5	21.0	14.5	17.5
6	11.0	7.5	9.0	12.0	7.5	9.5	18.0	12.5	15.0	22.0	15.0	18.5
7	8.0	7.0	7.5	9.5	6.5	8.0	16.5	11.5	14.0	21.0	16.0	18.0
8	10.5	5.5	8.0	8.0	4.0	6.0	13.5	10.5	11.5	19.5	16.0	18.0
9	8.5	6.0	7.0	10.5	4.0	7.5	11.0	7.0	9.0	21.0	14.0	17.5
10	10.5	6.5	8.0	11.5	7.0	9.5	9.0	5.5	7.5	22.5	15.0	19.0
11	9.5	6.5	8.0	11.5	6.0	9.0	13.5	8.0	10.5	24.5	17.0	20.5
12	11.5	7.0	9.0	16.0	7.5	11.5	14.5	10.5	12.5	24.5	18.0	21.5
13	10.0	7.5	8.5	16.5	10.0	13.5	17.5	11.0	14.0	24.5	18.5	21.5
14	11.0	8.0	9.0	15.0	10.5	13.0	18.5	13.0	16.0	24.5	18.5	21.5
15	9.0	5.5	7.0	12.5	9.0	11.0	19.5	14.0	17.0	24.0	18.5	21.0
16	8.0	3.5	5.5	15.0	8.5	11.5	19.5	14.5	17.5	22.0	18.0	20.0
17	6.5	4.5	5.5	14.5	9.5	12.0	18.0	14.5	16.5	23.0	16.0	19.5
18	7.0	3.0	4.5	16.0	9.5	13.0	15.5	13.0	14.0	23.0	17.5	20.0
19	9.5	3.5	6.0	19.0	11.5	15.0	14.5	10.5	12.5	21.5	17.0	19.0
20	11.0	4.0	7.5	17.5	13.0	15.5	18.0	11.0	14.0	23.0	16.5	19.5
21	9.0	6.0	7.5	14.5	9.0	11.5	19.0	13.5	16.5	23.0	16.0	19.5
22	12.0	6.0	9.0	9.5	7.5	8.5	17.5	14.5	16.0	22.5	15.5	19.0
23	10.5	6.5	8.5	10.5	6.5	8.5	19.0	14.5	16.5	22.0	17.0	19.5
24	10.0	4.0	7.0	14.0	8.0	10.5	20.0	14.5	17.0	23.5	16.0	19.5
25	11.0	5.5	8.0	14.5	9.5	12.0	21.5	15.5	18.5	21.5	16.0	19.0
26	11.5	6.5	9.0	16.0	11.0	13.0	22.0	16.5	19.5	19.5	15.0	17.5
27	8.5	6.5	7.5	17.0	12.0	14.5	22.0	16.5	19.5	19.0	15.5	17.5
28	11.0	5.0	7.5	16.5	12.0	14.5	21.5	16.5	19.0	19.0	14.0	17.0
29	13.5	6.0	9.5	20.0	12.5	15.5	19.5	15.5	17.5	22.0	16.0	18.5
30	13.0	7.5	10.5	18.5	14.0	16.0	20.0	14.5	17.0	21.5	15.0	18.0
31	---	---	---	18.0	12.5	15.5	---	---	---	20.5	15.0	17.5
MONTH	13.5	0.0	7.5	20.0	4.0	11.5	22.0	5.5	15.0	24.5	13.5	19.0

12324200 CLARK FORK AT DEER LODGE, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER	
1	20.0	12.5	16.0	16.5	13.5	15.0
2	20.0	14.0	16.5	18.5	12.5	15.5
3	19.5	12.5	16.0	17.5	13.5	16.0
4	19.0	14.5	16.5	18.5	13.5	16.0
5	20.0	14.0	16.5	17.0	14.5	15.5
6	18.0	14.5	16.5	15.0	13.0	14.0
7	16.0	13.5	15.0	14.5	12.5	13.5
8	14.0	12.5	13.0	15.5	10.5	13.0
9	18.0	10.5	14.0	15.5	10.0	13.0
10	19.5	13.0	16.5	16.5	10.5	13.5
11	18.5	14.5	16.5	17.5	11.5	14.5
12	19.5	14.0	16.5	17.5	12.0	15.0
13	20.5	13.5	17.0	17.5	12.0	15.0
14	20.5	15.0	17.5	17.0	11.5	14.5
15	20.5	13.0	16.5	17.0	12.5	15.0
16	18.5	13.5	16.0	16.0	12.5	14.5
17	18.0	12.0	15.0	14.5	12.0	12.5
18	19.0	12.5	15.5	13.0	10.5	12.0
19	19.0	12.5	16.0	15.5	10.5	13.0
20	18.5	13.5	16.0	15.0	11.0	12.5
21	16.0	12.5	14.0	13.0	9.0	11.0
22	18.0	12.0	14.5	13.0	8.0	10.5
23	17.5	12.5	15.0	14.0	8.5	11.0
24	18.5	14.0	16.5	14.0	9.0	11.5
25	18.5	13.5	16.0	13.5	9.0	11.0
26	18.5	13.5	16.0	12.0	8.5	10.5
27	17.0	13.5	15.5	10.5	8.5	9.5
28	19.5	13.5	16.5	12.5	7.5	10.0
29	18.0	14.5	16.5	12.0	8.0	10.0
30	18.0	13.0	15.5	10.5	8.5	9.5
31	17.5	13.5	16.0	---	---	---
MONTH	20.5	10.5	16.0	18.5	7.5	13.0

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	7	1.8	10	4.8	6	2.5	13	5.3	25	10	27	11
2	6	1.5	10	4.8	6	3.1	15	5.7	33	15	25	10
3	6	1.5	10	4.8	7	3.6	16	6.0	31	13	22	9.6
4	7	1.6	11	5.2	8	3.9	17	6.9	28	12	22	10
5	10	3.0	14	6.6	10	4.1	17	7.3	26	11	26	13
6	18	6.2	15	7.0	12	6.1	17	7.8	24	12	39	19
7	27	9.1	15	7.1	13	6.3	29	15	24	11	30	14
8	34	13	12	5.7	10	4.8	37	20	23	11	22	8.9
9	38	16	10	4.8	8	3.8	34	17	22	10	24	10
10	40	17	10	4.7	7	2.8	31	14	21	9.7	44	20
11	34	14	10	4.7	7	3.0	28	12	20	9.5	53	28
12	28	12	11	5.2	7	3.1	26	12	20	9.0	81	48
13	23	10	12	5.7	10	4.3	25	12	21	9.4	47	27
14	21	9.5	12	5.7	14	5.7	27	13	25	12	39	21
15	21	10	13	6.1	16	6.3	27	13	26	11	30	16
16	20	9.5	14	6.5	15	6.1	26	12	24	11	30	16
17	20	9.5	14	6.5	12	5.9	23	11	22	10	34	17
18	20	9.5	15	7.3	9	3.9	19	8.6	21	9.6	39	19
19	20	9.5	15	7.2	7	3.2	16	6.8	21	9.5	28	14
20	19	9.5	16	7.8	7	3.3	13	5.7	23	11	25	12
21	18	8.8	16	7.8	7	3.3	12	5.2	26	12	27	12
22	17	8.2	15	7.3	7	2.8	12	5.0	27	13	36	18
23	16	7.6	14	6.8	7	2.6	12	4.9	28	14	39	20
24	17	8.0	13	6.2	7	2.3	12	5.2	25	9.1	44	24
25	19	9.0	12	5.8	8	2.4	12	5.6	22	5.9	43	24
26	21	9.9	11	5.5	11	2.8	12	5.7	20	5.9	34	18
27	19	8.9	9	4.5	13	3.3	12	5.2	18	6.3	42	24
28	15	7.0	7	3.0	13	3.9	12	4.5	19	7.8	36	20
29	11	5.1	6	2.7	11	3.7	12	3.9	---	---	36	19
30	10	4.7	6	3.1	10	3.8	13	4.6	---	---	29	16
31	10	4.8	---	---	11	4.5	17	6.4	---	---	26	14
TOTAL	---	255.7	---	170.9	---	121.2	---	267.3	---	290.7	---	552.5

PEND OREILLE RIVER BASIN

12324200 CLARK FORK AT DEER LODGE, MT--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	28	15	15	6.3	52	40	9	5.3	15	2.5	3	0.80
2	42	21	14	5.8	59	58	7	3.7	15	2.4	3	0.81
3	40	20	10	4.0	128	134	6	2.9	12	1.9	3	0.81
4	37	19	9	3.6	68	57	7	3.4	7	1.2	3	0.78
5	38	19	16	5.5	50	37	7	3.2	4	0.83	3	0.72
6	39	21	12	4.2	39	27	7	3.0	3	0.66	3	0.73
7	35	19	15	5.5	29	20	7	3.0	3	0.67	7	2.5
8	26	13	12	4.5	25	18	6	2.6	3	1.1	8	3.1
9	27	14	11	3.7	26	21	5	2.0	2	0.91	7	2.4
10	30	16	12	4.1	54	62	5	1.8	2	0.76	6	1.9
11	30	16	7	2.5	52	54	4	1.3	2	0.62	6	1.9
12	28	15	6	2.0	29	24	4	1.1	2	0.57	6	1.9
13	32	17	7	2.2	22	17	3	0.79	2	0.50	5	1.6
14	36	20	8	2.4	21	14	3	0.70	2	0.44	4	1.2
15	32	20	9	2.4	21	13	3	0.65	2	0.39	4	1.2
16	27	16	11	2.5	21	14	3	0.63	3	0.60	4	1.2
17	23	13	8	1.8	24	18	3	0.62	4	0.78	5	1.5
18	26	15	5	1.0	27	24	4	0.80	3	0.57	7	2.4
19	24	13	5	1.0	16	15	4	0.75	1	0.18	7	2.4
20	23	12	5	1.1	12	9.5	5	1.1	2	0.35	7	2.3
21	21	11	12	3.9	14	9.8	5	1.0	4	0.84	7	2.1
22	18	8.8	42	22	19	15	6	1.1	4	1.1	5	1.5
23	20	8.9	28	15	26	24	6	1.0	2	0.61	4	1.3
24	18	8.5	19	9.5	20	17	6	1.1	2	0.60	5	1.4
25	20	9.9	16	7.0	13	10	6	1.1	2	0.54	8	2.2
26	16	8.0	12	4.7	10	7.0	6	1.2	2	0.55	10	3.0
27	13	6.2	10	3.7	9	6.1	7	1.6	2	0.54	10	3.4
28	13	6.4	10	4.0	9	5.6	8	1.9	2	0.56	10	3.6
29	14	6.4	10	3.9	10	6.5	9	2.0	2	0.57	10	3.5
30	12	5.2	20	9.4	10	6.6	9	1.8	2	0.56	10	3.6
31	---	---	94	71	---	---	11	2.1	2	0.53	---	---
TOTAL	---	413.3	---	220.2	---	784.1	---	55.24	---	24.93	---	57.75

TOTAL LOAD FOR YEAR: 3213.82 tons.

PEND OREILLE RIVER BASIN

12324590 LITTLE BLACKFOOT RIVER NEAR GARRISON, MT

LOCATION.--Lat 46°31'11", long 112°47'33" (NAD 27), in NE$^1/_4$NW$^1/_4$SE$^1/_4$ sec.24, T.9 N., R.10 W., Powell County, Hydrologic Unit 17010201, on right bank 20 ft upstream from bridge on frontage road, 0.7 mi southeast of Garrison, and at river mile 0.5.
DRAINAGE AREA.--407 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1972 to current year.
GAGE.--Water-stage recorder. Elevation of gage is 4,343.97 ft (NGVD 29). Prior to Oct. 1, 1992, at site 3.5 mi upstream at different datum.
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. A few minor irrigation holding reservoirs in upper reaches of drainage. Diversions for irrigation of about 11,000 acres upstream from station. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	71	e55	e40	e55	e45	260	114	392	179	74	41
2	31	69	56	e40	e55	e45	104	111	413	159	73	39
3	31	68	56	e45	e50	e45	93	114	415	147	69	37
4	31	67	e55	e50	e55	e50	100	101	363	144	69	36
5	34	63	e52	e50	e55	e60	197	103	313	134	72	30
6	36	65	e55	e55	e60	e55	399	110	273	118	72	32
7	36	65	e55	e65	e70	e50	373	102	250	111	74	40
8	36	62	e55	e80	e65	e55	218	99	261	121	76	42
9	36	61	e50	e75	e65	e60	206	95	318	126	85	41
10	36	60	e45	e70	e65	e80	207	105	484	132	77	38
11	41	56	e50	e70	e65	e75	233	105	470	117	69	40
12	46	57	e50	e70	e60	e70	198	105	424	108	68	38
13	49	59	e55	e65	e60	e65	202	105	407	103	67	36
14	54	60	e55	e65	e60	e65	255	107	409	105	61	34
15	56	62	e50	e60	e60	e60	274	118	406	107	50	34
16	54	62	e55	e60	e60	e55	215	115	394	98	46	33
17	52	62	55	e60	e58	e55	186	111	437	101	42	35
18	50	62	e50	e60	57	e55	168	115	403	97	41	37
19	58	60	e45	e55	57	e60	146	129	409	98	40	36
20	63	60	e45	e60	55	e55	145	182	352	109	40	35
21	59	62	e50	e60	54	e55	138	267	315	102	46	34
22	57	63	e45	e55	101	e60	133	390	355	92	50	34
23	68	63	e40	e55	117	e65	136	376	335	89	51	34
24	69	62	e40	e60	e40	e70	127	320	300	107	47	34
25	67	60	e35	e65	e35	82	122	298	262	94	46	40
26	69	58	e35	e60	e40	113	119	324	235	90	46	44
27	68	58	e35	e50	e50	199	120	367	205	87	45	46
28	70	e55	e40	e45	e50	135	118	384	196	87	45	47
29	72	e56	e45	e45	---	123	114	407	198	91	44	47
30	66	56	e45	e50	---	131	111	419	205	81	46	48
31	69	---	e40	e50	---	186	---	418	---	75	45	---
TOTAL	1595	1844	1494	1790	1674	2379	5417	6216	10199	3409	1776	1142
MEAN	51.45	61.47	48.19	57.74	59.79	76.74	180.6	200.5	340.0	110.0	57.29	38.07
MAX	72	71	56	80	117	199	399	419	484	179	85	48
MIN	31	55	35	40	35	45	93	95	196	75	40	30
AC-FT	3160	3660	2960	3550	3320	4720	10740	12330	20230	6760	3520	2270

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2002, BY WATER YEAR (WY)

MEAN	72.15	71.14	63.71	61.23	83.71	117.5	223.5	489.1	388.5	136.1	62.45	57.37
MAX	129	122	199	135	262	271	486	1460	1803	410	191	184
(WY)	1976	1976	1976	1976	1996	1986	1976	1981	1975	1975	1975	1993
MIN	35.4	39.8	32.9	36.3	36.4	55.4	88.8	76.9	60.1	23.6	11.9	19.9
(WY)	1974	1988	1993	1993	1989	1975	1973	1992	1992	1973	1977	1977

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1972 - 2002	
ANNUAL TOTAL	41655		38935			
ANNUAL MEAN	114.1		106.7		152.4	
HIGHEST ANNUAL MEAN					322	1975
LOWEST ANNUAL MEAN					58.4	1973
HIGHEST DAILY MEAN	635	May 16	484	Jun 10	6280	May 22 1981
LOWEST DAILY MEAN	19	Sep 4	30	Sep 5	6.5	Aug 23 1977
ANNUAL SEVEN-DAY MINIMUM	22	Aug 30	33	Oct 1	6.7	Aug 22 1977
MAXIMUM PEAK FLOW			746	Apr 6	8650	May 21 1981
MAXIMUM PEAK STAGE			3.48	Apr 6	8.79	May 21 1981
INSTANTANEOUS LOW FLOW			a20	Feb 24	b6.0	Aug 24 1977
ANNUAL RUNOFF (AC-FT)	82620		77230		110400	
10 PERCENT EXCEEDS	320		264		370	
50 PERCENT EXCEEDS	59		63		75	
90 PERCENT EXCEEDS	35		40		38	

a--Gage height, 0.98 ft, result of freezeup.
b--Site and datum then in use.
e--Estimated.

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963, 1985 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1999 to current year.
INSTRUMENTATION.--Temperature recorder installed Aug. 19, 1999.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 25.5°C, July 29, 30, Aug. 1, 2, 2000; minimum, 0.0°C on many days during winter period.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 23.0°C, July 12; minimum, 0.0°C on many days November through April.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)
NOV 2001											
08...	0835	63	8.1	284	-5.0	.5	130	37.6	8.71	2.13	.3
APR 2002											
09...	0925	197	8.1	206	9.0	3.0	88	25.5	5.92	--	--
MAY											
29...	1530	414	8.2	180	24.5	15.5	80	23.2	5.38	--	--
JUN											
04...	1125	372	8.1	194	20.5	10.5	86	24.8	5.74	--	--
24...	1830	289	8.4	222	27.0	19.5	100	29.7	6.75	1.58	.2
AUG											
21...	1715	51	8.6	265	14.0	15.5	120	35.0	8.11	--	--

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
NOV 2001											
08...	6.82	140	2.73	.2	21.2	16.1	.24	30.5	180	.11	<.013
APR 2002											
09...	--	--	--	--	--	--	--	--	--	--	--
MAY											
29...	--	--	--	--	--	--	--	--	--	.41	<.013
JUN											
04...	--	--	--	--	--	--	--	--	--	.26	<.013
24...	5.43	104	1.75	.2	21.5	10.6	.19	109	140	.26	<.013
AUG											
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV 2001											
08...	<.002	.013	.019	3.9	5	<.1	<.1	<.8	<1.0	.9	<10
APR 2002											
09...	--	--	--	5.3	6	<.1	<.1	--	2.3	2.5	79
MAY											
29...	<.002	.015	.070	5.1	6	<.04	.04	--	1.6	2.9	36
JUN											
04...	<.002	.013	.048	5.1	6	<.04	E.03	--	1.3	2.0	30
24...	<.002	.020	.039	6.0	6	E.02	E.02	<.8	1.2	1.6	21
AUG											
21...	--	--	--	5.5	6	<.04	E.02	--	.7	1.0	<10

E--Estimated.

12324590 LITTLE BLACKFOOT RIVER NEAR GARRISON, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001											
08...	40	<1	<1	2.5	6.8	<2	<1	1	81	2	.34
APR 2002											
09...	380	.13	<1	9.5	35	--	2	3	84	15	8.0
MAY											
29...	590	E.07	1	8.2	44	--	1	6	58	35	39.1
JUN											
04...	280	E.06	<1	7.9	25	--	1	4	73	13	13.1
24...	160	E.05	<1	9.0	21	<2	1	2	84	7	5.5
AUG											
21...	70	E.05	<1	5.4	16	--	1	1	94	3	.41

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	16.0	8.0	11.5	7.0	5.5	6.0	1.0	0.0	0.5	0.0	0.0	0.0
2	14.5	8.0	11.0	8.0	5.0	6.5	2.0	0.5	1.0	0.0	0.0	0.0
3	14.5	8.0	10.5	8.0	4.5	6.0	2.5	0.5	1.5	0.0	0.0	0.0
4	9.5	6.0	8.0	7.5	3.5	5.5	0.5	0.0	0.0	0.0	0.0	0.0
5	11.5	4.0	7.0	6.5	3.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0
6	12.0	4.5	8.0	6.5	3.5	5.0	0.5	0.0	0.0	0.0	0.0	0.0
7	11.0	6.5	8.5	6.0	3.0	4.0	1.0	0.0	0.0	0.0	0.0	0.0
8	11.5	8.0	9.0	4.5	1.0	2.5	0.5	0.0	0.0	0.0	0.0	0.0
9	9.0	7.0	8.0	4.0	1.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0
10	11.5	6.5	8.5	4.0	0.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0
11	9.0	6.0	8.0	4.5	0.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0
12	8.0	5.5	6.5	5.0	1.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0
13	10.0	6.5	8.0	5.0	2.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
14	7.5	6.0	6.5	6.5	3.0	4.5	1.0	0.0	0.5	0.0	0.0	0.0
15	10.0	5.5	7.0	6.0	3.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0
16	10.0	5.5	7.5	6.0	3.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0
17	9.5	6.0	7.5	5.5	4.0	4.5	1.5	0.0	0.5	0.0	0.0	0.0
18	7.5	4.5	6.0	5.5	2.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0
19	8.0	6.0	7.0	3.5	1.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0
20	9.0	5.5	7.0	5.0	2.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
21	8.0	4.5	6.5	5.5	3.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0
22	8.0	6.0	7.0	5.0	3.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
23	7.0	4.5	6.0	5.0	3.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
24	5.5	3.5	4.5	3.5	2.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0
25	5.5	3.5	4.5	2.0	1.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
26	7.5	3.0	5.0	2.0	0.5	1.0	0.0	0.0	0.0	0.5	0.0	0.0
27	9.0	4.0	6.0	2.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
28	8.0	6.5	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	8.5	6.0	7.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
30	8.5	7.5	8.0	2.5	1.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
31	9.0	6.0	7.5	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0
MONTH	16.0	3.0	7.5	8.0	0.0	3.5	2.5	0.0	0.0	0.5	0.0	0.0

PEND OREILLE RIVER BASIN

12324590 LITTLE BLACKFOOT RIVER NEAR GARRISON, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.5	13.0	5.0	8.5
2	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	1.0	12.5	5.5	9.0
3	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0	3.0	12.5	7.0	9.5
4	0.0	0.0	0.0	0.0	0.0	0.0	9.0	1.0	4.5	12.0	4.5	8.0
5	0.0	0.0	0.0	0.0	0.0	0.0	9.0	1.0	5.0	10.0	6.5	8.0
6	0.0	0.0	0.0	0.0	0.0	0.0	7.5	2.0	4.0	11.0	5.0	7.5
7	0.0	0.0	0.0	0.0	0.0	0.0	5.5	1.5	3.0	7.5	4.5	6.0
8	0.0	0.0	0.0	0.0	0.0	0.0	9.0	2.0	5.5	8.5	2.5	5.5
9	0.0	0.0	0.0	0.0	0.0	0.0	6.5	2.0	4.0	10.5	3.0	7.0
10	0.5	0.0	0.0	0.0	0.0	0.0	8.5	3.5	6.0	12.5	6.0	8.5
11	1.5	0.0	0.5	0.0	0.0	0.0	8.0	3.0	6.0	13.5	4.5	8.5
12	0.5	0.0	0.0	0.0	0.0	0.0	9.5	4.5	7.0	16.5	6.5	11.0
13	0.0	0.0	0.0	0.5	0.0	0.0	10.5	4.5	7.5	17.0	8.0	12.0
14	0.5	0.0	0.0	0.0	0.0	0.0	8.5	5.0	7.0	15.0	8.5	11.5
15	0.5	0.0	0.0	0.0	0.0	0.0	5.5	2.0	4.0	11.0	6.0	8.5
16	0.5	0.0	0.0	0.0	0.0	0.0	8.0	2.0	4.5	15.0	6.0	9.5
17	2.5	0.0	1.0	0.0	0.0	0.0	6.0	3.5	4.5	14.0	6.5	10.0
18	2.5	0.0	1.0	0.5	0.0	0.0	6.0	3.0	4.5	14.5	7.5	11.0
19	2.0	0.0	1.0	0.0	0.0	0.0	9.5	1.5	5.0	17.5	9.5	13.0
20	3.5	0.0	1.5	0.0	0.0	0.0	10.5	3.0	6.5	16.0	11.0	13.5
21	4.0	0.0	2.0	0.0	0.0	0.0	8.0	3.5	6.0	12.0	7.0	9.0
22	4.0	0.5	2.5	0.0	0.0	0.0	11.5	5.0	8.0	8.0	5.5	6.5
23	0.5	0.0	0.0	0.5	0.0	0.0	8.5	4.5	6.0	9.5	3.5	6.5
24	0.0	0.0	0.0	2.5	0.0	0.5	9.0	2.0	5.5	12.5	6.0	9.0
25	0.0	0.0	0.0	5.0	2.5	3.5	11.0	3.5	7.0	12.5	6.5	10.0
26	0.0	0.0	0.0	7.5	1.5	4.0	10.5	4.5	7.0	13.5	8.5	10.5
27	0.0	0.0	0.0	5.5	1.0	3.0	7.5	4.0	6.0	15.5	8.5	12.0
28	0.0	0.0	0.0	4.0	1.0	2.5	10.0	4.0	7.0	13.0	9.5	11.5
29	---	---	---	6.0	1.0	3.5	13.0	4.5	8.5	16.0	9.0	12.0
30	---	---	---	5.5	2.0	3.5	12.0	5.5	9.0	15.5	10.0	13.0
31	---	---	---	8.0	1.0	4.0	---	---	---	16.5	9.5	13.0
MONTH	4.0	0.0	0.5	8.0	0.0	1.0	13.0	0.0	5.5	17.5	2.5	9.5

		JUNE			JULY			AUGUST			SEPTEMBER	
1	14.0	10.0	11.5	18.5	11.5	15.0	21.0	11.5	16.0	18.0	11.5	15.0
2	12.0	9.5	10.5	19.0	11.0	15.0	20.5	12.5	16.0	20.5	11.5	15.5
3	13.5	8.0	10.5	16.5	12.0	14.5	19.5	12.0	15.0	19.0	12.5	15.5
4	15.5	8.5	12.0	19.5	12.5	16.0	18.5	12.0	14.5	20.0	12.5	16.0
5	15.5	10.0	13.0	20.0	11.5	16.0	20.0	13.0	16.0	19.0	13.5	16.0
6	16.0	10.0	13.0	21.0	12.5	16.5	19.0	13.5	16.0	15.5	13.0	14.0
7	16.0	9.0	12.5	20.0	13.5	16.5	16.0	13.0	14.0	14.5	11.5	13.0
8	12.0	8.5	10.5	17.5	13.5	15.0	13.5	11.5	13.0	16.0	10.5	13.0
9	9.5	6.0	7.5	19.5	10.5	15.0	18.5	10.0	14.0	17.5	9.0	13.0
10	8.5	4.5	6.5	21.5	12.5	17.0	20.0	12.0	16.0	19.0	9.5	14.0
11	13.0	6.5	9.5	22.5	14.0	18.0	18.5	13.5	16.0	19.0	10.5	14.5
12	13.5	8.5	11.0	23.0	14.5	19.0	19.5	12.5	16.0	19.5	11.0	15.0
13	16.0	8.5	12.0	22.5	15.0	18.5	20.5	12.0	16.0	19.0	10.5	14.5
14	16.5	10.0	13.0	22.5	15.5	18.5	20.5	13.0	16.0	19.0	9.5	14.0
15	18.0	11.5	14.5	22.5	15.0	18.5	21.0	11.5	16.0	19.0	11.0	14.5
16	17.0	11.5	14.5	20.0	15.0	17.5	19.5	11.5	15.5	17.0	11.0	13.5
17	16.5	12.0	14.5	21.5	14.0	17.5	19.5	10.5	14.5	14.0	11.5	12.5
18	14.5	11.0	12.5	22.5	15.0	18.5	20.0	10.5	15.0	14.5	10.5	12.0
19	14.0	9.0	11.5	20.0	15.5	17.5	19.5	11.0	15.0	17.0	9.5	12.5
20	17.0	9.0	13.0	22.0	14.5	18.0	19.5	12.0	15.5	15.5	10.0	12.0
21	17.0	11.5	14.5	21.5	14.0	17.5	17.0	12.0	14.0	14.5	7.5	10.5
22	16.0	12.0	14.0	21.5	13.5	17.5	19.0	11.5	14.5	14.5	6.5	10.0
23	17.0	12.0	14.5	22.0	15.0	18.0	19.0	11.0	15.0	15.5	7.5	11.0
24	19.0	12.0	15.5	22.5	14.5	18.0	21.0	13.5	16.5	14.5	8.0	11.0
25	20.0	12.5	16.5	20.0	14.0	17.0	20.0	12.0	16.0	15.0	7.5	10.5
26	20.0	13.5	17.0	20.5	14.0	17.0	20.0	12.0	15.5	12.5	7.5	10.0
27	20.0	14.0	17.0	19.5	14.0	16.5	20.5	12.5	16.0	10.5	8.5	9.5
28	19.0	13.5	16.0	19.0	12.5	16.0	21.0	13.0	16.5	14.5	8.0	11.0
29	17.5	13.0	15.0	21.0	14.5	17.5	19.0	13.0	15.5	12.5	7.5	10.0
30	19.5	12.0	15.0	20.0	13.5	17.0	20.0	11.5	15.5	12.0	7.5	9.0
31	---	---	---	20.0	13.5	16.5	19.5	12.5	16.0	---	---	---
MONTH	20.0	4.5	13.0	23.0	10.5	17.0	21.0	10.0	15.5	20.5	6.5	13.0

PEND OREILLE RIVER BASIN

12324680 CLARK FORK AT GOLDCREEK, MT

LOCATION.--Lat 46°35'26", long 112°55'40" (NAD 27), in SE$^1/_4$NW$^1/_4$SW$^1/_4$ sec.25, T.10 N., R.11 W., Powell County, Hydrologic Unit 17010201, on right bank at county road bridge, 0.4 mi north of the town of Goldcreek, 1.1 mi downstream from Gold Creek, and at river mile 434.7.
DRAINAGE AREA.--1,760 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year.
GAGE.--Water-stage recorder. Elevation of gage is 4,172.80 ft (NGVD 29). June 13 to Oct. 21, 1982, nonrecording gage at site 350 ft downstream at same datum.
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Some regulation by settling ponds on Silver Bow Creek near Warm Springs. Diversion for irrigation of about 40,100 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	178	317	277	e240	e260	254	555	302	932	493	194	191
2	181	310	296	e220	e280	e240	332	300	1000	448	183	186
3	173	309	310	e220	e260	260	327	293	1060	414	174	186
4	167	308	297	e240	e270	281	332	283	924	416	175	186
5	169	303	269	e260	e270	323	420	279	796	396	189	173
6	191	303	288	e260	e270	285	627	280	710	358	192	172
7	198	300	300	e280	e280	e250	668	277	675	336	205	213
8	203	295	295	e320	e300	e210	459	279	685	361	238	245
9	220	294	e280	e330	e290	e250	444	263	760	353	281	239
10	225	293	e240	e280	e280	290	450	267	1120	343	272	222
11	227	288	256	e260	e280	340	486	271	1140	317	239	213
12	236	290	277	e280	269	442	444	269	936	297	225	212
13	253	294	288	e300	269	390	441	267	870	278	222	210
14	274	295	286	e290	289	341	491	257	834	266	208	206
15	288	299	e260	292	258	306	560	262	834	286	184	208
16	284	295	e260	293	271	292	506	252	846	256	174	206
17	279	291	283	306	266	261	450	243	963	249	170	210
18	275	300	e240	293	257	272	435	244	980	239	165	225
19	288	298	e250	286	254	274	406	246	1020	231	163	232
20	301	299	274	292	259	259	396	301	877	282	162	203
21	297	301	298	287	260	231	384	403	751	256	175	201
22	289	301	e260	287	326	286	368	662	804	229	206	205
23	297	303	e210	266	365	304	344	713	844	229	218	210
24	294	299	e180	286	257	366	335	618	799	249	218	213
25	295	297	e160	298	e180	388	340	556	708	235	204	213
26	301	298	e150	289	e160	441	339	561	615	236	195	226
27	302	300	e150	e260	e200	525	334	599	556	233	195	237
28	311	277	e160	e220	e260	401	334	652	531	233	195	246
29	316	266	e180	e200	---	376	321	703	521	237	201	242
30	308	309	e220	e210	---	370	305	788	544	220	198	244
31	312	---	e240	e240	---	433	---	926	---	203	195	---
TOTAL	7932	8932	7734	8385	7440	9941	12633	12616	24635	9179	6215	6375
MEAN	255.9	297.7	249.5	270.5	265.7	320.7	421.1	407.0	821.2	296.1	200.5	212.5
MAX	316	317	310	330	365	525	668	926	1140	493	281	246
MIN	167	266	150	200	160	210	305	243	521	203	162	172
AC-FT	15730	17720	15340	16630	14760	19720	25060	25020	48860	18210	12330	12640

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2002, BY WATER YEAR (WY)

MEAN	400.1	404.3	350.3	348.4	420.6	487.8	601.3	1041	1123	494.3	236.4	306.5
MAX	699	651	622	596	860	721	918	2914	3002	1196	646	707
(WY)	1983	1981	1981	1984	1996	1978	1996	1981	1980	1982	1993	1993
MIN	198	244	193	199	208	306	360	198	138	85.7	67.5	99.8
(WY)	1989	1989	1993	1988	1989	1988	1992	1992	1992	1985	2000	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1978 - 2002	
ANNUAL TOTAL	121458		122017			
ANNUAL MEAN	332.8		334.3		517.6	
HIGHEST ANNUAL MEAN					860	1981
LOWEST ANNUAL MEAN					243	1992
HIGHEST DAILY MEAN	1050	Jun 5	1140	Jun 11	9100	May 23 1981
LOWEST DAILY MEAN	106	Aug 26	150	Dec 26	55	Sep 4 1988
ANNUAL SEVEN-DAY MINIMUM	109	Aug 25	170	Dec 23	58	Sep 3 1988
MAXIMUM PEAK FLOW			a1270	Jun 11	d12000	May 22 1981
MAXIMUM PEAK STAGE			b6.62	Dec 29	b12.50	Jan 2 1997
INSTANTANEOUS LOW FLOW			c86	Feb 25	f54	Sep 3 1988
ANNUAL RUNOFF (AC-FT)	240900		242000		375000	
10 PERCENT EXCEEDS	586		576		925	
50 PERCENT EXCEEDS	295		281		387	
90 PERCENT EXCEEDS	174		195		190	

a--Gage height, 5.85 ft.
b--Backwater from ice.
c--Gage height, 3.84 ft, but may have been less during ice-affected period.
d--From rating curve extended above 6,500 ft^3/s on basis of contracted-opening measurement of peak flow; gage height, 11.17 ft, from floodmark.
e--Estimated.
f--Gage height, 3.73 ft.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1993 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1991 to September 1998.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance for many days are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 25.5°C, July 26, 1995; minimum, 0.0°C on many days during winter period.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
NOV 2001									
07...	1120	299	8.5	489	6.0	4.0	210	62.0	13.7
MAR 2002									
14...	1450	326	8.6	474	9.0	4.0	210	61.4	13.3
APR									
09...	1015	454	8.3	365	7.0	5.5	150	45.5	10.0
MAY									
06...	1535	281	8.5	408	10.5	11.0	180	53.2	11.7
29...	1630	718	8.7	272	26.5	16.0	120	34.2	7.59
JUN									
04...	1220	928	8.4	270	19.0	12.0	120	35.1	7.67
25...	0730	732	8.2	307	13.0	15.0	130	38.9	8.38
AUG									
21...	1555	175	8.6	427	13.0	15.5	190	55.1	11.8

DATE	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
NOV 2001										
07...	6.9	9	<.1	E.1	2.1	13.0	<10	190	<1	2
MAR 2002										
14...	9.4	12	<.1	.2	8.8	40.8	22	680	.13	5
APR										
09...	8.1	11	<.1	.1	5.4	28.3	35	710	.13	4
MAY										
06...	8.1	8	<.1	<.1	4.0	12.8	<10	230	<.08	2
29...	7.7	9	E.03	.12	4.2	16.3	13	560	E.04	2
JUN										
04...	10.6	16	E.03	.27	5.6	45.4	19	780	.14	7
25...	12.4	13	.04	.14	5.7	22.9	12	370	E.08	3
AUG										
21...	10.1	10	E.03	.04	3.5	5.7	<10	50	.10	<1

DATE	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001							
07...	13.6	65.9	3	17	72	14	11.3
MAR 2002							
14...	33.9	130	8	44	71	38	33.4
APR							
09...	15.7	105	5	30	73	38	46.6
MAY							
06...	17.0	53.2	2	14	87	14	10.6
29...	10.0	73	1	18	84	30	58.2
JUN							
04...	10.5	153	4	45	84	37	92.7
25...	13.9	75	4	23	77	18	35.6
AUG							
21...	7.6	21	2	4	79	3	1.4

E--Estimated.

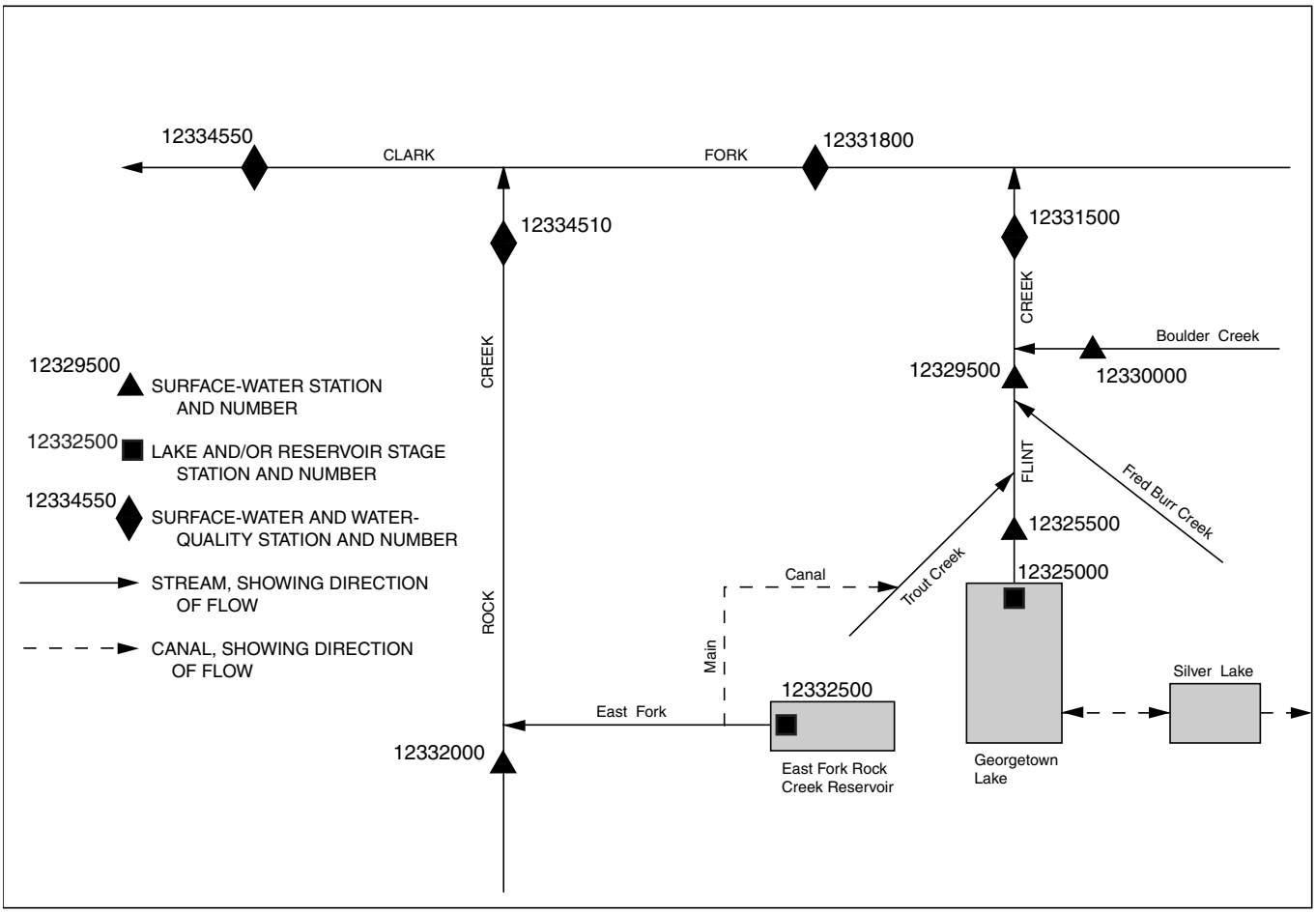

Figure 13. Schematic diagram showing diversions and storage in Flint and Rock Creek Basins.

PEND OREILLE RIVER BASIN

12325500 FLINT CREEK NEAR SOUTHERN CROSS, MT

LOCATION.--Lat 46°13'59", long 113°17'56" (NAD 27), in SE$^1/_4$NW$^1/_4$ sec.36, T.6 N., R.14 W., Granite County, Hydrologic Unit 17010202, on right wing wall of weir, 0.5 mi downstream from power plant, 2.0 mi downstream from Georgetown Dam, 3.5 mi northwest of Southern Cross, 6.8 mi south of Philipsburg, and at river mile 36.8.

DRAINAGE AREA.--52.6 mi2.

PERIOD OF RECORD.--October 1940 to September 1998, August 2000 to current year (seasonal records only).

REVISED RECORDS.--WSP 1216: 1942(M). WSP 1246: Drainage area.

GAGE.--Water-stage recorder and sharp-crested, contracted, rectangular weir. Elevation of gage is 5,630 ft (NGVD 29). Prior to June 3, 1982, nonrecording gage at same site and datum. Prior to Nov. 27, 1973, gage at same site and datum 0.20 ft higher.

REMARKS.--Seasonal records good. Flow regulated by Georgetown Lake (station number 12325000). Flow may be augmented by interbasin diversion from Silver Lake to Georgetown Lake or reduced by pumping from Georgetown Lake to Silver Lake. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the water year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				5.4	5.2	41	36	32	29	28		
2				5.4	6.0	39	35	32	29	26		
3				5.3	14	39	30	32	29	21		
4				5.5	13	38	31	32	29	21		
5				5.6	12	38	30	32	29	20		
6				5.4	12	38	30	32	29	18		
7				5.4	15	38	30	32	30	15		
8				5.4	19	39	30	32	29	14		
9				5.4	19	40	30	30	29	14		
10				5.4	18	46	30	29	29	14		
11				5.4	17	64	30	25	29	11		
12				5.4	17	65	31	25	29	11		
13				5.4	17	65	33	25	29	11		
14				5.8	19	68	33	25	29	11		
15				5.9	25	62	33	25	29	10		
16				5.6	30	48	32	25	29	10		
17				5.8	30	38	31	25	29	10		
18				6.2	33	36	31	25	29	10		
19				6.6	40	32	30	25	28	10		
20				6.0	40	36	29	28	28	10		
21				5.4	41	36	29	29	28	10		
22				5.6	41	36	29	29	28	9.9		
23				5.7	40	36	31	29	28	7.7		
24				5.7	39	36	31	30	28	7.5		
25				5.4	38	36	31	30	28	7.3		
26				5.1	39	36	31	30	28	7.3		
27				5.3	38	36	31	29	28	7.3		
28				5.2	38	36	32	29	29	7.4		
29				5.2	38	36	32	29	28	7.3		
30				5.3	37	36	32	29	28	7.3		
31				---	36	---	32	29	---	7.3		
TOTAL				166.2	826.2	1270	966	890	860	381.3		
MEAN				5.540	26.65	42.33	31.16	28.71	28.67	12.30		
MAX				6.6	41	68	36	32	30	28		
MIN				5.1	5.2	32	29	25	28	7.3		
AC-FT				330	1640	2520	1920	1770	1710	756		

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1998, BY SEASONS 2000-2002*

MEAN	19.1	20.6	22.5	25.43	31.68	56.62	46.40	33.01	31.21	25.7	21.9	20.5
MAX	37.5	53.8	80.4	121	106	142	131	78.5	74.3	59.2	62.2	50.0
(WY)	1996	1968	1943	1948	1976	1948	1975	1975	1993	1984	1984	1976
MIN	2.86	3.37	4.10	1.62	7.75	25.9	26.4	21.7	13.0	3.90	3.86	2.66
(WY)	1975	1975	1975	1941	1962	1955	1988	1952	2000	1974	1974	1975

SUMMARY STATISTICS	FOR 2002 SEASON		WATER YEAR 1941 - 1998			SEASONS 2000-2002*	
ANNUAL TOTAL							
ANNUAL MEAN			30.0				
HIGHEST ANNUAL MEAN			57.9		1976		
LOWEST ANNUAL MEAN			13.2		1962		
HIGHEST DAILY MEAN	68	Jun 14	172	Jun 19	1980	68	Jun 14 2002
LOWEST DAILY MEAN	5.1	Apr 21	a.00	Nov 30	1966	4.9	Oct 20 2001
ANNUAL SEVEN-DAY MINIMUM			1.4	Mar 8	1941		
MAXIMUM PEAK FLOW	76	Jun 14	b174	Jun 13	1942	76	Jun 14 2002
MAXIMUM PEAK STAGE	1.58	Jun 14	c2.60	Jun 19	1980	1.58	Jun 14 2002
INSTANTANEOUS LOW FLOW			0.00	Nov 30	1966		
ANNUAL RUNOFF (AC-FT)			21720				
10 PERCENT EXCEEDS			51				
50 PERCENT EXCEEDS			28				
90 PERCENT EXCEEDS			7.6				

*--During periods of operation (1941 to current year, seasonal records beginning 2000).
a--Partial days of no flow in several years.
b--Gage height, 1.86 ft.
c--Maximum observed.

PEND OREILLE RIVER BASIN

12329500 FLINT CREEK AT MAXVILLE, MT

LOCATION.--Lat 46°27'50", long 113°14'20" (NAD 27), in NE$^1/_4$SW$^1/_4$NW$^1/_4$ sec.9, T.8 N., R.13 W., Granite County, Hydrologic Unit 17010202, on right bank 0.4 mi west of Maxville and 1.0 mi upstream from Boulder Creek.

DRAINAGE AREA.--208 mi^2.

PERIOD OF RECORD.--August 1941 to current year. April 1939 to September 1941 at site 0.5 mi upstream; records not equivalent owing to diversions.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,828.38 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Some regulation by Georgetown Lake. Diversions for irrigation of about 8,200 acres upstream from station. During irrigation season, flow is supplemented by water from East Fork Rock Creek which is diverted in sec.5, T.4 N., R.14 W., 500 ft below Rock Creek Dam, through a canal into Trout Creek, thence into Flint Creek. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	60	35	e32	35	e29	63	42	88	94	102	88
2	52	57	45	e30	e36	e27	46	42	110	86	103	79
3	50	55	44	29	e43	e28	46	43	123	75	101	77
4	49	54	39	34	35	e30	48	46	94	73	103	74
5	50	53	e41	34	35	e34	60	44	83	66	106	68
6	52	52	42	36	35	e36	78	45	89	60	108	67
7	52	51	41	43	38	e34	63	41	92	61	110	89
8	52	48	41	56	38	e32	51	43	97	63	127	91
9	54	49	41	50	35	e33	48	43	109	63	122	79
10	55	48	e34	39	e35	e35	51	43	143	57	107	74
11	59	48	e37	42	39	39	49	42	147	55	94	70
12	68	48	37	42	e38	57	48	40	118	56	88	64
13	65	48	38	42	e38	68	50	39	112	59	87	60
14	64	48	43	37	e36	51	67	39	114	61	94	59
15	66	48	e45	37	e36	e43	78	40	126	95	93	56
16	61	48	e40	37	e39	41	66	40	135	99	89	56
17	58	48	e38	e36	40	e40	61	39	143	102	81	56
18	58	51	e35	e34	36	e40	59	37	146	112	77	58
19	59	48	e38	e32	e34	e34	54	38	148	131	74	56
20	62	48	e35	e34	38	e32	55	46	122	148	81	55
21	59	48	e32	e32	34	e35	51	59	113	139	86	51
22	62	47	e28	e30	43	e37	49	79	157	134	90	52
23	62	47	e27	e30	e45	47	48	59	159	127	83	51
24	60	46	e26	e30	e25	55	47	51	131	117	87	55
25	57	46	e25	e36	e27	81	47	47	119	115	89	55
26	57	44	e24	e38	e30	63	46	47	107	122	88	55
27	56	45	e27	e30	e31	104	47	58	100	116	84	56
28	58	47	e30	e31	e30	62	47	70	98	112	89	57
29	60	44	e31	e32	---	55	45	78	98	111	92	57
30	59	44	34	34	---	48	43	97	112	108	92	58
31	58	---	34	33	---	50	---	100	---	103	91	---
TOTAL	1783	1468	1107	1112	1004	1400	1611	1577	3533	2920	2918	1923
MEAN	57.52	48.93	35.71	35.87	35.86	45.16	53.70	50.87	117.8	94.19	94.13	64.10
MAX	68	60	45	56	45	104	78	100	159	148	127	91
MIN	49	44	24	29	25	27	43	37	83	55	74	51
AC-FT	3540	2910	2200	2210	1990	2780	3200	3130	7010	5790	5790	3810

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 2002, BY WATER YEAR (WY)

MEAN	84.77	72.52	60.50	54.35	62.17	75.84	105.6	137.3	188.0	127.4	106.8	92.01
MAX	148	121	120	88.1	141	186	310	353	455	324	217	151
(WY)	1976	1984	1976	1976	1996	1943	1948	1976	1948	1975	1975	1993
MIN	50.2	41.3	27.7	26.6	27.3	33.5	48.6	50.9	70.7	48.1	30.1	33.6
(WY)	1992	1993	1993	1993	1993	1955	1961	2002	1987	1973	1992	1992

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1942 - 2002	
ANNUAL TOTAL	20911		22356			
ANNUAL MEAN	57.29		61.25		97.34	
HIGHEST ANNUAL MEAN					165	1976
LOWEST ANNUAL MEAN					53.2	1992
HIGHEST DAILY MEAN	179	Jun 5	159	Jun 23	933	Mar 29 1943
LOWEST DAILY MEAN	24	Dec 26	24	Dec 26	15	Feb 25 1962
ANNUAL SEVEN-DAY MINIMUM	27	Dec 22	27	Dec 22	19	Dec 31 1957
MAXIMUM PEAK FLOW			a191	Jun 22	c1680	Mar 28 1943
MAXIMUM PEAK STAGE			b6.53	Mar 7	b8.08	Feb 4 1963
INSTANTANEOUS LOW FLOW					15	Feb 25 1962
ANNUAL RUNOFF (AC-FT)	41480		44340		70520	
10 PERCENT EXCEEDS	89		108		167	
50 PERCENT EXCEEDS	51		51		80	
90 PERCENT EXCEEDS	33		34		44	

a--Gage height, 3.27 ft.
b--Backwater from ice.
c--Gage height, 6.79 ft.
e--Estimated.

PEND OREILLE RIVER BASIN

12330000 BOULDER CREEK AT MAXVILLE, MT

LOCATION.--Lat 46°28'20", 1ong 113°13'59" (NAD 27), in SE$^1/_4$NE$^1/_4$SW$^1/_4$ sec.4, T.8 N., R.13 W., Granite County, Hydrologic Unit 17010202, on right bank 0.2 mi upstream from mouth and 0.7 mi north of Maxville.

DRAINAGE AREA.--71.3 mi^2.

PERIOD OF RECORD.--April 1939 to current year. Monthly discharge only for some periods, published in WSP 1316.

GAGE.--Water-stage recorder. Elevation of gage is 4,750 ft (NGVD 29). Apr. 15, 1939, to July 7, 1941, nonrecording gage at site 75 ft upstream at different datum. July 8-20, 1941, nonrecording gage at site 175 ft upstream at datum 1.03 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Diversions upstream for irrigation of about 240 acres near the station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.9	25	17	e14	e16	e14	15	15	176	75	15	13
2	8.8	24	17	e14	e15	e13	e13	15	225	65	15	13
3	8.6	22	e16	e14	e16	e13	e13	17	196	59	14	12
4	8.6	22	e15	e15	17	e14	15	15	148	55	15	12
5	8.6	21	e15	e16	17	e15	16	13	133	51	16	12
6	8.6	21	e16	e17	17	e15	18	13	148	48	16	12
7	8.5	21	17	e18	17	e14	18	12	130	47	18	21
8	8.5	20	17	e18	17	e14	17	10	117	49	33	18
9	9.0	20	17	e17	16	e14	17	9.1	107	46	32	15
10	9.1	19	e16	e17	16	e15	19	8.9	96	41	23	14
11	11	19	e15	18	16	15	18	8.7	93	39	19	13
12	11	19	e15	18	17	16	19	14	103	36	17	13
13	9.8	19	e16	18	e15	15	20	20	109	33	15	12
14	12	19	e16	18	e15	15	25	24	145	33	15	12
15	12	19	e16	18	e15	15	29	28	183	49	14	11
16	12	19	e16	e16	e16	15	26	26	189	36	13	11
17	12	19	e15	e15	16	16	25	25	198	33	12	12
18	15	20	e15	e15	16	17	22	30	180	34	11	14
19	20	19	e16	e16	15	15	22	59	160	42	14	14
20	22	19	e17	17	16	15	21	118	127	41	19	12
21	21	20	e18	17	16	e14	21	155	120	33	20	11
22	21	19	e16	18	16	e14	21	114	160	28	20	11
23	20	19	e14	e16	17	15	21	81	144	27	15	11
24	20	18	e13	e19	e13	15	20	65	120	28	15	11
25	20	18	e13	e15	e12	15	20	60	108	26	15	11
26	20	18	e12	e15	e12	15	19	67	99	25	14	11
27	20	18	e12	e14	e13	15	19	91	91	22	14	13
28	23	e16	e13	e15	e14	15	17	114	86	21	14	13
29	24	e15	e14	e15	---	15	14	145	91	18	14	13
30	24	17	e16	e16	---	15	14	198	90	17	14	15
31	25	---	e15	e17	---	15	---	201	---	16	14	---
TOTAL	462.0	584	476	506	434	458	574	1771.7	4072	1173	515	386
MEAN	14.90	19.47	15.35	16.32	15.50	14.77	19.13	57.15	135.7	37.84	16.61	12.87
MAX	25	25	18	19	17	17	29	201	225	75	33	21
MIN	8.5	15	12	14	12	13	13	8.7	86	16	11	11
AC-FT	916	1160	944	1000	861	908	1140	3510	8080	2330	1020	766

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

MEAN	22.78	23.42	20.72	18.54	18.38	18.50	28.60	114.8	175.3	59.37	20.81	17.83
MAX	51.1	44.8	39.0	32.4	30.5	28.6	56.3	261	376	244	68.4	54.1
(WY)	1960	1976	1976	1976	1951	1976	1943	1976	1975	1975	1975	1965
MIN	3.59	11.8	11.0	8.49	10.0	12.3	10.4	54.7	35.0	12.6	8.14	6.59
(WY)	1988	1988	1988	1988	1941	1993	1991	1977	1992	1988	1988	1991

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002	
ANNUAL TOTAL	11059.1		11411.7			
ANNUAL MEAN	30.30		31.26		44.95	
HIGHEST ANNUAL MEAN					82.2	1976
LOWEST ANNUAL MEAN					20.4	1992
HIGHEST DAILY MEAN	190	May 15	225	Jun 2	1140	Jun 19 1975
LOWEST DAILY MEAN	7.9	Sep 26	8.5	Oct 7	2.8	Oct 13 1991
ANNUAL SEVEN-DAY MINIMUM	8.6	Oct 2	8.6	Oct 2	3.4	Oct 8 1987
MAXIMUM PEAK FLOW			a252	Jun 2	1460	Jun 19 1975
MAXIMUM PEAK STAGE			b3.75	Dec 26	4.55	Jun 19 1975
INSTANTANEOUS LOW FLOW					c2.8	Oct 13 1991
ANNUAL RUNOFF (AC-FT)	21940		22640		32560	
10 PERCENT EXCEEDS	81		90		110	
50 PERCENT EXCEEDS	16		17		22	
90 PERCENT EXCEEDS	11		12		12	

a--Gage height, 2.87 ft.
b--Backwater from ice.
c--Result of upstream diversion.
e--Estimated.

PEND OREILLE RIVER BASIN

12331500 FLINT CREEK NEAR DRUMMOND, MT

LOCATION.--Lat 46°37'44", long 113°09'02" (NAD 27), in NE$^1/_4$NW$^1/_4$NE$^1/_4$ sec. 18, T.10 N.,R.12 W., Granite County, Hydrologic Unit 17010202, on left bank 10 ft downstream from county bridge, 2.0 mi upstream from mouth, and 2.7 mi south of Drummond.
DRAINAGE AREA.--490 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1990 to September 2002 (discontinued).
GAGE.--Water-stage recorder. Datum of gage is 4,017.27 ft (NGVD 29). June 1948 to September 1949 at same site with different datum.
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Some regulation by Georgetown Lake (station number 12325000). Diversions for irrigation of about 25,000 acres of which 1,000 acres are downstream from station. During irrigation season, flow is supplemented by water from East Fork Rock Creek which is diverted in sec.5, T.4 N., R.14 W., 500 ft below Rock Creek Dam, through a canal into Trout Creek, thence into Flint Creek. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	145	89	e110	e80	85	112	69	55	96	50	30
2	33	137	95	e100	90	71	84	67	94	80	49	29
3	39	131	99	e110	108	73	77	66	131	67	41	27
4	42	127	92	e130	102	97	80	70	79	60	35	29
5	64	124	89	e130	78	101	91	67	51	50	42	31
6	82	122	97	e140	81	95	124	67	50	45	43	36
7	84	118	94	e150	69	87	115	48	45	46	45	55
8	84	110	90	e170	70	93	90	30	46	55	67	71
9	84	108	95	102	66	107	85	22	82	52	68	75
10	87	106	84	87	67	107	91	12	159	45	53	70
11	97	105	e90	81	67	124	84	11	120	43	41	65
12	109	106	e96	82	65	182	84	15	98	42	33	58
13	107	106	e96	82	65	126	87	19	87	40	26	54
14	126	106	e88	78	68	93	102	11	106	41	21	50
15	136	109	87	e78	63	80	128	5.7	148	58	19	48
16	128	112	114	e76	64	75	112	3.2	170	57	16	49
17	123	112	92	e74	69	67	105	4.4	187	52	14	52
18	120	117	85	e76	68	68	99	11	179	68	14	54
19	128	112	e92	e76	65	70	90	14	181	97	12	53
20	145	111	e88	e80	68	72	93	28	127	87	12	50
21	141	112	e82	69	68	56	90	18	105	83	15	46
22	137	110	e76	e70	79	66	84	19	172	82	20	44
23	139	108	e74	e72	88	82	81	7.9	199	86	17	43
24	131	105	e72	e70	65	100	80	3.5	144	83	18	42
25	126	105	e72	70	45	127	79	8.3	109	74	19	40
26	125	101	e72	73	55	120	78	15	91	86	18	31
27	130	101	e82	74	81	155	80	12	97	78	19	32
28	145	92	e96	57	89	104	81	9.8	107	73	19	32
29	148	96	e110	70	---	94	75	17	116	68	21	37
30	145	101	e120	75	---	85	73	50	129	56	31	43
31	145	---	e120	e76	---	87	---	62	---	53	32	---
TOTAL	3360	3355	2828	2788	2043	2949	2734	862.8	3464	2003	930	1376
MEAN	108.4	111.8	91.23	89.94	72.96	95.13	91.13	27.83	115.5	64.61	30.00	45.87
MAX	148	145	120	170	108	182	128	70	199	97	68	75
MIN	30	92	72	57	45	56	73	3.2	45	40	12	27
AC-FT	6660	6650	5610	5530	4050	5850	5420	1710	6870	3970	1840	2730

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2002, BY WATER YEAR (WY)

MEAN	130.7	124.2	98.60	97.87	116.4	129.3	153.0	149.1	223.1	122.7	45.48	70.71
MAX	186	165	144	156	232	256	326	459	627	412	167	196
(WY)	1996	1999	1999	1997	1996	1997	1996	1997	1997	1998	1993	1993
MIN	81.2	91.4	63.8	57.1	56.9	79.5	86.8	14.1	14.9	12.8	6.66	18.0
(WY)	1993	1993	1993	1993	1993	1991	2001	1992	1992	2000	1991	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1991 - 2002	
ANNUAL TOTAL	27583.7		28692.8			
ANNUAL MEAN	75.57		78.61		121.6	
HIGHEST ANNUAL MEAN					234	1997
LOWEST ANNUAL MEAN					60.2	1992
HIGHEST DAILY MEAN	260	Jun 4	199	Jun 23	998	Jun 27 1998
LOWEST DAILY MEAN	2.1	May 11	3.2	May 16	0.59	May 6 1992
ANNUAL SEVEN-DAY MINIMUM	7.1	Aug 30	9.8	May 13	1.8	Aug 9 1992
MAXIMUM PEAK FLOW			a236	Jun 23	c1100	Feb 8 1996
MAXIMUM PEAK STAGE			b4.44	Jan 7	b6.99	Feb 9 1996
ANNUAL RUNOFF (AC-FT)	54710		56910		88070	
10 PERCENT EXCEEDS	128		127		215	
50 PERCENT EXCEEDS	81		80		102	
90 PERCENT EXCEEDS	16		24		21	

a--Gage height, 2.97 ft.
b--Backwater from ice jam.
c--About, estimated based on upstream measurement.
e--Estimated.

12331500 FLINT CREEK NEAR DRUMMOND, MT--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972-73, 1985 to August 2002 (discontinued).

REMARKS.--Flow affected by diversions for irrigation upstream from station. Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)
NOV											
07...	1220	119	8.6	350	6.5	4.5	160	43.4	12.5	6.2	9
MAR											
13...	1640	125	8.5	305	3.5	2.5	130	33.3	10.4	10.9	15
APR											
09...	1110	84	8.4	301	7.5	4.5	130	35.3	10.9	7.3	12
MAY											
08...	0930	31	8.5	360	4.0	4.0	170	45.7	13.1	7.5	8
29...	1725	19	8.8	306	25.5	20.5	140	39.7	10.8	11.9	14
JUN											
04...	1320	83	8.4	276	21.5	13.5	130	35.2	9.51	9.7	14
25...	0830	112	8.1	353	15.0	12.5	160	44.6	12.3	10.3	13
AUG											
20...	1740	11	8.5	483	21.5	18.0	220	59.4	17.8	11.6	12

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
NOV										
07...	<.1	<.1	<1.0	1.4	<10	130	<1	2	21.5	53
MAR										
13...	<.1	E.1	4.4	7.2	99	720	.67	9	54.2	182
APR										
09...	<.1	<.1	E1.0	3.6	21	470	.25	7	39.7	137
MAY										
08...	<.1	<.1	E.8	1.4	E6	130	.10	2	57.6	84
29...	E.02	.05	1.4	2.8	E8	270	.12	4	39.3	147
JUN										
04...	<.04	.07	1.4	3.4	19	400	.26	7	36.9	144
25...	E.02	.06	1.3	3.1	20	260	.20	5	48.6	125
AUG										
20...	<.04	<.04	1.3	1.9	E9	100	E.06	<1	50.7	80

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV					
07...	1	7	87	8	2.6
MAR					
13...	9	29	78	52	17.6
APR					
09...	2	19	88	29	6.6
MAY					
08...	2	5	88	8	.67
29...	1	11	92	17	.87
JUN					
04...	2	19	86	26	5.8
25...	2	15	87	15	4.5
AUG					
20...	1	3	88	4	.12

E--Estimated.

PEND OREILLE RIVER BASIN

12331800 CLARK FORK NEAR DRUMMOND, MT

LOCATION.--Lat 46°42'44", long 113°19'48" (NAD 27), in NE$^1/_4$SW$^1/_4$NW$^1/_4$ sec. 14, T.11 N., R.14 W., in Granite County, Hydrologic Unit 17010201, on right bank 50 ft upstream from country road bridge, 0.3 mi north of Bearmouth, 4.5 mi east of Bearmouth Chalet, 9.0 mi northwest of Drummond, and at river mile 403.9.

DRAINAGE AREA.--2,501 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1993 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,790 ft (NGVD 29).

REMARKS.--Water-discharge records good. Some regulation by settling ponds on Silver Bow Creek near Anaconda and Georgetown Lake (station number 12325000) on Flint Creek. Diversions for irrigation of about 88,000 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 23, 1981 recorded a discharge of about 16,000 ft^3/s, from measurements made upstream at Clark Fork at Drummond (12331600) and at downstream site, Clark Fork at Clinton (12331900).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	284	540	468	358	402	342	765	455	1010	715	314	263
2	301	529	448	325	419	322	565	453	1040	645	300	256
3	313	518	482	333	378	325	511	445	1220	594	283	252
4	303	511	459	401	403	345	509	443	1130	582	272	257
5	314	505	421	419	404	408	568	434	967	553	287	254
6	338	502	417	413	398	447	769	434	850	512	289	254
7	348	497	472	439	440	341	922	431	784	486	296	291
8	359	489	431	553	452	288	686	416	760	501	346	335
9	378	485	443	583	430	342	637	397	834	505	395	349
10	391	482	412	496	419	405	634	376	1230	462	402	334
11	400	478	392	468	429	450	666	380	1430	434	369	316
12	424	477	408	476	409	893	635	374	1200	412	342	305
13	450	481	422	475	394	743	623	381	1090	392	323	298
14	480	481	466	453	414	617	650	357	1060	372	307	291
15	533	484	403	419	403	534	772	343	1070	400	283	288
16	515	483	402	412	394	500	744	331	1100	389	259	285
17	503	476	450	432	424	418	661	316	1170	376	228	279
18	491	478	399	410	431	410	635	308	1240	365	223	293
19	506	479	398	400	414	457	605	308	1310	390	221	300
20	545	476	396	409	418	445	584	321	1170	400	210	290
21	538	479	430	419	420	322	569	394	980	395	217	271
22	521	482	444	414	486	347	552	576	1030	373	245	270
23	528	479	367	381	577	484	527	756	1160	374	244	273
24	519	469	312	393	402	577	515	694	1100	390	256	282
25	508	469	246	442	258	683	509	615	956	376	255	285
26	510	464	211	448	e220	649	507	594	820	391	241	288
27	509	469	209	417	301	858	509	618	748	392	246	300
28	527	430	220	337	e350	649	506	649	724	382	254	320
29	538	430	272	306	---	580	492	710	712	383	252	332
30	535	482	332	326	---	554	472	783	779	362	272	345
31	532	---	358	348	---	584	---	933	---	337	273	---
TOTAL	13941	14504	11990	12905	11289	15319	18299	15025	30674	13640	8704	8756
MEAN	449.7	483.5	386.8	416.3	403.2	494.2	610.0	484.7	1022	440.0	280.8	291.9
MAX	545	540	482	583	577	893	922	933	1430	715	402	349
MIN	284	430	209	306	220	288	472	308	712	337	210	252
AC-FT	27650	28770	23780	25600	22390	30390	36300	29800	60840	27050	17260	17370

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2002, BY WATER YEAR (WY)

MEAN	615.4	609.4	518.7	520.7	636.9	688.3	791.0	1143	1522	766.9	393.1	450.0
MAX	859	810	640	754	1377	1048	1356	2557	3560	1731	895	1007
(WY)	1998	1998	1998	1997	1996	1997	1996	1997	1997	1998	1993	1993
MIN	450	448	366	377	375	494	549	298	297	160	112	201
(WY)	2002	2001	2001	2001	2001	2002	2000	2000	2000	2000	2000	1994

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1993 - 2002	
ANNUAL TOTAL	176475		175046			
ANNUAL MEAN	483.5		479.6		713.1	
HIGHEST ANNUAL MEAN					1192	1997
LOWEST ANNUAL MEAN					400	2000
HIGHEST DAILY MEAN	1750	Jun 5	1430	Jun 11	8430	Feb 9 1996
LOWEST DAILY MEAN	152	Sep 5	209	Dec 27	77	Jul 31 2000
ANNUAL SEVEN-DAY MINIMUM	159	Aug 30	227	Aug 17	83	Jul 29 2000
MAXIMUM PEAK FLOW			1490	Jun 11	9800	Feb 9 1996
MAXIMUM PEAK STAGE			4.71	Jun 11	10.03	Feb 9 1996
INSTANTANEOUS LOW FLOW			a186	Dec 27	b75	Jul 30 2000
ANNUAL RUNOFF (AC-FT)	350000		347200		516600	
10 PERCENT EXCEEDS	752		751		1230	
50 PERCENT EXCEEDS	459		430		567	
90 PERCENT EXCEEDS	264		283		279	

a--Gage height, 2.39 ft.
b--Gage height, 2.03 ft.
e--Estimated.

PEND OREILLE RIVER BASIN

12331800 CLARK FORK NEAR DRUMMOND, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1993 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)
NOV											
07...	1340	498	8.4	498	9.0	6.0	220	63.2	15.1	7.5	10
MAR											
13...	1510	698	8.2	411	9.5	3.5	180	51.1	11.9	9.7	12
APR											
09...	1200	650	8.3	418	7.0	8.0	180	52.2	12.3	8.9	13
MAY											
08...	1025	420	8.5	480	4.0	7.5	220	62.7	14.7	8.6	9
30...	1045	768	8.2	349	22.5	16.0	160	45.1	10.3	9.6	13
JUN											
04...	1430	1120	8.3	324	22.5	15.0	140	41.5	9.42	11.9	18
25...	0945	963	8.3	373	19.0	17.5	160	47.5	11.1	12.3	14
AUG											
21...	1435	223	8.5	559	21.0	17.5	260	73.7	18.3	11.3	10

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
NOV										
07...	<.1	E.1	2.0	9.3	<10	180	<1	2	7.5	53
MAR										
13...	E.1	.2	12.5	44.0	51	1190	.30	8	27.9	160
APR										
09...	<.1	.2	5.8	32.4	12	780	.14	6	11.4	116
MAY										
08...	<.1	<.1	3.7	10.7	<10	190	<.08	1	15.3	48
30...	E.04	.25	5.5	33.8	E8	780	E.06	5	10.0	118
JUN										
04...	E.03	.43	6.4	60.7	12	1220	.16	10	10.4	190
25...	.04	.13	6.0	21.6	E8	360	.09	3	10.9	74
AUG										
21...	E.03	.04	3.0	4.9	<10	40	<.08	<1	10.9	23

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV					
07...	3	18	66	17	22.9
MAR					
13...	13	70	51	96	181
APR					
09...	6	44	70	52	91.3
MAY					
08...	4	14	90	11	12.5
30...	4	44	84	47	97.5
JUN					
04...	5	76	75	71	215
25...	4	25	80	19	49.4
AUG					
21...	3	6	67	4	2.4

E--Estimated.

12332000 MIDDLE FORK ROCK CREEK NEAR PHILIPSBURG, MT

LOCATION.--Lat 46°11'03", long 113°30'05" (NAD 27), in SW$^1/_4$NW$^1/_4$SE$^1/_4$ sec.17, T.5 N., R.15 W., Granite County, Hydrologic Unit 17010202, on left bank 40 ft downstream from bridge on county highway, 1.2 mi upstream from East Fork, 3.4 mi upstream from West Fork, and 15 mi southwest of Philipsburg.

DRAINAGE AREA.--123 mi^2.

PERIOD OF RECORD.--September 1937 to current year. Monthly discharges only January to March 1938, published in WSP 1316.

GAGE.--Water-stage recorder. Datum of gage is 5,444.08 ft (NGVD 29). Prior to Oct. 25, 1990, gage located at several sites 0.8 to 1.0 mi downstream. See WSP 1736 or 1933 for history of changes prior to Oct. 1, 1955.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter at station. A few small diversions for irrigation upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	52	e37	e33	e35	e28	e32	60	705	259	74	52
2	34	47	e38	e32	e34	e27	e31	64	753	230	71	49
3	34	46	e36	e34	e34	e28	e30	73	679	210	69	48
4	35	44	e35	e35	e36	e30	e31	74	561	196	70	48
5	35	43	e37	e33	e35	e32	e33	83	515	183	71	47
6	35	41	e37	e33	e36	e30	e35	82	541	173	74	47
7	35	41	e39	e36	e38	e29	e34	82	538	172	75	61
8	35	e39	e37	e39	e37	e28	e33	79	497	166	91	60
9	36	e38	e35	e37	e36	e29	e33	75	436	156	82	54
10	36	e37	e34	e36	e35	e30	e35	77	394	145	73	51
11	40	e37	e35	e37	e36	e31	e36	73	360	137	69	49
12	40	38	e36	e37	e35	e30	e39	71	341	130	67	47
13	41	37	e37	e37	e34	e29	e41	77	313	125	64	46
14	41	37	e36	e36	e33	e30	e40	92	338	120	63	45
15	42	37	e35	e35	e33	e28	e39	105	395	161	60	43
16	40	37	e36	e36	e33	e28	e40	107	469	148	58	42
17	40	38	e36	e35	e35	e28	e41	115	565	133	57	43
18	40	39	e34	e34	e34	e28	e41	140	568	122	57	46
19	39	38	e34	e35	e34	e29	e40	195	518	e140	56	45
20	45	37	e35	e36	e35	e28	e40	343	414	e150	55	42
21	43	38	e37	e35	e34	e27	e44	469	394	e130	60	41
22	41	38	e36	e34	e37	e27	e52	428	427	e120	63	40
23	49	38	e35	e34	e32	e28	e50	343	407	e100	58	40
24	46	35	e33	e36	e30	e28	e46	292	384	95	57	39
25	42	e35	e32	e39	e26	e28	e48	266	369	92	59	39
26	41	e34	e30	e38	e27	e29	49	266	355	102	56	39
27	40	e34	e30	e34	e30	e30	53	297	347	91	56	40
28	43	e33	e31	e32	e28	e31	52	360	327	87	59	42
29	47	e36	e32	e34	---	e32	53	480	314	82	57	40
30	47	e38	e34	e35	---	e34	57	667	296	79	55	43
31	51	---	e34	e36	---	e33	---	722	---	77	55	---
TOTAL	1248	1162	1083	1093	942	907	1228	6657	13520	4311	1991	1368
MEAN	40.26	38.73	34.94	35.26	33.64	29.26	40.93	214.7	450.7	139.1	64.23	45.60
MAX	51	52	39	39	38	34	57	722	753	259	91	61
MIN	34	33	30	32	26	27	30	60	296	77	55	39
AC-FT	2480	2300	2150	2170	1870	1800	2440	13200	26820	8550	3950	2710
CFSM	0.33	0.31	0.28	0.29	0.27	0.24	0.33	1.75	3.66	1.13	0.52	0.37
IN.	0.38	0.35	0.33	0.33	0.28	0.27	0.37	2.01	4.09	1.30	0.60	0.41

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2002, BY WATER YEAR (WY)

MEAN	49.64	42.99	36.46	32.11	32.95	36.37	74.69	334.2	481.8	178.8	70.55	51.90
MAX	201	104	64.1	60.9	60.3	71.2	190	650	914	496	141	98.5
(WY)	1947	1947	1947	1976	1996	1986	1943	1947	1972	1975	1975	1946
MIN	26.9	25.7	23.6	22.0	16.5	22.7	28.1	137	141	48.7	25.8	30.4
(WY)	1988	1980	1946	1977	1959	1955	1975	1953	1992	1940	1940	1987

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1938 - 2002	
ANNUAL TOTAL	27645		35510			
ANNUAL MEAN	75.74		97.29		118.7	
HIGHEST ANNUAL MEAN					183	1997
LOWEST ANNUAL MEAN					62.3	1940
HIGHEST DAILY MEAN	442	May 15	753	Jun 2	1480	Jun 16 1974
LOWEST DAILY MEAN	24	Feb 14	26	Feb 25	5.3	Feb 9 1953
ANNUAL SEVEN-DAY MINIMUM	25	Feb 23	28	Feb 25	10	Feb 22 1962
MAXIMUM PEAK FLOW			775	Jun 2	b1680	Jun 16 1974
MAXIMUM PEAK STAGE			a3.38	Jun 2	5.58	Jun 16 1974
INSTANTANEOUS LOW FLOW					5.3	Feb 9 1953
ANNUAL RUNOFF (AC-FT)	54830		70430		85990	
ANNUAL RUNOFF (CFSM)	0.62		0.79		0.97	
ANNUAL RUNOFF (INCHES)	8.36		10.74		13.11	
10 PERCENT EXCEEDS	211		313		326	
50 PERCENT EXCEEDS	39		40		48	
90 PERCENT EXCEEDS	29		31		27	

a--Recorded, may have been higher during period of no gage-height record, Dec. 6 to Apr. 25.
b--Site and datum then in use.
e--Estimated.

PEND OREILLE RIVER BASIN

12334510 ROCK CREEK NEAR CLINTON, MT

LOCATION.--Lat 46°43'21", long 113°40'56" (NAD 27), in NW$^1/_4$NE$^1/_4$SW$^1/_4$ sec.12, T.11 N., R.17 W., Missoula County, Hydrologic Unit 17010202, on left bank 100 ft downstream from private road bridge, 0.2 mi upstream from mouth, and 3.7 mi southeast of Clinton.

DRAINAGE AREA.--885 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,519.46 ft (NGVD 29).

REMARKS.--Water-discharge records good. Some regulation by East Fork Rock Creek Reservoir (station number 12332500). During irrigation season water is diverted from East Fork Rock Creek in sec.5, T.4 N., R.14 W., 500 ft below Rock Creek Dam, through a canal into Trout Creek, thence into Flint Creek. Diversions for irrigation of about 16,100 acres. U.S. Geological Survey satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1972 reached a stage of 8.52 ft, from floodmark, discharge, 6,500 ft^3/s; local residents report flood of 1927 reached a stage of about 9.5 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	161	263	163	e130	139	133	216	386	2400	870	312	232
2	162	254	166	e120	147	127	207	407	2440	792	306	227
3	162	237	177	132	130	125	181	455	2410	725	292	221
4	166	230	165	162	141	132	182	495	2100	684	309	217
5	168	223	147	165	135	144	205	478	1910	643	354	217
6	170	218	151	166	135	149	262	489	1890	622	352	220
7	168	215	164	178	149	138	292	467	1830	614	333	248
8	168	205	159	202	153	133	270	438	1690	638	360	254
9	169	189	153	201	148	133	266	407	1620	620	376	245
10	168	189	145	171	134	142	289	393	1650	588	340	236
11	178	185	133	161	144	149	306	389	1550	551	313	233
12	187	187	130	170	140	180	315	365	1440	519	300	227
13	196	194	142	168	130	182	352	360	1360	494	290	218
14	212	194	187	153	136	163	482	419	1350	470	282	207
15	217	193	154	144	132	153	751	510	1400	488	270	203
16	206	190	139	142	129	146	636	531	1490	547	258	199
17	195	189	173	137	139	144	526	531	1600	531	245	199
18	192	194	142	138	146	139	461	586	1630	494	236	205
19	201	195	140	134	140	141	399	744	1630	489	224	204
20	213	190	145	139	142	146	368	1110	1400	498	220	201
21	215	192	153	147	143	138	355	1560	1260	469	232	197
22	208	193	160	144	156	138	344	1940	1240	429	248	197
23	220	193	143	133	172	159	356	1600	1290	410	243	198
24	228	189	e100	135	e150	178	358	1330	1200	401	231	197
25	219	181	e95	159	e120	189	339	1200	1090	380	235	194
26	208	182	e90	161	e110	192	335	1190	1020	392	239	193
27	201	171	e90	146	e120	219	346	1360	974	403	232	195
28	209	147	e95	124	144	215	350	1540	966	374	233	198
29	221	143	e100	111	---	201	336	1760	958	355	237	199
30	230	175	e120	126	---	191	348	2160	975	337	234	206
31	240	---	e140	139	---	189	---	2420	---	323	234	---
TOTAL	6058	5900	4361	4638	3904	4908	10433	28020	45763	16150	8570	6387
MEAN	195.4	196.7	140.7	149.6	139.4	158.3	347.8	903.9	1525	521.0	276.5	212.9
MAX	240	263	187	202	172	219	751	2420	2440	870	376	254
MIN	161	143	90	111	110	125	181	360	958	323	220	193
AC-FT	12020	11700	8650	9200	7740	9740	20690	55580	90770	32030	17000	12670
CFSM	0.22	0.22	0.16	0.17	0.16	0.18	0.39	1.02	1.72	0.59	0.31	0.24
IN.	0.25	0.25	0.18	0.19	0.16	0.21	0.44	1.18	1.92	0.68	0.36	0.27

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 2002, BY WATER YEAR (WY)

MEAN	253.4	227.0	197.2	185.2	191.9	243.5	499.6	1465	1724	683.4	312.5	262.5
MAX	474	430	460	329	426	428	1022	3676	3755	1908	635	389
(WY)	1976	1976	1976	1976	1996	1986	1996	1976	1975	1975	1975	1975
MIN	157	149	119	106	109	158	236	544	407	267	156	148
(WY)	1988	1988	1989	1988	1993	2002	1975	1977	1992	1985	1988	1992

12334510 ROCK CREEK NEAR CLINTON, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1973 - 2002	
ANNUAL TOTAL	116805		145092			
ANNUAL MEAN	320.0		397.5		521.2	
HIGHEST ANNUAL MEAN					966	1976
LOWEST ANNUAL MEAN					258	1992
HIGHEST DAILY MEAN	1520	May 16	2440	Jun 2	5480	May 18 1997
LOWEST DAILY MEAN	90	Dec 26	90	Dec 26	38	Dec 22 1998
ANNUAL SEVEN-DAY MINIMUM	99	Dec 24	99	Dec 24	65	Jan 3 1974
MAXIMUM PEAK FLOW			2540	May 31	a5530	May 18 1997
MAXIMUM PEAK STAGE			6.56	May 31	8.05	Jun 9 1997
INSTANTANEOUS LOW FLOW					b37	Dec 23 1998
ANNUAL RUNOFF (AC-FT)	231700		287800		377600	
ANNUAL RUNOFF (CFSM)	0.36		0.45		0.59	
ANNUAL RUNOFF (INCHES)	4.91		6.10		8.00	
10 PERCENT EXCEEDS	823		1100		1240	
50 PERCENT EXCEEDS	187		208		265	
90 PERCENT EXCEEDS	135		138		151	

a--Gage height, 7.81 ft.
b--Gage height, 2.56 ft, may have been less during period of ice effect.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1979-83, 1985 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: September 1979 to September 1983, April 1995 to current year.
INSTRUMENTATION.--Temperature probe installed Apr. 14, 1995.
REMARKS--Unpublished records of instantaneous specific conductance and temperature data are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE : Maximum, 23.0, Aug. 1, 2000; minimum, 0.0°C, on many days during winter periods.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 22.0°C, July 13, 14; minimum, 0.0°C, many days December through February.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)
NOV 2001											
07...	1445	215	8.3	148	9.5	5.0	67	17.5	5.80	1.23	.2
APR 2002											
09...	1310	270	8.2	125	8.5	5.5	53	13.4	4.84	--	--
MAY											
23...	1145	1610	7.7	69	5.0	5.0	28	7.23	2.46	--	--
JUN											
04...	1620	2080	7.8	68	23.0	10.0	30	7.70	2.50	--	--
25...	1130	1080	8.0	92	25.0	13.0	40	10.5	3.39	.84	.1
AUG											
21...	1320	241	8.2	136	15.0	12.5	61	15.6	5.35	--	--

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
NOV 2001											
07...	3.30	77	1.31	.1	11.0	4.8	.12	52.8	91	E.09	E.010
APR 2002											
09...	--	--	--	--	--	--	--	--	--	--	--
MAY											
23...	--	--	--	--	--	--	--	--	--	.27	.043
JUN											
04...	--	--	--	--	--	--	--	--	--	.20	<.013
25...	1.87	45	.59	E.1	9.98	2.2	.08	165	57	.14	<.013
AUG											
21...	--	--	--	--	--	--	--	--	--	--	--

E--Estimated.

PEND OREILLE RIVER BASIN

12334510 ROCK CREEK NEAR CLINTON, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV 2001											
07...	<.002	E.004	.009	.5	<2	<.1	<.1	<.8	<1.0	E.3	<10
APR 2002											
09...	--	--	--	.6	<2	<.1	<.1	--	<1.0	E.6	17
MAY											
23...	<.002	.010	.042	.6	<2	.04	E.02	--	1.0	1.5	52
JUN											
04...	<.002	.007	.029	.6	<2	<.04	<.04	--	.7	1.8	29
25...	<.002	.009	.024	.6	5	E.02	<.04	<.8	.5	.9	22
AUG											
21...	--	--	--	.6	<2	<.04	<.04	--	.3	E.5	E9

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001											
07...	30	<1	<1	.8	E2.5	<2	<1	1	73	3	1.7
APR 2002											
09...	80	<.08	<1	.8	3.6	--	<1	<1	82	4	2.9
MAY											
23...	260	<.08	<1	1.7	13	--	2	2	63	17	73.9
JUN											
04...	190	<.08	<1	1.8	10	--	<1	2	57	15	84.2
25...	120	<.08	<1	2.2	7	<2	<1	<1	73	7	20.4
AUG											
21...	40	<.08	<1	1.8	5	--	<1	<1	80	3	2.0

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	14.0	9.0	11.0	7.5	6.5	7.0	2.0	0.5	1.0	0.5	0.0	0.5
2	13.5	9.5	11.0	7.5	6.5	7.0	2.0	1.0	1.5	0.5	0.0	0.0
3	12.5	8.5	10.5	7.5	5.5	6.5	2.5	1.0	2.0	0.5	0.5	0.5
4	10.5	7.5	8.5	6.5	4.5	5.5	2.0	0.5	1.0	1.0	0.5	0.5
5	9.0	5.0	7.0	6.5	4.0	5.0	1.0	0.5	0.5	1.0	0.5	0.5
6	9.0	4.5	7.0	6.5	5.0	5.5	1.0	0.5	0.5	1.5	0.5	1.0
7	9.0	6.5	8.0	6.0	4.0	5.0	2.0	0.5	1.0	2.0	1.0	1.0
8	10.0	8.0	9.0	4.0	2.5	3.0	2.0	0.5	1.0	2.0	1.0	1.5
9	9.0	7.5	8.0	3.5	1.5	2.5	1.0	0.5	0.5	1.5	0.5	1.0
10	9.5	6.0	7.5	3.5	1.0	2.0	0.5	0.0	0.5	1.5	0.5	1.0
11	9.0	7.5	8.5	3.5	1.0	2.0	0.5	0.0	0.5	2.0	0.5	1.5
12	8.0	6.5	7.0	3.5	1.5	2.5	0.5	0.5	0.5	2.0	1.0	1.0
13	9.5	6.5	8.0	4.5	2.0	3.0	1.0	0.5	1.0	2.0	0.5	1.0
14	8.5	7.0	7.5	5.0	3.0	4.0	2.0	0.5	1.0	1.5	0.5	1.0
15	9.5	7.0	8.0	5.5	3.5	4.5	1.5	0.0	0.5	1.5	0.5	1.0
16	9.0	6.0	7.5	5.5	3.5	4.5	0.5	0.0	0.5	1.5	0.5	1.0
17	9.0	6.5	7.5	5.0	4.0	4.5	1.5	0.0	1.0	1.5	0.5	1.0
18	6.5	5.0	6.0	5.5	3.5	4.5	0.5	0.0	0.5	1.5	0.0	0.5
19	7.0	6.0	6.5	4.5	3.0	3.5	0.5	0.5	0.5	1.5	0.5	1.0
20	8.0	6.5	7.0	4.5	3.5	4.0	0.5	0.0	0.5	2.0	1.0	1.0
21	7.5	5.5	6.5	6.0	4.5	5.0	1.0	0.5	0.5	2.0	0.5	1.5
22	8.0	6.0	7.0	5.0	4.0	4.5	1.0	0.0	1.0	1.5	0.5	1.0
23	7.5	5.5	6.5	5.0	4.0	4.5	0.5	0.0	0.5	1.5	0.0	0.5
24	6.0	4.5	5.0	4.0	3.0	3.5	0.5	0.0	0.0	3.0	0.5	1.5
25	5.5	4.5	5.0	3.0	2.5	3.0	0.5	0.0	0.0	2.5	1.5	1.5
26	6.5	4.0	5.0	3.0	2.0	2.5	0.5	0.0	0.0	1.5	0.5	1.0
27	7.0	4.0	5.5	3.0	1.0	2.0	0.5	0.0	0.0	1.5	0.0	0.5
28	7.0	6.5	7.0	1.0	0.5	0.5	0.5	0.0	0.5	0.5	0.0	0.0
29	8.0	7.0	7.5	1.5	0.5	1.0	0.5	0.5	0.5	0.5	0.0	0.5
30	8.5	7.5	8.0	2.0	1.0	1.5	0.5	0.0	0.5	0.5	0.0	0.5
31	8.5	7.0	8.0	---	---	---	0.5	0.0	0.5	1.0	0.0	0.5
MONTH	14.0	4.0	7.5	7.5	0.5	4.0	2.5	0.0	0.5	3.0	0.0	1.0

PEND OREILLE RIVER BASIN

12334510 ROCK CREEK NEAR CLINTON, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.5	0.5	1.0	1.0	0.0	0.5	4.0	1.0	2.5	11.5	6.0	8.5
2	2.0	0.0	1.0	0.5	0.0	0.0	4.5	0.0	2.0	12.5	6.5	9.0
3	1.0	0.0	0.5	0.5	0.0	0.0	6.5	0.5	3.0	11.0	7.5	9.0
4	3.0	0.5	1.5	0.5	0.0	0.5	8.0	2.0	4.5	10.5	5.5	8.0
5	2.0	0.0	0.5	2.0	0.0	1.0	9.0	3.0	6.0	8.5	7.0	7.5
6	3.0	0.0	1.0	1.0	0.0	0.5	7.5	5.5	6.5	8.0	5.5	7.0
7	3.0	1.5	2.0	0.5	0.0	0.0	6.0	5.0	5.5	7.0	5.0	6.0
8	2.5	1.0	1.5	1.0	0.0	0.5	9.5	4.0	6.5	9.0	4.0	6.0
9	3.5	0.5	1.5	1.0	0.0	0.5	6.5	4.5	5.5	7.5	4.0	6.0
10	3.0	0.0	1.0	3.0	0.5	1.5	8.5	5.5	6.5	9.0	5.5	7.0
11	2.5	0.5	1.5	3.0	1.0	2.0	8.5	5.5	6.5	10.0	5.5	7.5
12	2.5	0.0	1.0	2.5	1.0	1.5	9.5	6.0	7.5	14.0	7.0	10.0
13	2.5	0.0	1.0	3.0	0.5	1.5	9.0	6.0	7.5	14.5	8.0	11.0
14	3.0	0.0	1.0	3.5	0.5	1.5	9.5	6.5	7.5	12.5	9.5	11.0
15	2.5	0.0	1.0	3.5	0.5	1.5	6.5	4.0	5.0	10.5	7.5	9.0
16	2.5	0.0	1.0	3.5	0.5	1.5	6.0	3.5	4.5	10.5	6.5	8.5
17	4.0	0.5	1.5	2.5	0.0	1.0	5.5	4.0	4.5	11.0	7.0	9.0
18	2.5	0.5	1.5	2.5	0.0	1.0	6.0	3.5	5.0	13.0	8.0	10.0
19	3.0	0.5	1.5	2.5	1.0	1.5	7.5	2.5	5.0	14.0	9.5	11.5
20	4.0	0.5	2.0	2.0	0.0	1.0	9.5	3.5	6.0	12.0	9.0	10.5
21	3.5	0.5	1.5	1.5	0.0	0.5	8.0	5.0	6.5	10.0	7.0	8.5
22	2.5	1.5	2.0	3.5	0.0	1.5	11.0	6.0	8.0	7.0	5.5	6.0
23	1.5	0.0	1.0	6.0	1.5	3.0	8.5	5.0	7.0	6.0	5.0	5.5
24	0.5	0.0	0.0	4.5	1.5	3.0	9.0	3.5	6.0	9.5	5.5	7.0
25	0.5	0.0	0.0	4.5	2.0	3.0	9.5	4.5	7.0	10.0	6.5	8.5
26	0.5	0.0	0.0	5.5	1.0	3.0	10.0	5.5	7.5	11.0	8.5	9.5
27	0.5	0.0	0.5	4.5	1.5	3.0	8.0	6.0	7.0	12.0	8.5	10.0
28	1.0	0.0	0.5	5.0	1.5	3.0	9.0	5.0	7.0	11.0	9.0	10.0
29	---	---	---	5.0	1.5	3.5	11.0	5.0	8.0	12.0	9.0	10.5
30	---	---	---	5.5	2.0	3.5	10.0	6.5	8.0	12.0	10.0	11.0
31	---	---	---	6.0	1.5	3.5	---	---	---	11.5	8.0	10.0
MONTH	4.0	0.0	1.0	6.0	0.0	1.5	11.0	0.0	6.0	14.5	4.0	8.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	10.5	9.0	10.0	16.0	12.0	14.0	18.5	12.0	15.5	15.5	13.0	14.5
2	9.5	8.5	9.0	16.5	11.0	14.0	19.0	13.0	16.0	18.0	12.5	15.0
3	10.0	8.0	9.0	17.0	12.5	14.5	18.5	12.5	15.5	18.5	13.0	15.5
4	11.0	8.0	9.5	18.0	13.0	15.0	18.5	14.0	16.0	18.5	13.5	15.5
5	11.0	9.0	10.0	17.5	12.5	15.0	18.0	14.0	16.0	17.5	13.5	15.5
6	12.0	9.0	10.5	19.0	13.0	16.0	16.5	13.5	15.0	15.5	13.5	14.0
7	10.5	8.0	9.5	18.5	14.5	16.0	14.5	13.0	13.5	15.0	12.5	13.5
8	9.5	8.0	8.5	16.0	14.0	15.0	14.0	12.0	13.0	15.0	11.0	12.5
9	8.0	5.5	6.5	18.0	12.0	14.5	17.0	11.0	14.0	15.0	10.0	12.0
10	7.0	5.5	6.0	19.5	13.0	16.0	18.5	12.5	15.0	16.0	10.5	13.0
11	11.0	7.0	8.5	21.0	14.5	17.5	17.5	13.5	15.0	16.5	11.5	13.5
12	11.0	8.5	10.0	21.5	15.0	18.0	19.0	13.5	16.0	16.5	11.5	13.5
13	13.0	8.5	10.5	22.0	15.5	18.5	19.5	13.5	16.0	17.0	11.5	14.0
14	13.5	9.5	11.5	22.0	16.5	19.0	19.5	13.5	16.5	16.0	11.0	13.5
15	14.5	10.0	12.5	21.0	16.5	18.5	19.0	13.0	16.0	16.5	11.5	13.5
16	14.0	11.0	12.5	19.5	16.0	17.5	18.0	13.0	15.5	16.0	12.0	13.5
17	13.0	11.5	12.0	20.0	15.0	17.5	17.5	11.5	14.5	14.0	12.0	13.0
18	11.5	10.0	11.0	21.0	15.0	17.5	18.0	12.0	14.5	13.5	11.0	12.0
19	10.0	9.0	9.5	19.5	16.0	17.5	18.0	12.0	14.5	15.0	10.0	12.0
20	13.5	8.5	10.5	20.5	15.0	17.5	15.5	12.5	14.0	14.0	11.0	12.5
21	14.5	10.5	12.5	20.5	14.5	17.5	15.0	12.0	13.5	12.5	8.5	10.5
22	14.5	11.0	12.5	20.5	14.5	17.5	15.5	11.5	13.0	12.5	7.5	10.0
23	15.0	11.5	13.0	21.5	16.0	18.5	17.0	10.5	13.5	13.0	8.0	10.5
24	15.5	11.5	13.5	21.5	16.0	18.5	17.0	13.5	14.5	13.0	9.0	11.0
25	17.0	12.0	14.5	21.0	15.5	18.0	17.5	12.5	14.5	13.0	9.0	11.0
26	17.5	13.0	15.5	19.0	15.0	17.0	17.0	13.0	14.5	11.5	9.0	10.5
27	18.0	13.5	15.5	19.5	15.0	16.5	17.0	12.5	15.0	10.5	9.0	10.0
28	17.0	13.5	15.0	18.5	13.5	16.0	18.5	13.5	15.5	12.0	8.0	9.5
29	16.0	13.5	14.5	20.0	15.0	17.0	17.5	13.5	15.5	11.0	8.0	9.5
30	15.5	12.0	13.5	20.5	14.5	17.0	17.0	13.5	15.0	10.0	8.0	9.0
31	---	---	---	19.0	14.5	16.5	18.0	13.0	15.0	---	---	---
MONTH	18.0	5.5	11.0	22.0	11.0	16.5	19.5	10.5	15.0	18.5	7.5	12.5

PEND OREILLE RIVER BASIN

12334550 CLARK FORK AT TURAH BRIDGE, NEAR BONNER, MT

LOCATION.--Lat 46°49'34", long 113°48'48" (NAD 27), in SW$^1/_4$NW$^1/_4$SW$^1/_4$ sec. 1, T.12 N., R.18 W., Missoula County, Hydrologic Unit 17010201, on left bank 0.8 mi southeast of Turah, 4 mi southeast of Bonner, and at river mile 370.2.

DRAINAGE AREA.--3,641 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1985 to current year. Water-discharge records for the period March 1985 to September 1985 are available in files of the Helena district office.

GAGE.--Water-stage recorder. Elevation of gage is 3,320 ft (NGVD 29), from topographic map. Prior to May 9, 1986, non-recording gage at same site at datum 2.00 ft higher.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Some regulation by settling ponds on Silver Bow Creek near Anaconda and by Georgetown Lake (station number 12325000) on Flint Creek. Diversions for irrigation of about 100,000 acres upstream from station. U. S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	474	854	697	e480	542	e600	e1000	986	3490	2310	705	572
2	478	847	655	e450	587	e550	e950	999	3590	2140	686	558
3	485	822	699	495	554	e480	846	1050	3790	2010	653	544
4	486	800	697	559	557	507	813	1090	3400	1910	652	541
5	491	789	631	616	573	562	841	1070	3010	1840	727	541
6	518	776	615	612	554	651	1020	1080	2900	1620	728	549
7	547	770	671	631	604	596	1260	1060	2770	1270	718	611
8	555	761	656	743	648	512	1160	994	2580	1280	782	661
9	567	736	635	830	619	494	1060	937	2600	1260	865	689
10	591	725	643	774	592	548	1070	894	3000	1190	862	677
11	619	718	590	699	614	617	1110	874	3250	1120	809	653
12	644	706	577	713	595	874	1130	841	2940	1070	745	627
13	681	720	588	713	560	1040	1150	822	2740	1020	700	605
14	730	728	683	686	572	900	1290	873	2650	975	668	582
15	788	724	637	640	572	807	1690	953	2700	972	638	572
16	782	722	574	597	558	750	1630	984	2810	1070	597	562
17	764	717	654	598	582	e700	1430	966	3210	1030	557	560
18	748	722	611	600	613	603	1300	994	3720	976	524	573
19	771	728	589	561	596	661	1210	1130	3800	990	508	585
20	814	721	615	586	598	e650	1130	1450	3490	1040	495	586
21	820	720	631	596	597	e500	1100	1980	3070	1000	513	554
22	806	728	656	594	652	e520	1080	2610	2930	949	548	545
23	814	728	596	556	774	642	1050	2570	3150	917	557	546
24	811	713	489	541	732	782	1050	2250	3040	903	545	551
25	788	708	e350	613	e500	899	1000	2000	2780	878	559	553
26	773	697	e250	655	e300	939	994	1940	2580	885	556	548
27	772	686	e200	615	e400	1080	1000	2110	2400	919	546	566
28	788	660	e220	549	e550	1030	1000	2320	2400	868	552	587
29	805	618	e250	475	---	928	974	2620	2390	830	556	601
30	818	676	e350	494	---	889	968	3060	2440	799	573	625
31	822	---	e500	511	---	916	---	3500	---	751	582	---
TOTAL	21350	22020	17209	18782	16195	22227	33306	47007	89620	36792	19706	17524
MEAN	688.7	734.0	555.1	605.9	578.4	717.0	1110	1516	2987	1187	635.7	584.1
MAX	822	854	699	830	774	1080	1690	3500	3800	2310	865	689
MIN	474	618	200	450	300	480	813	822	2390	751	495	541
AC-FT	42350	43680	34130	37250	32120	44090	66060	93240	177800	72980	39090	34760

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2002, BY WATER YEAR (WY)

MEAN	853.9	843.1	730.0	715.5	855.3	1032	1478	2495	2850	1271	639.9	687.7
MAX	1287	1173	1233	1149	2124	1664	3072	6345	7090	2920	1423	1423
(WY)	1998	1998	1996	1997	1996	1986	1996	1997	1997	1998	1993	1993
MIN	592	616	492	474	472	712	828	915	639	485	271	357
(WY)	1993	1993	1993	1993	1989	1991	1991	1992	1992	2000	2000	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1986 - 2002	
ANNUAL TOTAL	328722		361738			
ANNUAL MEAN	900.6		991.1		1204	
HIGHEST ANNUAL MEAN					2219	1997
LOWEST ANNUAL MEAN					686	1992
HIGHEST DAILY MEAN	3320	May 16	3800	Jun 19	9530	Jun 2 1997
LOWEST DAILY MEAN	200	Dec 27	200	Dec 27	200	Dec 21 1998
ANNUAL SEVEN-DAY MINIMUM	301	Dec 24	301	Dec 24	224	Aug 15 1992
MAXIMUM PEAK FLOW			3910	Jun 3	a12400	Feb 9 1996
MAXIMUM PEAK STAGE			6.33	Jun 3	b10.24	Dec 10 1995
INSTANTANEOUS LOW FLOW					c214	Aug 21 1992
ANNUAL RUNOFF (AC-FT)	652000		717500		872300	
10 PERCENT EXCEEDS	1850		2310		2340	
50 PERCENT EXCEEDS	728		721		846	
90 PERCENT EXCEEDS	464		542		500	

a--Gage height, 9.05 ft.
b--Backwater from ice.
c--Gage height, 1.68 ft.
e--Estimated.

12334550 CLARK FORK AT TURAH BRIDGE, NEAR BONNER, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1985 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1991 to September 1998.
SUSPENDED-SEDIMENT DISCHARGE: March 1985 to current year.

REMARKS.-- Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 25.0°C, Aug. 17, 1992; minimum, 0.0°C, on many days during winter.
SEDIMENT CONCENTRATION: Maximum daily mean, 1,140 mg/L, Feb. 25, 1986; minimum daily mean, 1 mg/L, Sep. 12, 1987.
SEDIMENT LOAD: Maximum daily, 24,400 tons, Feb. 25, 1986; minimum daily 1.1 tons, Sep. 12, 1987.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATION: Maximum daily mean, 135 mg/L, Apr. 7; minimum daily mean, 2 mg/L, Sept. 25-30.
SEDIMENT LOAD: Maximum daily, 860 tons, May 31; minimum daily, 2.0 tons, Dec. 26.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
NOV												
08..	1040	740	8.4	400	2.5	3.5	180	50.6	13.1	2.86	.3	10.7
MAR												
13..	1315	1010	8.2	323	11.0	1.5	130	36.7	9.38	--	--	--
APR												
09..	1530	1010	8.4	323	13.5	7.5	140	39.2	10.1	--	--	--
MAY												
08..	1150	973	8.5	277	6.5	7.0	120	34.4	9.19	--	--	--
23..	1345	2520	8.1	173	8.5	7.0	73	20.4	5.38	--	--	--
JUN												
05..	1050	3020	8.1	176	18.5	12.0	75	21.0	5.41	--	--	--
26..	0730	2610	8.2	241	14.5	16.0	110	29.7	7.56	1.73	.3	5.95
AUG												
*04..	1300	666	8.5	318	--	17.5	140	39.4	10.8	--	--	--
*10..	1445	856	8.7	325	--	18.5	150	40.8	10.9	--	--	--
*14..	1015	682	8.3	341	--	16.5	150	41.7	11.2	--	--	--
*18..	1230	529	8.5	337	--	15.5	150	40.8	11.2	--	--	--
21..	0720	495	8.2	350	10.0	13.5	150	42.5	11.8	--	--	--
*24..	1100	542	8.2	350	--	15.0	160	43.9	11.9	--	--	--

DATE	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV											
08...	155	5.23	.4	16.1	59.6	.34	502	251	.18	E.012	<.002
MAR											
13...	--	--	--	--	--	--	--	--	--	--	--
APR											
09...	--	--	--	--	--	--	--	--	--	--	--
MAY											
08...	--	--	--	--	--	--	--	--	.22	<.013	<.002
23...	--	--	--	--	--	--	--	--	--	--	--
JUN											
05...	--	--	--	--	--	--	--	--	.35	.013	<.002
26...	95	2.66	.3	14.5	24.5	.20	1010	144	.30	E.011	<.002
AUG											
*04...	--	--	--	--	--	--	--	--	--	--	--
*10...	--	--	--	--	--	--	--	--	--	--	--
*14...	--	--	--	--	--	--	--	--	--	--	--
*18...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
*24...	--	--	--	--	--	--	--	--	--	--	--

*--Supplemental samples collected by sediment observer during Milltown Reservoir drawdown. Samples were collected by depth integration at a single vertical near midstream.
E--Estimated.

12334550 CLARK FORK AT TURAH BRIDGE, NEAR BONNER, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
NOV											
08...	E.006	.019	5.2	7	<.1	<.1	<.8	E1.1	5.7	<10	100
MAR											
13...	--	--	7.7	13	E.1	.4	--	8.4	53.6	71	1810
APR											
09...	--	--	6.2	8	<.1	.1	--	5.0	25.3	20	580
MAY											
08...	E.006	.028	4.1	4	<.1	<.1	--	2.2	5.8	E5	160
23...	--	--	3.4	4	E.04	.19	--	2.9	23.3	37	710
JUN											
05...	.011	.067	4.7	7	E.02	.14	--	3.2	20.8	23	530
26...	.016	.054	6.1	7	.04	.12	E.4	4.3	18.0	13	340
AUG											
*04...	--	--	5.1	6	.06	<.04	--	2.2	3.3	<10	40
*10...	--	--	5.9	6	E.02	E.03	--	2.6	4.3	<10	50
*14...	--	--	5.5	5	E.02	E.03	--	2.3	4.1	<10	50
*18...	--	--	5.2	5	E.02	E.02	--	2.0	4.1	<10	30
21...	--	--	4.8	4	E.02	E.03	--	1.7	3.5	<10	50
*24...	--	--	5.4	5	E.02	E.03	--	2.5	6.4	<10	50

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV										
08...	<1	<1	3.3	28	<2	3	11	86	7	14.0
MAR										
13...	.29	11	18.0	239	--	12	93	87	129	352
APR										
09...	.14	4	7.4	85	--	4	33	81	36	98.2
MAY										
08...	<.08	<1	5.2	24	--	2	9	80	10	26.3
23...	.10	4	6.1	91	--	4	36	70	45	306
JUN										
05...	.11	3	6.6	71	--	4	29	68	35	285
26...	.08	2	9.2	54	<2	4	22	71	22	155
AUG										
*04...	E.05	<1	1.2	10	--	3	4	65	4	7.2
*10...	<.08	<1	.6	12	--	2	6	70	4	9.2
*14...	<.08	<1	1.0	13	--	3	9	49	5	9.2
*18...	<.08	<1	.5	9	--	1	4	64	5	7.1
21...	<.08	<1	4.8	15	--	--	6	82	6	8.0
*24...	<.08	<1	.4	13	--	4	9	58	4	5.9

*--Supplemental samples collected by sediment observer during Milltown Reservoir drawdown. Samples were collected by depth integration at a single vertical near midstream.
E--Estimated.

PEND OREILLE RIVER BASIN

12334550 CLARK FORK AT TURAH BRIDGE, NEAR BONNER, MT--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	5	6.4	14	32	7	13	9	12	8	12	14	23
2	6	7.8	13	30	7	12	7	8.5	8	13	11	16
3	7	9.2	12	27	8	15	7	9.4	9	13	7	9.1
4	7	9.2	10	22	8	15	7	11	9	14	7	9.6
5	8	11	9	19	7	12	7	12	9	14	11	17
6	9	13	9	19	7	12	6	9.9	9	13	13	23
7	11	16	8	17	7	13	7	12	9	15	14	23
8	13	19	7	14	6	11	15	30	10	18	13	18
9	14	21	7	14	6	10	21	47	10	17	11	15
10	15	24	7	14	6	10	15	31	9	14	14	21
11	15	25	7	14	6	9.6	8	15	9	15	16	27
12	16	28	6	11	5	7.8	8	15	9	14	80	189
13	18	33	6	12	6	9.5	9	17	9	14	130	364
14	20	39	6	12	7	13	8	15	8	12	46	112
15	22	47	6	12	7	12	8	14	8	12	26	57
16	22	46	6	12	8	12	7	11	7	11	18	36
17	21	43	6	12	7	12	7	11	8	13	19	36
18	20	40	7	14	6	9.9	7	11	9	15	15	24
19	19	40	7	14	5	7.9	8	12	10	16	16	29
20	18	40	7	14	5	8.3	7	11	10	16	20	35
21	16	35	8	16	5	8.5	6	9.7	11	18	24	32
22	13	28	7	14	4	7.1	6	9.6	13	23	19	27
23	11	24	7	14	4	6.4	7	11	21	44	22	38
24	10	22	6	12	4	5.3	7	10	20	40	36	76
25	11	23	6	11	3	2.8	7	12	16	22	86	209
26	11	23	6	11	3	2.0	7	12	16	13	76	193
27	11	23	6	11	4	2.2	6	10	16	17	112	326
28	11	23	6	11	6	3.6	5	7.4	15	22	99	275
29	11	24	6	10	8	5.4	5	6.4	---	---	46	115
30	12	26	6	11	10	9.5	4	5.3	---	---	34	82
31	14	31	---	---	10	14	7	9.7	---	---	31	77
TOTAL	---	799.6	---	456	---	291.8	---	417.9	---	480	---	2533.7

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	53	143	15	40	71	668	14	87	4	7.6	5	7.7
2	80	205	15	40	63	610	12	69	4	7.4	5	7.5
3	29	66	18	51	84	858	9	49	4	7.1	5	7.3
4	28	61	18	53	56	514	8	41	4	7.0	5	7.3
5	31	70	16	46	35	284	6	30	6	12	5	7.3
6	63	173	14	41	29	227	7	31	5	9.8	5	7.4
7	135	459	12	34	26	194	7	24	4	7.8	5	8.2
8	94	293	10	27	25	174	8	28	4	8.4	5	8.9
9	44	126	9	23	26	183	7	24	6	14	5	9.3
10	38	110	8	19	38	308	5	16	4	9.3	5	9.1
11	40	120	8	19	51	448	5	15	4	8.7	4	7.1
12	46	140	8	18	38	301	4	12	4	8.0	4	6.8
13	42	131	10	22	29	214	4	11	4	7.6	4	6.5
14	58	202	11	26	26	186	4	11	5	9.0	4	6.3
15	126	576	12	31	26	189	4	11	5	8.6	4	6.2
16	66	291	10	27	32	242	4	12	5	8.1	4	6.1
17	42	162	10	26	33	286	4	11	5	7.5	4	6.1
18	26	92	10	27	39	391	4	11	5	7.1	4	6.2
19	22	72	17	52	37	379	4	11	4	5.5	4	6.3
20	20	61	42	164	28	264	5	14	5	6.7	4	6.3
21	22	65	74	395	23	191	6	16	6	8.3	3	4.5
22	17	49	81	572	25	198	7	18	5	7.4	3	4.4
23	15	43	44	305	31	264	6	15	4	6.0	3	4.4
24	11	31	28	170	28	230	6	15	4	5.9	3	4.5
25	11	30	23	124	22	165	5	12	3	4.5	2	3.0
26	15	40	21	110	21	147	5	12	4	6.0	2	3.0
27	18	49	21	119	21	136	5	12	4	5.9	2	3.1
28	15	41	27	169	18	117	4	9.4	4	6.0	2	3.2
29	15	39	39	275	18	116	4	9.0	4	6.0	2	3.2
30	15	39	65	537	17	112	4	8.6	4	6.2	2	3.4
31	---	---	91	860	---	---	4	8.1	4	6.3	---	---
TOTAL	---	3979	---	4422	---	8596	---	653.1	---	235.7	---	180.6

TOTAL LOAD FOR YEAR: 23045.4 tons

PEND OREILLE RIVER BASIN

12335100 BLACKFOOT RIVER ABOVE NEVADA CREEK, NEAR HELMVILLE, MT

LOCATION.--Lat 46°55'09", long 113°00'53" (NAD 27), in SW$^1/_4$SW$^1/_4$SE$^1/_4$ sec. 32, T.14 N., R.11 W., Powell County, Hydrologic Unit 17010203, on right bank 40 ft downstream from county road bridge, 1.9 mi south of Browns Lake, 4.2 mi upstream from Nevada Creek, 4.4 mi northwest of Helmville, and at river mile 72.0.

DRAINAGE AREA.--494 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1999 to current year. Records equivalent to those published as "12335000 Blackfoot River near Helmville," September 1940 to October 1953 at site 13.5 mi upstream.

GAGE.--Water-stage recorder. Elevation of gage is 4,280 ft (NGVD 29).

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Numerous diversions for irrigation upstream from station. Several observations of water temperature and specific conductance were made during the year. U. S. Geological Survey satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 5, 1953 reached a discharge of 6,040 ft^3/s at 12335000 Blackfoot River near Helmville.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	130	149	135	e120	e135	e110	157	162	1660	1200	278	196
2	130	149	134	e120	e130	e105	e130	162	1660	1040	272	191
3	130	147	136	e130	e125	e105	e135	164	1580	932	265	186
4	130	144	136	e140	e130	e115	141	166	1490	857	265	184
5	131	143	e135	e130	e130	e120	147	169	1410	775	282	182
6	133	143	e135	e130	e135	e110	166	172	1410	726	294	186
7	134	140	136	e140	e140	e110	198	173	1460	688	297	203
8	135	138	135	e150	e135	e115	224	177	1430	679	309	204
9	136	137	e135	e140	133	e120	221	177	1370	667	308	196
10	136	138	e135	e140	132	e125	208	183	1400	622	290	189
11	142	138	e135	e145	131	e130	214	186	1330	588	274	185
12	147	137	e130	146	130	e130	215	189	1220	550	264	183
13	147	137	e135	144	e130	e125	218	195	1160	517	256	182
14	151	137	138	143	e125	e120	231	208	1240	493	242	180
15	151	137	137	e140	e125	e120	249	265	1380	488	236	169
16	146	137	e135	e140	e125	e115	229	347	1530	485	231	167
17	143	137	136	e140	e130	e115	211	373	1700	464	225	168
18	142	137	e130	e140	129	e110	197	379	1820	437	222	177
19	145	136	e130	e140	128	e115	187	410	1820	416	219	175
20	150	136	e130	e145	128	e105	181	504	1580	406	215	172
21	147	138	e135	e140	128	e105	177	811	1390	385	214	169
22	144	141	e130	e135	131	e110	174	1250	1310	367	220	169
23	147	139	e130	e135	135	e120	172	1260	1420	356	217	168
24	147	138	e135	e140	e100	e130	170	1060	1560	340	211	170
25	146	137	e130	141	e95	e135	167	908	1500	328	206	171
26	146	135	e120	138	e100	135	165	823	1410	328	199	168
27	148	135	e120	137	e115	138	164	841	1370	323	197	166
28	146	134	e125	e125	e110	139	163	974	1400	315	197	167
29	148	134	e135	e115	---	137	161	1180	1360	307	196	167
30	148	135	e140	e120	---	137	160	1350	1330	298	197	174
31	150	---	e130	e130	---	143	---	1620	---	288	197	---
TOTAL	4406	4163	4118	4219	3520	3749	5532	16838	43700	16665	7495	5364
MEAN	142.1	138.8	132.8	136.1	125.7	120.9	184.4	543.2	1457	537.6	241.8	178.8
MAX	151	149	140	150	140	143	249	1620	1820	1200	309	204
MIN	130	134	120	115	95	105	130	162	1160	288	196	166
AC-FT	8740	8260	8170	8370	6980	7440	10970	33400	86680	33060	14870	10640

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2002, BY WATER YEAR (WY)

MEAN	162.6	155.4	141.8	139.1	123.7	132.0	200.5	548.8	879.8	362.9	188.7	157.3
MAX	175	180	165	152	138	154	279	670	1457	538	242	179
(WY)	2000	2000	2000	2000	2000	2000	2000	2000	2002	2002	2002	2002
MIN	142	139	128	129	107	121	139	433	578	262	152	135
(WY)	2002	2002	2001	2001	2001	2002	2001	2001	2000	2000	2000	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 2000 - 2002	
ANNUAL TOTAL	77495		119769			
ANNUAL MEAN	212.3		328.1		266.2	
HIGHEST ANNUAL MEAN					328	2002
LOWEST ANNUAL MEAN					215	2001
HIGHEST DAILY MEAN	842	Jun 17	1820	Jun 18	1820	Jun 18 2002
LOWEST DAILY MEAN	90	Feb 14	95	Feb 25	90	Feb 14 2001
ANNUAL SEVEN-DAY MINIMUM	95	Feb 26	105	Feb 24	95	Feb 26 2001
MAXIMUM PEAK FLOW			1890	Jun 19	1890	Jun 19 2002
MAXIMUM PEAK STAGE			6.91	Jun 19	6.91	Jun 19 2002
INSTANTANEOUS LOW FLOW			a81	Mar 17		
ANNUAL RUNOFF (AC-FT)	153700		237600		192800	
10 PERCENT EXCEEDS	506		1100		588	
50 PERCENT EXCEEDS	140		150		161	
90 PERCENT EXCEEDS	110		125		125	

a--Gage height, 3.01 ft.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.-November 1995 to August 1998, April 2002 to August 2002.

REMARKS--Unpublished records of instantaneous specific conductance and temperature data are available in files of the District office.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)
APR 2002										
09...	1015	221	8.2	257	7.0	5.0	140	36.2	11.1	.26
JUN										
03...	1630	1560	8.1	204	25.0	10.0	110	28.1	8.56	.31
24...	1145	1570	8.3	211	22.0	13.0	110	28.2	8.62	.23
AUG										
06...	1040	299	8.4	283	16.0	14.0	150	40.0	12.1	E.07

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
APR 2002										
09...	E.009	<.002	<.007	.031	1	129	2	<.1	1.7	270
JUN										
03...	.018	<.002	<.007	.094	3	694	E2	.30	6.8	1210
24...	<.013	<.002	<.007	.065	4	545	2	<.04	5.1	890
AUG										
06...	<.013	<.002	<.007	.006	1	18	E2	<.04	1.0	50

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
APR 2002						
09...	<1	34	2	94	15	9.0
JUN						
03...	2	71	12	75	136	573
24...	2	55	9	76	98	415
AUG						
06...	<1	8	5	84	4	3.2

E--Estimated.

PEND OREILLE RIVER BASIN

12335500 NEVADA CREEK ABOVE RESERVOIR, NEAR HELMVILLE, MT

(Formerly published as 12335500 Nevada Creek above reservoir, near Finn, MT)

LOCATION.--Lat 46°46'42", long 112°46'00" (NAD 27), in SW$^1/_4$NW$^1/_4$SW$^1/_4$ sec.20, T.12 N., R.9 W., Powell County, Hydrologic Unit 17010203, on right bank 0.7 mi upstream from Nevada Lake, 1.1 mi downstream from Gallagher Creek, 11 mi southeast of Helmville, and at river mile 34.5.
DRAINAGE AREA.--116 mi^2.
PERIOD OF RECORD.--April 1939 to current year. Prior to October 2001, published as "near Finn."
GAGE.--Water-stage recorder. Elevation of gage is 4,640 ft (NGVD 29). Prior to Apr. 30, 1942, nonrecording gage at site 0.1 mi, downstream at different datum. Apr. 30, 1942 to July 26, 1953, water-stage recorder at site 0.2 mi downstream at different datum. July 26, 1953, to Nov. 6, 1978, water-stage recorder at site 0.8 mi upstream at different datum.
REMARKS.--Records good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 2,900 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	14	e5.0	e5.0	e8.0	e7.0	e30	16	89	25	13	9.7
2	5.8	13	e5.0	e6.0	e8.0	e7.0	e25	13	92	21	13	9.1
3	5.8	12	e4.5	e7.0	e7.0	e7.0	e30	14	79	20	12	8.4
4	5.8	12	e4.5	e8.0	e8.0	e9.0	e40	15	68	20	15	7.3
5	5.8	12	e4.5	e7.0	e8.0	e11	e50	18	61	18	16	7.5
6	5.9	12	e4.5	e8.0	e9.0	e10	e70	20	54	16	17	9.2
7	6.0	12	e5.0	e9.0	e11	e9.0	e100	19	48	16	16	14
8	6.0	e11	e4.5	e10	e10	e8.0	e90	21	52	18	23	11
9	6.2	e9.0	e4.5	e9.0	e9.0	e10	94	19	76	17	18	7.0
10	6.7	e8.0	e4.0	e8.0	e8.0	e13	121	18	133	15	15	6.7
11	9.4	e8.0	e4.5	e9.0	e9.0	e15	79	16	86	13	14	6.2
12	9.0	e9.0	e4.5	e9.0	e8.0	e14	71	16	59	12	13	6.0
13	9.2	e9.0	e5.0	e8.0	e8.0	e13	75	16	53	12	12	5.8
14	10	e10	e5.0	e8.0	e8.0	e12	69	18	58	13	11	5.5
15	10	e10	e5.0	e8.0	e8.0	e11	52	22	68	20	11	5.5
16	9.8	e9.0	e6.0	e8.0	e8.0	e10	38	24	73	17	11	5.4
17	9.4	e9.0	e6.0	e8.0	e9.0	e10	32	23	68	17	11	5.8
18	9.6	e8.0	e5.0	e7.0	e10	e10	29	24	69	15	10	6.2
19	14	e7.0	e5.0	e8.0	e9.0	e12	25	25	66	16	10	5.9
20	15	e8.0	e5.0	e9.0	e9.0	e10	24	46	55	18	9.8	5.7
21	12	e7.0	e6.0	e8.0	e10	e10	19	76	47	15	12	5.8
22	12	e7.0	e5.0	e8.0	e12	e12	19	112	52	15	14	5.8
23	14	e7.0	e4.5	e8.0	e10	e15	18	87	44	16	12	6.0
24	13	e6.0	e4.0	e9.0	e7.0	e20	17	60	36	17	11	6.4
25	12	e6.0	e3.5	e10	e6.0	e30	16	48	31	15	11	6.6
26	12	e5.0	e3.0	e9.0	e7.0	e40	17	47	29	15	11	6.6
27	12	e4.5	e3.0	e8.0	e9.0	e35	17	47	27	17	10	6.7
28	13	e4.0	e4.0	e6.0	e8.0	e30	17	58	28	16	10	6.4
29	14	e4.5	e5.0	e7.0	---	e30	16	74	34	15	9.7	6.4
30	13	e5.0	e6.0	e7.0	---	e35	16	91	32	14	9.9	7.3
31	14	---	e5.0	e8.0	---	e40	---	96	---	13	11	---
TOTAL	306.3	258.0	146.0	247.0	241.0	505.0	1316	1199	1767	507	392.4	211.9
MEAN	9.881	8.600	4.710	7.968	8.607	16.29	43.87	38.68	58.90	16.35	12.66	7.063
MAX	15	14	6.0	10	12	40	121	112	133	25	23	14
MIN	5.8	4.0	3.0	5.0	6.0	7.0	16	13	27	12	9.7	5.4
AC-FT	608	512	290	490	478	1000	2610	2380	3500	1010	778	420

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2002, BY WATER YEAR (WY)

MEAN	13.91	14.51	12.34	11.56	15.79	33.68	67.03	112.2	90.13	27.62	14.35	10.28
MAX	32.2	28.8	47.4	54.5	84.6	114	196	356	429	96.5	40.5	28.2
(WY)	1960	1976	1976	1984	1986	1978	1952	1976	1975	1955	1975	1965
MIN	5.52	5.73	3.74	3.83	4.17	7.61	10.0	16.0	11.5	6.19	3.89	3.68
(WY)	1940	1989	1993	1988	1944	1962	1941	1977	1992	1985	1961	1940

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1939 - 2002	
ANNUAL TOTAL	7381.4		7096.6			
ANNUAL MEAN	20.22		19.44		35.52	
HIGHEST ANNUAL MEAN					77.2	1975
LOWEST ANNUAL MEAN					11.8	1988
HIGHEST DAILY MEAN	120	Mar 24	133	Jun 10	1240	May 22 1981
LOWEST DAILY MEAN	3.0	Dec 26	3.0	Dec 26	2.0	Jan 11 1944
ANNUAL SEVEN-DAY MINIMUM	3.9	Dec 22	3.9	Dec 22	2.0	Feb 9 1944
MAXIMUM PEAK FLOW			196	Apr 10	a1800	Jun 2 1953
MAXIMUM PEAK STAGE			2.84	Apr 10	b7.40	May 29 1953
INSTANTANEOUS LOW FLOW					c2.0	Aug 20 1944
ANNUAL RUNOFF (AC-FT)	14640		14080		25730	
10 PERCENT EXCEEDS	48		52		88	
50 PERCENT EXCEEDS	10		11		15	
90 PERCENT EXCEEDS	5.0		5.6		6.4	

a--Gage height, 6.00 ft, site and datum then in use; from rating curve extended above 400 ft^3/s, on the basis of inflow-outflow study of Nevada Lake.
b--Site and datum then in use; backwater from diversion dam.
c--Probably less than 2.0 ft^3/s in several years.
e--Estimated.

PEND OREILLE RIVER BASIN

12337800 NEVADA CREEK AT MOUTH, NEAR HELMVILLE, MT

LOCATION.--Lat 46°53'39", long 113°02'24" (NAD 27), in SE$^1/_4$NE$^1/_4$SW$^1/_4$ sec.7, T.13N., R.11W., Powell County, Hydrologic Unit 17010203, on left bank 350 ft downstream from private road bridge, 3.8 mi southwest of Browns Lake, 4.2 mi northwest of Helmville, and at river mile 0.2.
DRAINAGE AREA.--308 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 2001 to September 2002.
GAGE.--Water-stage recorder. Elevation of gage is 4,240 ft (NGVD 29).
REMARKS.--Water-discharge records fair except those for estimated daily discharges, which are poor. Partial regulation by Nevada lake (station number 12336500). Numerous diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e20	31	e25	e18	e22	e19	e40	30	e60	e80	21	35
2	e20	29	e25	e18	e21	e18	e35	31	e70	e75	21	31
3	e20	27	e25	e20	e20	e18	e50	32	e70	e70	19	31
4	e20	25	e24	e22	e22	e20	66	35	e60	e60	22	35
5	e20	25	e22	e22	e23	e20	116	30	e50	e55	23	36
6	e20	24	e23	e23	e25	e18	219	33	e40	e50	26	37
7	e20	24	e23	e25	e25	e18	254	32	e40	e45	32	47
8	e20	23	e23	e28	e24	e19	124	34	e50	e45	45	56
9	e20	22	e23	e27	e23	e21	90	33	e100	e50	47	46
10	e20	e22	e22	e26	e23	e23	73	33	e200	e45	37	41
11	e22	e23	e22	e26	e23	e25	72	32	e150	e40	31	35
12	e25	e23	e22	e27	e22	e25	66	32	e100	e35	27	27
13	e25	24	e23	e26	e21	e24	64	29	e80	e30	23	29
14	e25	24	e24	e25	e20	e23	68	24	e70	e30	19	28
15	e25	24	e23	e25	e20	e22	74	22	e80	36	18	30
16	e25	24	e23	e24	e20	e21	71	23	e100	42	20	29
17	e25	24	e22	e23	e21	e20	61	25	e90	40	21	26
18	e28	24	e20	e23	e22	e20	55	24	e80	45	23	33
19	e30	24	e22	e23	e22	e22	51	27	e80	34	26	33
20	e30	25	e22	e24	e23	e20	48	36	e70	31	24	28
21	e30	25	e23	e23	e23	e20	44	e50	e60	29	24	25
22	e28	25	e21	e22	e23	e22	45	e70	e60	23	23	24
23	e26	e24	e20	e22	e21	e25	42	e55	e70	23	26	26
24	e25	e24	e22	e24	e18	e30	40	e45	e65	32	30	29
25	e25	e23	e21	e25	e15	e40	40	e40	e60	32	28	26
26	24	e23	e19	e22	e16	e50	38	e35	e60	36	31	24
27	25	e24	e18	e20	e19	e45	36	e30	e60	36	30	23
28	26	e24	e18	e18	e20	e40	35	e30	e70	27	31	23
29	29	e25	e20	e19	---	e40	33	e35	e90	26	37	22
30	30	e25	e20	e20	---	e45	30	e40	e85	22	37	22
31	30	---	e19	e22	---	e50	---	e50	---	21	36	---
TOTAL	758	733	679	712	597	823	2080	1077	2320	1245	858	937
MEAN	24.45	24.43	21.90	22.97	21.32	26.55	69.33	34.74	77.33	40.16	27.68	31.23
MAX	30	31	25	28	25	50	254	70	200	80	47	56
MIN	20	22	18	18	15	18	30	22	40	21	18	22
AC-FT	1500	1450	1350	1410	1180	1630	4130	2140	4600	2470	1700	1860

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

MEAN	24.45	24.43	21.90	22.97	21.32	26.55	69.33	34.74	77.33	40.16	27.68	31.23
MAX	24.5	24.4	21.9	23.0	21.3	26.5	69.3	34.7	77.3	40.2	27.7	31.2
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
MIN	24.5	24.4	21.9	23.0	21.3	26.5	69.3	34.7	77.3	40.2	27.7	31.2
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002

SUMMARY STATISTICS	FOR 2002 WATER YEAR	
ANNUAL TOTAL	12819	
ANNUAL MEAN	35.12	
HIGHEST ANNUAL MEAN		
LOWEST ANNUAL MEAN		
HIGHEST DAILY MEAN	254	Apr 7
LOWEST DAILY MEAN	15	Feb 25
ANNUAL SEVEN-DAY MINIMUM	18	Feb 24
MAXIMUM PEAK FLOW	a340	Apr 7
MAXIMUM PEAK STAGE	b4.88	Mar 27
ANNUAL RUNOFF (AC-FT)	25430	
10 PERCENT EXCEEDS	62	
50 PERCENT EXCEEDS	25	
90 PERCENT EXCEEDS	20	

a--Gage height, 3.63 ft.
b--Backwater from ice.
e--Estimated.

12337800 NEVADA CREEK AT MOUTH, NEAR HELMVILLE, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 2001 to September 2002.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Oct. 26, 2001 to September 2002.
INSTRUMENTATION.--Temperature probe installed Oct. 25, 2001.
REMARKS--Missing temperature data for June 16 due to incomplete transmissions from DCP. Unpublished records of instantaneous specific conductance and temperature data are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 27.5°C, July 13, 2002; minimum, 0.0°C, many days during winter months.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 27.5°C, July 13; minimum, 0.0°C, many days November through April.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV 2001									
27...	1230	29	8.1	411	.0	.0	.31	.022	E.002
APR 2002									
09...	1215	87	7.9	290	7.0	3.0	1.3	.059	.004
JUN									
03...	1215	70	8.3	478	22.0	13.5	.88	<.013	E.002
24...	1330	65	8.7	431	25.0	21.0	.70	<.013	E.002
AUG									
06...	1230	26	8.7	415	17.0	16.0	.47	<.013	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001					
27...	.059	.089	92	13	1.0
APR 2002					
09...	.138	.33	98	120	28.2
JUN					
03...	.191	.24	98	16	3.0
24...	.179	.19	89	11	1.9
AUG					
06...	.091	.12	96	5	.35

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
NOV 2001											
27...	1230	190	51.5	14.1	3.89	.5	15.2	192	3.95	.2	28.3
JUN 2002											
03...	1215	210	55.0	16.8	5.28	.6	20.6	201	4.02	.2	31.3

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
NOV 2001											
27...	35.4	.36	21.2	268	4	<.1	<.8	1.1	<1	1	1
JUN 2002											
03...	53.8	.42	58.2	308	6	<.1	<.8	2.1	<1	2	3

E--Estimated.

WATER TEMPERATURE FROM (DEGREES CELSIUS), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1				6.0	5.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0
2				6.5	5.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0
3				6.5	4.5	5.5	0.5	0.0	0.0	0.0	0.0	0.0
4				5.0	3.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
5				5.0	2.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0
6				5.5	3.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0
7				4.5	2.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
8				2.5	0.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0
9				2.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
10				1.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
11				1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
12				1.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
13				2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
14				3.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
15				3.0	1.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0
16				3.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
17				2.5	1.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0
18				3.0	1.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0
19				1.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
20				1.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
21				2.5	1.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0
22				2.0	1.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0
23				2.5	1.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0
24				2.0	1.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
25				1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	4.5	1.5	3.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	5.0	2.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	6.0	4.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	6.5	4.5	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	7.0	6.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	8.0	6.0	7.0	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0
MONTH	---	---	---	6.5	0.0	2.0	0.5	0.0	0.0	0.0	0.0	0.0

	FEBRUARY			MARCH			APRIL			MAY		
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	7.0	10.5
2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	13.5	8.5	11.0
3	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	1.0	13.0	8.0	10.5
4	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	2.0	11.0	7.5	9.5
5	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.5	2.5	10.0	7.0	8.5
6	0.0	0.0	0.0	0.0	0.0	0.0	4.5	2.0	3.5	9.0	6.5	7.5
7	0.0	0.0	0.0	0.0	0.0	0.0	4.5	1.5	3.0	7.5	5.0	6.0
8	0.0	0.0	0.0	0.0	0.0	0.0	6.5	1.5	4.0	8.0	4.0	6.0
9	0.0	0.0	0.0	0.0	0.0	0.0	5.5	3.0	4.0	9.0	4.5	7.0
10	0.0	0.0	0.0	0.0	0.0	0.0	8.0	3.0	5.5	12.5	7.5	10.0
11	0.0	0.0	0.0	0.0	0.0	0.0	7.5	4.5	6.0	12.0	7.5	10.0
12	0.0	0.0	0.0	0.0	0.0	0.0	9.0	5.5	7.5	17.0	9.0	13.0
13	0.0	0.0	0.0	0.0	0.0	0.0	8.5	6.0	7.5	18.0	12.0	15.0
14	0.0	0.0	0.0	0.0	0.0	0.0	10.0	6.5	8.0	16.0	13.0	14.5
15	0.0	0.0	0.0	0.0	0.0	0.0	7.5	3.5	5.5	15.0	8.0	10.5
16	0.0	0.0	0.0	0.0	0.0	0.0	6.0	3.0	5.0	13.5	7.5	10.0
17	0.0	0.0	0.0	0.0	0.0	0.0	5.5	4.0	4.5	15.5	9.0	12.0
18	0.0	0.0	0.0	0.0	0.0	0.0	7.0	3.0	5.0	16.5	10.5	13.5
19	0.0	0.0	0.0	0.0	0.0	0.0	9.0	2.5	6.0	19.5	12.0	15.0
20	0.0	0.0	0.0	0.0	0.0	0.0	10.5	3.5	7.5	19.5	15.0	17.0
21	0.0	0.0	0.0	0.0	0.0	0.0	9.5	6.0	7.5	17.0	12.0	14.5
22	0.0	0.0	0.0	0.0	0.0	0.0	11.0	6.0	8.5	12.0	8.0	10.0
23	0.0	0.0	0.0	0.0	0.0	0.0	9.5	5.0	6.5	10.5	6.5	8.5
24	0.0	0.0	0.0	0.0	0.0	0.0	9.0	2.5	6.0	13.5	8.0	10.0
25	0.0	0.0	0.0	0.0	0.0	0.0	9.5	5.0	7.0	14.5	9.5	12.0
26	0.0	0.0	0.0	0.0	0.0	0.0	10.5	6.0	8.0	15.5	12.0	13.5
27	0.0	0.0	0.0	0.0	0.0	0.0	8.5	5.0	7.0	17.0	12.5	14.5
28	0.0	0.0	0.0	0.0	0.0	0.0	10.5	5.5	8.0	17.0	13.5	15.0
29	---	---	---	0.0	0.0	0.0	12.0	6.0	9.0	17.0	12.5	14.0
30	---	---	---	0.0	0.0	0.0	12.5	7.5	10.0	19.5	14.5	16.5
31	---	---	---	0.5	0.0	0.0	---	---	---	20.5	14.0	17.0
MONTH	0.0	0.0	0.0	0.5	0.0	0.0	12.5	0.0	5.5	20.5	4.0	11.5

PEND OREILLE RIVER BASIN

12337800 NEVADA CREEK AT MOUTH, NEAR HELMVILLE, MT--Continued

WATER TEMPERATURE FROM (DEGREES CELSIUS), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	19.0	15.0	17.0	19.5	16.5	18.0	21.0	14.5	18.0	18.5	15.5	17.0
2	16.5	14.0	15.0	20.5	15.5	18.0	21.0	15.5	18.0	19.0	14.0	16.5
3	16.0	12.5	14.5	20.0	16.5	18.5	20.0	15.0	17.5	20.0	15.0	17.5
4	17.5	13.0	15.5	21.5	17.5	19.0	17.5	14.0	16.0	20.5	16.0	18.5
5	18.0	15.0	16.5	21.5	17.0	19.5	19.0	14.5	17.0	19.5	16.5	18.0
6	17.5	11.0	15.5	23.0	17.5	20.0	19.0	15.5	17.0	17.5	15.5	16.0
7	17.5	12.5	15.0	22.5	19.0	20.5	18.5	16.0	16.5	15.5	14.0	14.5
8	14.5	11.5	12.5	20.5	17.5	19.0	16.5	14.5	15.5	15.5	12.5	14.0
9	11.5	7.0	9.0	20.5	15.0	17.5	18.5	13.0	16.0	15.5	11.5	13.5
10	9.0	6.5	7.5	23.5	16.5	20.0	19.5	14.0	17.0	16.5	12.0	14.5
11	11.0	7.0	9.0	26.0	19.0	22.5	18.5	15.5	17.0	17.5	13.0	15.5
12	15.0	8.5	12.5	27.0	21.0	24.0	20.0	14.5	17.0	18.0	13.5	16.0
13	19.0	12.5	15.5	27.5	21.5	24.5	20.5	15.5	18.0	18.0	13.5	16.0
14	20.0	15.5	18.0	27.0	22.0	24.5	21.0	16.5	18.5	17.5	13.0	15.5
15	21.5	17.5	19.5	26.5	22.0	24.0	20.0	14.5	17.5	17.5	13.5	16.0
16	23.0	---	---	25.5	21.5	23.5	19.0	15.5	17.5	16.5	14.0	15.5
17	20.5	18.0	19.0	26.0	20.5	23.0	18.5	14.0	16.5	15.5	14.0	14.5
18	18.5	15.0	16.5	26.0	21.0	23.5	19.5	14.5	17.0	14.0	12.5	13.5
19	15.0	12.0	13.0	24.5	21.0	23.0	19.0	14.0	17.0	15.0	11.0	13.0
20	17.5	11.5	14.0	25.5	20.5	23.0	19.0	15.0	17.0	15.0	12.5	13.5
21	21.0	16.0	18.5	24.5	19.5	22.0	17.5	14.5	15.5	13.0	10.0	12.0
22	20.0	17.5	18.5	22.5	18.0	20.5	18.0	13.5	15.5	12.5	9.0	11.0
23	21.5	17.0	19.0	24.0	19.0	21.5	19.0	13.0	16.0	12.0	9.0	11.0
24	23.0	18.0	20.0	24.5	19.5	22.0	20.0	15.5	18.0	13.0	10.0	11.5
25	24.0	18.0	21.0	24.0	19.5	22.0	20.5	15.5	18.0	12.0	8.5	10.5
26	25.5	19.5	22.5	23.5	19.0	21.5	19.5	15.5	18.0	11.0	9.0	10.0
27	26.0	21.5	23.0	22.0	19.0	20.5	19.5	15.0	17.5	10.0	8.5	9.5
28	23.0	20.0	21.5	20.5	17.0	19.0	21.0	16.0	18.5	11.5	8.0	9.5
29	21.5	19.0	20.0	21.0	17.0	19.0	20.0	16.5	18.5	11.5	8.5	10.0
30	19.5	16.5	18.0	21.5	16.5	19.0	19.5	16.0	18.0	10.5	8.5	9.0
31	---	---	---	21.0	17.0	19.0	20.0	15.5	18.0	---	---	---
MONTH	26.0	---	---	27.5	15.0	21.0	21.0	13.0	17.0	20.5	8.0	14.0

PEND OREILLE RIVER BASIN

12338300 NORTH FORK BLACKFOOT RIVER ABOVE DRY GULCH, NEAR OVANDO, MT

LOCATION.--Lat 46°58'48", 1ong 113°05'25" (NAD 27), in NW$^1/_4$SW$^1/_4$SW$^1/_4$ sec.11, T.14 N., R.12 W., Powell County, Hydrologic Unit 17010203, on right bank 400 ft upstream from county road bridge, 0.9 mi upstream from Dry Gulch, 3.2 mi southeast of Ovando, and at river mile 2.5.
DRAINAGE AREA.--314 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1997 to current year.
GAGE.--Water-stage recorder. Elevation of gage is 4,060 ft (NGVD 29).
REMARKS.--Water-discharge records good. Numerous diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 8, 1964 reached a discharge of 11,800 ft^3/s, from slope-area measurement of peak flow, as determined at North Fork Blackfoot River near Ovando (station 12338000), 9 mi upstream. Flood of about May 22, 1948 reached a discharge of 4,380 ft^3/s, from slope-area measurement of peak flow at same site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	121	125	104	92	89	85	94	421	2910	1210	307	219
2	121	124	104	91	89	84	92	513	2810	1070	299	215
3	121	122	103	91	88	84	92	693	2510	970	293	212
4	121	121	103	91	88	84	92	726	2270	902	299	208
5	121	121	103	91	87	84	92	701	2260	848	305	205
6	121	118	103	91	87	84	98	622	2440	778	295	206
7	120	118	103	91	87	85	106	573	2190	728	292	212
8	118	118	102	91	88	84	112	520	1960	739	303	209
9	118	118	102	91	87	84	116	475	1680	698	300	205
10	118	117	102	91	87	85	119	448	1550	636	285	203
11	120	116	102	91	88	85	130	434	1380	594	277	200
12	120	116	101	91	87	86	141	448	1280	558	272	197
13	120	114	102	91	87	86	162	583	1300	531	264	194
14	121	114	102	91	87	87	244	962	1450	507	251	190
15	120	114	102	91	87	87	384	1010	1760	487	247	187
16	118	114	100	91	87	88	349	947	2160	479	245	185
17	118	113	100	91	87	87	299	943	2440	456	244	184
18	118	111	100	91	87	88	276	1110	2410	433	242	185
19	120	112	98	91	87	89	262	1570	2070	421	242	182
20	118	111	98	91	86	90	267	3330	1690	407	241	179
21	118	112	98	91	86	88	284	3370	1600	388	243	177
22	117	111	98	90	87	88	288	2600	1770	373	248	178
23	119	111	97	90	87	88	331	1960	2150	361	240	176
24	121	110	96	90	86	88	320	1580	2000	353	234	174
25	119	109	96	91	e85	87	321	1390	1870	344	232	173
26	118	109	96	91	e85	88	323	1410	1770	344	229	172
27	117	108	95	89	85	89	333	1670	1700	337	228	171
28	117	105	96	90	85	89	331	2140	1670	336	231	171
29	117	107	94	89	---	89	337	2530	1570	324	225	170
30	116	106	93	89	---	89	381	3120	1410	318	226	171
31	120	---	93	89	---	91	---	3090	---	311	223	---
TOTAL	3692	3425	3086	2810	2433	2690	6776	41889	58030	17241	8062	5710
MEAN	119.1	114.2	99.55	90.65	86.89	86.77	225.9	1351	1934	556.2	260.1	190.3
MAX	121	125	104	92	89	91	384	3370	2910	1210	307	219
MIN	116	105	93	89	85	84	92	421	1280	311	223	170
AC-FT	7320	6790	6120	5570	4830	5340	13440	83090	115100	34200	15990	11330

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2002, BY WATER YEAR (WY)

MEAN	156.8	143.0	121.0	102.9	95.02	98.86	296.9	1189	1318	458.9	226.7	172.7
MAX	183	160	137	117	113	122	542	1372	1940	626	280	197
(WY)	1998	1998	2000	2000	2000	2000	2000	1999	1999	1999	1999	1999
MIN	119	114	99.5	90.6	82.3	77.5	121	801	766	265	167	128
(WY)	2002	2002	2002	2002	2001	2001	2001	2001	2001	2001	2001	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1998 - 2002	
ANNUAL TOTAL	86515		155844			
ANNUAL MEAN	237.0		427.0		365.8	
HIGHEST ANNUAL MEAN					456	1999
LOWEST ANNUAL MEAN					242	2001
HIGHEST DAILY MEAN	1520	May 15	3370	May 21	3870	May 26 1999
LOWEST DAILY MEAN	72	Mar 18	84	Mar 2	72	Mar 18 2001
ANNUAL SEVEN-DAY MINIMUM	73	Mar 5	84	Mar 2	73	Mar 5 2001
MAXIMUM PEAK FLOW			4020	May 20	4280	May 26 1999
MAXIMUM PEAK STAGE			5.92	May 20	5.92	May 20 2002
INSTANTANEOUS LOW FLOW			a83	Feb 28	b69	Mar 18 2001
ANNUAL RUNOFF (AC-FT)	171600		309100		265000	
10 PERCENT EXCEEDS	676		1490		1010	
50 PERCENT EXCEEDS	118		121		161	
90 PERCENT EXCEEDS	80		87		89	

a--Gage height, 2.39 ft.
b--Gage height, 2.35 ft.
e--Estimated.

12338300 NORTH FORK BLACKFOOT RIVER ABOVE DRY GULCH, NEAR OVANDO, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--September 1995 to May 1997.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: April 2001 to current year.

INSTRUMENTATION.--Temperature probe installed Apr. 24, 2001.

REMARKS--Unpublished records of instantaneous specific conductance and temperature data are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE : Maximum, 17.5°C, Aug. 6 and 7, 2001; minimum, 0.0°C, several days in February and March 2002.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 17.0°C, July 14; minimum, 0.0°C, several days in February and March.

WATER TEMPERATURE, DEGREES CELSIUS, OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.5	6.5	9.5	7.5	6.5	6.5	6.0	4.0	5.0	3.0	1.0	2.0
2	12.5	7.0	9.5	8.5	7.0	7.5	6.5	5.0	5.5	4.0	1.0	2.5
3	12.5	6.5	9.0	9.5	6.0	7.0	7.0	4.0	5.5	5.5	4.0	4.5
4	10.0	6.5	7.5	8.5	5.0	6.5	5.5	3.0	4.0	6.0	4.5	5.0
5	11.0	5.0	7.5	9.0	5.0	6.5	6.0	4.0	4.5	6.0	3.5	4.5
6	11.0	5.0	7.5	8.5	5.5	7.0	5.5	4.0	4.5	6.0	3.5	4.5
7	11.0	6.5	8.0	8.0	5.0	6.0	6.0	4.0	5.0	7.0	5.0	6.0
8	11.0	7.5	8.5	7.5	4.0	5.5	6.0	3.5	4.5	7.0	5.0	6.0
9	9.0	7.0	8.0	8.0	4.0	5.5	6.0	3.0	4.0	6.5	4.5	5.5
10	10.5	7.0	8.5	8.0	4.0	5.5	5.0	3.0	4.5	5.0	3.5	4.5
11	10.0	6.5	8.0	8.0	4.0	5.5	5.5	3.5	4.5	6.5	4.0	5.0
12	8.0	6.5	7.0	8.0	4.5	6.0	5.5	3.0	4.0	6.0	4.5	5.0
13	10.0	7.0	8.0	8.0	5.0	6.0	6.0	4.0	5.0	5.0	4.0	4.5
14	8.0	6.5	7.5	8.5	5.5	7.0	6.5	3.5	5.0	5.0	3.5	4.0
15	10.5	6.5	8.0	8.5	5.0	6.5	5.0	3.0	4.0	5.0	3.0	4.0
16	10.5	6.0	7.5	8.0	5.0	6.5	5.5	3.0	4.5	5.0	3.5	4.0
17	10.0	6.5	7.5	7.5	5.5	6.5	5.5	3.0	4.5	5.0	3.0	3.5
18	8.5	6.0	7.0	7.5	5.0	6.5	3.5	1.5	2.5	4.5	2.5	3.0
19	8.0	7.0	7.5	7.0	4.0	5.5	6.0	2.5	4.0	5.5	3.0	4.0
20	8.5	6.0	7.0	7.0	5.0	6.0	5.0	2.0	3.5	5.5	3.5	4.5
21	9.0	5.5	7.0	7.5	5.5	6.5	6.0	3.0	4.5	5.5	3.0	4.5
22	8.5	7.0	7.5	7.0	5.5	6.0	6.0	3.0	4.5	4.5	2.5	3.5
23	7.5	6.0	6.5	6.5	5.5	6.0	4.5	2.0	3.0	5.0	2.5	3.5
24	9.0	5.5	6.5	6.5	5.0	5.5	4.5	3.5	4.0	6.0	3.0	4.5
25	7.5	6.0	6.5	6.0	4.5	5.0	4.5	3.0	3.5	6.5	4.5	5.5
26	9.5	6.0	7.0	6.5	4.5	5.0	3.5	1.0	2.5	5.5	3.5	4.5
27	9.5	5.5	7.0	6.0	4.5	5.0	3.5	1.0	2.0	5.0	1.5	3.5
28	8.5	7.0	7.5	5.0	3.5	4.5	4.0	1.5	2.5	4.5	0.5	2.0
29	9.5	7.0	8.0	6.5	4.5	5.5	5.5	3.5	4.0	4.5	0.5	2.5
30	9.0	7.5	8.0	6.0	4.0	5.0	5.0	3.5	4.5	5.0	1.0	3.0
31	9.5	6.5	7.5	---	---	---	5.5	3.0	4.5	5.5	3.0	4.0
MONTH	13.5	5.0	7.5	9.5	3.5	6.0	7.0	1.0	4.0	7.0	0.5	4.0

12338300 NORTH FORK BLACKFOOT RIVER ABOVE DRY GULCH, NEAR OVANDO, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	6.0	3.0	4.0	6.0	1.0	3.0	5.0	2.0	4.0	10.0	3.5	6.5
2	6.0	2.5	4.5	6.5	0.5	3.0	9.0	0.5	4.5	9.5	4.0	6.5
3	4.5	1.0	2.5	6.0	0.0	2.5	10.0	1.5	5.0	7.0	4.5	6.0
4	6.5	3.0	4.5	6.5	1.5	4.0	11.0	2.5	6.0	8.0	3.5	5.5
5	5.5	2.0	3.5	8.0	2.5	5.0	11.5	3.0	6.5	6.5	4.0	5.0
6	6.5	2.5	4.0	4.5	0.0	2.5	10.0	5.0	7.0	7.0	3.5	5.0
7	6.5	4.0	5.0	3.5	0.0	1.5	8.5	5.0	6.0	6.0	3.5	4.5
8	5.5	3.5	4.5	6.0	0.5	2.5	11.0	3.0	6.5	7.0	3.0	4.5
9	7.0	3.0	4.5	7.0	2.0	4.0	7.5	3.5	5.5	7.0	3.0	5.0
10	6.0	2.0	3.5	8.0	3.5	5.0	11.0	4.5	7.0	9.5	4.5	6.5
11	6.0	2.5	4.0	7.5	4.0	5.5	10.5	4.0	6.5	9.0	4.0	6.5
12	6.0	2.0	3.5	7.5	3.5	5.0	10.5	5.0	7.0	11.5	5.0	8.0
13	5.5	1.0	3.0	9.0	2.0	5.0	8.5	5.0	6.5	10.5	5.5	8.0
14	6.0	1.5	3.5	8.5	2.5	5.0	8.5	3.5	6.0	8.0	5.0	6.5
15	6.0	1.0	3.0	7.5	3.0	4.5	6.5	1.5	3.5	7.0	3.5	5.0
16	6.0	1.0	3.0	7.5	2.0	4.5	6.0	2.0	4.0	8.5	4.0	6.0
17	7.0	2.0	4.0	7.5	1.0	3.5	5.0	3.5	4.0	8.0	4.0	6.5
18	6.5	3.0	4.5	7.0	1.5	3.5	7.5	3.0	4.5	8.5	4.5	6.5
19	6.5	2.5	4.5	5.5	2.5	4.0	9.5	2.5	5.0	10.0	5.0	7.5
20	7.0	3.5	4.5	3.5	0.0	1.5	10.0	2.5	6.0	7.5	4.5	6.0
21	6.5	2.5	4.5	7.5	0.5	3.5	7.5	3.5	5.0	5.5	4.0	4.5
22	6.0	4.5	5.5	9.0	1.0	4.0	10.5	4.0	6.5	4.5	3.5	4.0
23	4.5	2.0	3.5	9.5	2.5	5.5	6.0	3.5	5.0	5.0	3.0	4.0
24	4.0	1.0	2.5	9.0	3.5	5.5	8.0	2.5	5.0	7.0	3.5	5.5
25	4.5	0.0	1.5	9.0	4.0	5.5	9.0	3.5	6.0	7.5	4.0	6.0
26	4.0	0.0	1.5	10.0	3.5	6.0	8.5	4.0	6.0	8.5	5.5	7.0
27	5.5	1.5	3.0	9.0	3.5	5.5	7.5	4.0	5.5	9.0	5.0	7.0
28	6.0	1.5	3.5	8.0	3.5	5.0	7.0	3.5	5.5	8.0	5.0	6.0
29	---	---	---	8.5	3.5	5.5	9.5	3.5	6.5	9.0	4.5	6.5
30	---	---	---	8.0	4.0	5.5	10.0	4.0	6.5	7.0	5.0	6.0
31	---	---	---	9.5	4.0	6.5	---	---	---	9.0	4.0	6.5
MONTH	7.0	0.0	3.5	10.0	0.0	4.5	11.5	0.5	5.5	11.5	3.0	6.0

	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.5	4.5	6.0	11.5	7.5	9.5	15.5	8.0	11.5	13.5	8.5	10.5
2	7.5	5.0	6.0	12.0	7.0	9.5	15.5	8.5	11.5	15.0	8.5	11.0
3	8.0	4.5	6.0	12.0	8.5	10.0	15.0	8.5	11.5	15.0	9.0	11.5
4	8.5	4.5	6.5	14.0	9.0	11.0	14.0	9.5	11.0	15.0	9.0	11.5
5	8.5	5.5	7.0	13.0	8.5	10.5	14.5	9.5	11.0	14.5	9.5	11.5
6	8.5	5.5	7.0	13.5	8.5	11.0	14.5	9.5	11.5	11.5	9.5	10.5
7	7.5	4.5	6.5	13.5	10.0	11.5	11.5	9.5	10.5	12.5	9.0	10.5
8	7.0	5.0	5.5	11.0	9.5	10.5	12.0	9.0	10.0	14.0	8.0	10.5
9	5.5	4.0	4.5	13.5	7.5	10.5	15.0	8.0	11.0	13.5	7.0	10.0
10	5.5	4.5	5.0	15.0	9.5	12.0	15.0	8.5	11.5	14.5	7.5	10.5
11	7.0	4.5	5.5	15.5	10.0	12.5	13.5	9.0	11.0	15.0	8.0	11.0
12	9.5	5.5	7.0	16.0	10.5	13.0	15.5	9.0	11.5	14.5	8.0	11.0
13	10.5	5.5	8.0	16.0	10.5	13.0	16.0	8.5	11.5	14.5	8.0	10.5
14	11.0	6.5	8.5	17.0	11.0	13.5	15.5	9.0	11.5	14.5	8.0	10.5
15	11.0	6.5	8.5	16.0	11.0	13.0	15.5	9.5	12.5	14.0	8.0	10.5
16	10.5	6.5	8.5	15.0	11.0	12.5	15.0	8.5	11.0	13.5	8.5	10.5
17	9.5	7.0	8.0	16.0	10.0	13.0	14.5	7.5	10.5	11.5	9.0	10.0
18	8.5	6.5	7.0	16.5	10.5	13.0	15.0	8.0	11.0	12.5	8.5	10.0
19	7.5	5.5	6.0	14.5	11.0	12.5	15.0	8.0	11.0	14.0	8.0	10.5
20	10.5	5.0	7.5	16.5	10.5	13.0	13.0	8.5	10.5	12.5	8.0	10.0
21	11.0	7.0	9.0	16.0	9.5	12.5	11.5	8.5	10.0	12.5	6.5	9.0
22	10.0	7.5	9.0	16.0	9.5	12.5	14.5	8.5	10.5	12.5	6.5	9.0
23	10.5	7.5	9.0	16.5	10.5	13.0	15.0	8.0	11.0	13.0	7.0	9.5
24	11.0	6.5	9.0	16.5	10.0	13.0	15.0	9.0	11.5	12.5	7.0	9.5
25	12.0	7.0	9.5	16.0	10.0	12.5	14.0	9.0	11.5	12.5	7.0	9.0
26	11.5	8.0	10.0	15.0	10.5	12.5	13.5	8.5	11.0	11.0	7.0	9.0
27	12.5	8.5	10.5	14.0	10.0	11.5	14.5	8.5	10.5	10.5	8.0	9.0
28	12.0	8.5	10.5	15.0	9.0	11.5	15.5	9.5	12.0	12.5	7.5	9.5
29	11.0	8.5	9.5	14.5	10.0	12.0	14.0	9.5	11.5	12.0	7.0	9.0
30	11.0	7.0	9.0	16.0	9.0	12.0	14.5	9.0	11.5	11.0	7.5	8.5
31	---	---	---	15.0	9.5	12.0	15.0	9.0	11.5	---	---	---
MONTH	12.5	4.0	7.5	17.0	7.0	12.0	16.0	7.5	11.0	15.0	6.5	10.0

PEND OREILLE RIVER BASIN

12340000 BLACKFOOT RIVER NEAR BONNER, MT

LOCATION.--Lat 46°53'59", long 113°45'20" (NAD 27), in SE$^1/_4$SE$^1/_4$NW$^1/_4$ sec.9, T.13 N., R.17 W., Missoula County, Hydrologic Unit 17010203, Lolo National Forest, on right bank 5.0 mi downstream from Union Creek, 5.6 mi northeast of Bonner, and at river mile 7.9.

DRAINAGE AREA.--2,290 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July to November 1898, March 1899 to September 1901, May 1903 to January 1905, March to October 1905, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1316. Published as "at Bonner" 1898-99 and as Big Blackfoot near Bonner 1903-05.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,344.76 ft (NGVD 29). July 7, 1898 to June 30, 1901, and May 15, 1903, to Oct. 31, 1905, nonrecording gage at site 7 mi downstream at different datum. Oct. 4, 1939, to Sept. 30, 1955, nonrecording gage at site 1.3 mi downstream at datum 21.82 ft lower.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Flow slightly regulated by Nevada Creek Reservoir (station number 12336500). Diversions for irrigation of about 20,000 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	416	568	491	e470	e450	e450	1000	2200	7980	4300	916	646
2	411	560	493	e470	e430	e430	900	2370	7820	3840	896	635
3	413	551	495	e480	e410	e430	778	2680	7490	3480	866	627
4	412	548	480	e490	e410	e460	750	2890	7050	3200	881	618
5	421	547	467	e500	e420	481	778	2880	6700	2960	945	607
6	431	547	491	e500	e420	442	999	2790	6700	2760	947	622
7	436	546	504	e510	e430	387	1380	2650	6630	2590	935	678
8	436	534	483	e530	e440	378	1350	2500	6250	2570	959	686
9	440	524	480	e520	456	445	1330	2310	5830	2510	967	676
10	439	517	e470	507	e430	461	1290	2150	5590	2330	932	653
11	461	515	e470	500	450	491	1430	2030	5210	2170	887	639
12	468	516	e480	487	429	523	1590	1970	4720	2030	859	620
13	473	513	502	477	e420	530	1910	2050	4410	1890	837	603
14	483	510	507	465	435	518	2740	2500	4430	1800	797	591
15	493	507	469	447	413	533	3520	2950	4880	1690	759	587
16	481	502	508	443	410	509	3530	3060	5600	1670	733	577
17	474	500	502	441	447	472	3310	3100	6350	1600	726	573
18	461	500	495	429	478	432	3010	3260	6700	1520	718	579
19	478	496	e490	440	446	472	2730	3720	6400	1440	709	587
20	499	495	e510	450	432	471	2530	5180	5680	1370	701	576
21	488	509	e530	460	424	342	2400	7200	5080	1320	700	568
22	485	527	e510	443	454	395	2330	7710	4940	1260	713	565
23	515	533	e480	e430	492	504	2370	6990	5460	1210	697	566
24	505	523	e450	e420	e420	550	2380	5950	5730	1170	681	560
25	504	518	e420	e440	e320	523	2290	5190	5570	1130	678	557
26	505	510	e390	e460	e340	524	2230	4780	5280	1120	670	558
27	500	500	e380	e420	e440	568	2200	4900	5070	1110	661	564
28	515	480	e420	e350	e470	669	2140	5420	5100	1080	662	561
29	523	497	e450	e330	---	693	2090	6240	4970	1040	668	554
30	530	505	e480	e380	---	714	2100	7470	4800	996	667	555
31	548	---	e500	e430	---	799	---	8080	---	938	663	---
TOTAL	14644	15598	14797	14119	12016	15596	59385	125170	174420	60094	24430	17988
MEAN	472.4	519.9	477.3	455.5	429.1	503.1	1980	4038	5814	1939	788.1	599.6
MAX	548	568	530	530	492	799	3530	8080	7980	4300	967	686
MIN	411	480	380	330	320	342	750	1970	4410	938	661	554
AC-FT	29050	30940	29350	28010	23830	30930	117800	248300	346000	119200	48460	35680
CFSM	0.21	0.23	0.21	0.20	0.19	0.22	0.86	1.76	2.54	0.85	0.34	0.26
IN.	0.24	0.25	0.24	0.23	0.20	0.25	0.96	2.03	2.83	0.98	0.40	0.29

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1898 - 2002, BY WATER YEAR (WY)*

MEAN	658.2	654.0	611.0	555.6	601.6	778.6	2040	4916	4950	1876	841.7	675.1
MAX	1547	1480	1555	1069	1668	2351	4727	9802	13610	6557	1921	1250
(WY)	1960	1960	1996	1976	1971	1986	1943	1997	1899	1899	1899	1899
MIN	370	369	332	348	359	435	463	1096	1158	533	365	363
(WY)	1988	1988	1988	1988	1993	1988	1905	1941	1987	1977	1988	1988

12340000 BLACKFOOT RIVER NEAR BONNER, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1898 - 2002*	
ANNUAL TOTAL	349164		548257			
ANNUAL MEAN	956.6		1502		1582	
HIGHEST ANNUAL MEAN					2480	1976
LOWEST ANNUAL MEAN					558	1941
HIGHEST DAILY MEAN	4140	May 16	8080	May 31	18000	Jun 10 1964
LOWEST DAILY MEAN	370	Feb 28	320	Feb 25	200	Jan 4 1950
ANNUAL SEVEN-DAY MINIMUM	394	Feb 27	397	Jan 28	239	Dec 21 1983
MAXIMUM PEAK FLOW			8170	May 31	b19200	Jun 10 1964
MAXIMUM PEAK STAGE			7.46	May 31	c16.00	Feb 9 1996
INSTANTANEOUS LOW FLOW			a264	Feb 26	d156	Feb 2 1989
ANNUAL RUNOFF (AC-FT)	692600		1087000		1146000	
ANNUAL RUNOFF (CFSM)	0.42		0.66		0.69	
ANNUAL RUNOFF (INCHES)	5.67		8.91		9.39	
10 PERCENT EXCEEDS	2690		4890		4140	
50 PERCENT EXCEEDS	508		564		735	
90 PERCENT EXCEEDS	420		430		450	

*--During periods of operation (1900-01, 1904, 1940 to current year).
a--Gage height, 1.47 ft, but may have been lower during period of ice affect.
b--Gage height, 10.89 ft.
c--Backwater from ice.
d--Gage height, 1.20 ft, but may have been lower during water year 1989 period of ice affect.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1956-59, 1985 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1955 to September 1959, October 1999 to current year.
SUSPENDED-SEDIMENT DISCHARGE: July 1986 to April 1987, June 1988 to September 1995.
INSTRUMENTATION.--Temperature recorder installed Aug. 3, 1999.
REMARKS.-During low flows from Oct. 1 to Feb. 26, spring inflow upstream from gage and inadequate mixing may effect temperature records by as much as 3.0°C. Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 21.5°C, Aug. 7, 8, 2001 and July 14, 15, 19, 2002; minimum, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATION: Maximum daily mean, 335 mg/L, May 19, 1991; minimum daily mean, 1 mg/L on many days.
SEDIMENT LOAD: Maximum daily, 8,100 tons, May 19, 1991; minimum daily, 0.54 ton, Feb. 8, 1995.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE : Maximum, 21.5°C, July 14, 15, 19; minimum, 0.0°C on many days November through March.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
NOV												
08...	1315	535	8.5	267	10.5	4.0	130	33.5	12.0	1.02	.1	3.37
APR												
09...	1730	1310	8.4	205	10.0	5.5	97	24.7	8.68	--	--	--
MAY												
23...	1530	6840	8.1	146	7.5	7.0	71	18.6	5.98	--	--	--
JUN												
05...	0910	6720	8.1	152	17.0	10.5	75	19.6	6.35	--	--	--
25...	1540	5620	8.3	156	29.0	15.0	78	20.2	6.54	.48	.1	1.31
AUG												
21...	0845	694	8.5	257	13.5	13.5	130	33.0	12.1	--	--	--

12340000 BLACKFOOT RIVER NEAR BONNER, MT--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV											
08...	148	1.48	E.1	10.3	6.0	.21	226	156	.10	<.013	<.002
APR											
09...	--	--	--	--	--	--	--	--	--	--	--
MAY											
23...	--	--	--	--	--	--	--	--	.30	.032	<.002
JUN											
05...	--	--	--	--	--	--	--	--	.21	.015	<.002
25...	80	E.23	<.1	6.95	2.3	--	--	--	.15	E.010	<.002
AUG											
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
NOV											
08...	<.007	.004	1.0	E2	<.1	<.1	<.8	<1.0	E.5	<10	20
APR											
09...	--	--	1.5	E1	<.1	<.1	--	1.5	3.8	100	500
MAY											
23...	E.005	.087	.8	M	<.04	.04	--	1.4	6.4	25	960
JUN											
05...	<.007	.044	.8	<2	<.04	E.02	--	.9	3.9	16	520
25...	E.004	.037	.8	<2	<.04	<.04	<.8	.7	2.2	E9	490
AUG											
21...	--	--	1.2	E1	<.04	<.04	--	.4	.6	<10	30

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV										
08...	<1	<1	1.1	E2	<2.0	<1	<1	85	1	1.4
APR										
09...	.11	<1	5.2	41	--	1	3	91	28	99.0
MAY										
23...	<.08	1	2.8	68	--	1	7	84	81	1500
JUN										
05...	<.08	<1	1.9	35	--	<1	4	81	47	853
25...	<.08	<1	2.4	31	<2.0	<1	3	84	44	668
AUG										
21...	<.08	<1	1.1	6	--	<1	<1	84	3	5.6

E--Estimated.

PEND OREILLE RIVER BASIN

12340000 BLACKFOOT RIVER NEAR BONNER, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.5	10.5	11.5	7.5	6.5	6.5	1.5	1.0	1.0	0.0	0.0	0.0
2	12.0	10.5	11.5	6.5	6.0	6.5	1.5	1.0	1.0	0.0	0.0	0.0
3	12.0	10.5	11.5	6.5	6.0	6.0	2.0	1.0	1.5	0.0	0.0	0.0
4	11.0	9.0	10.0	6.5	5.0	5.5	1.5	0.5	1.0	0.0	0.0	0.0
5	9.5	7.5	8.5	5.5	4.5	5.0	0.5	0.5	0.5	0.0	0.0	0.0
6	8.5	7.0	8.0	5.0	4.0	4.5	0.5	0.5	0.5	0.0	0.0	0.0
7	9.5	7.5	8.5	4.0	3.0	3.5	1.0	0.5	0.5	0.0	0.0	0.0
8	10.0	8.5	9.0	3.0	1.5	2.0	1.0	0.5	0.5	0.0	0.0	0.0
9	9.5	8.5	9.0	2.0	0.5	1.0	0.5	0.5	0.5	0.0	0.0	0.0
10	9.5	8.0	8.5	1.5	0.0	1.0	0.5	0.0	0.5	0.0	0.0	0.0
11	9.0	8.0	8.5	1.0	0.0	0.5	0.5	0.5	0.5	0.0	0.0	0.0
12	8.5	7.5	8.0	1.5	0.5	1.0	0.5	0.5	0.5	0.0	0.0	0.0
13	9.0	7.5	8.0	2.5	1.0	1.5	0.5	0.5	0.5	0.5	0.0	0.0
14	8.5	7.5	8.0	4.0	2.0	3.0	1.0	0.5	0.5	0.0	0.0	0.0
15	8.5	7.0	7.5	4.0	3.0	3.5	0.5	0.5	0.5	0.0	0.0	0.0
16	8.0	6.5	7.0	4.0	3.0	3.5	0.5	0.5	0.5	0.0	0.0	0.0
17	7.5	6.5	7.0	4.5	3.0	3.5	1.0	0.5	0.5	0.0	0.0	0.0
18	7.5	6.0	6.5	4.0	3.0	3.5	0.5	0.0	0.5	0.0	0.0	0.0
19	6.5	6.0	6.5	3.0	2.0	2.5	0.5	0.0	0.5	0.0	0.0	0.0
20	7.5	6.0	6.5	3.0	2.0	2.5	0.5	0.5	0.5	0.0	0.0	0.0
21	7.0	5.5	6.0	4.0	3.0	3.5	0.5	0.5	0.5	0.0	0.0	0.0
22	7.0	6.0	6.5	3.5	3.0	3.5	0.5	0.5	0.5	0.0	0.0	0.0
23	7.0	6.0	6.5	4.0	3.5	3.5	0.5	0.5	0.5	0.0	0.0	0.0
24	6.0	5.0	5.5	3.5	2.5	3.0	0.5	0.5	0.5	0.5	0.0	0.0
25	5.5	4.5	5.0	3.0	2.5	2.5	0.5	0.0	0.5	0.5	0.0	0.5
26	5.5	5.0	5.0	2.5	1.5	2.5	0.0	0.0	0.0	0.5	0.0	0.5
27	6.0	4.5	5.0	2.0	1.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
28	6.0	5.5	6.0	1.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0
29	7.0	6.0	6.5	1.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0
30	7.5	6.5	7.0	1.0	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
31	7.5	7.0	7.5	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0
MONTH	12.5	4.5	7.5	7.5	0.0	3.0	2.0	0.0	0.5	0.5	0.0	0.0
		FEBRUARY			MARCH			APRIL			MAY	
1	0.0	0.0	0.0	0.5	0.5	0.5	5.0	2.0	3.5	9.5	7.0	8.5
2	0.0	0.0	0.0	0.5	0.5	0.5	3.0	0.5	1.5	10.0	7.0	8.5
3	0.0	0.0	0.0	0.5	0.5	0.5	4.5	0.5	2.5	9.5	8.0	8.5
4	0.0	0.0	0.0	0.5	0.5	0.5	6.0	2.0	4.0	8.0	6.5	7.5
5	0.0	0.0	0.0	0.5	0.0	0.5	7.0	3.5	5.5	7.5	7.0	7.5
6	0.5	0.0	0.0	0.5	0.0	0.5	7.5	5.0	6.0	8.0	6.0	7.0
7	0.5	0.0	0.0	1.0	0.5	0.5	6.5	5.0	5.5	7.0	6.0	6.5
8	0.5	0.0	0.5	1.0	0.5	0.5	7.5	4.5	5.5	7.5	6.0	6.5
9	1.0	0.0	0.5	0.5	0.5	0.5	6.0	5.0	5.0	7.5	5.5	6.5
10	0.5	0.0	0.5	1.0	0.5	0.5	7.5	4.5	6.0	9.0	6.5	7.5
11	1.0	0.0	0.5	1.0	0.5	0.5	8.0	6.0	7.0	9.5	7.0	8.0
12	0.5	0.0	0.5	1.5	0.5	1.0	8.0	6.0	7.0	11.5	8.0	9.5
13	0.5	0.0	0.0	2.5	0.0	1.0	7.5	6.0	7.0	12.5	9.5	11.0
14	0.5	0.0	0.5	2.5	0.5	1.5	7.0	5.5	6.5	11.5	9.5	10.5
15	0.5	0.0	0.5	2.0	0.5	1.5	5.5	4.0	5.0	9.5	7.5	8.0
16	0.5	0.0	0.5	2.5	0.5	1.5	6.0	4.0	5.0	10.0	7.5	8.5
17	0.5	0.0	0.5	2.0	0.0	1.0	5.5	5.0	5.0	10.0	8.0	9.0
18	0.5	0.0	0.0	2.0	0.0	1.0	5.5	4.0	5.0	10.5	9.0	9.5
19	0.5	0.0	0.5	1.0	0.0	0.5	6.5	4.0	5.0	11.0	9.5	10.5
20	2.0	0.5	1.0	1.0	0.0	0.5	7.5	5.0	6.0	11.0	9.5	10.5
21	1.5	0.0	1.0	1.0	0.5	1.0	7.0	5.5	6.0	9.5	7.0	8.0
22	2.0	1.0	1.5	2.0	0.5	1.0	8.5	5.5	6.5	7.5	6.5	7.0
23	1.0	0.0	0.5	3.5	0.5	2.0	7.5	5.0	6.0	7.0	6.0	6.5
24	0.5	0.0	0.0	3.5	1.0	2.0	7.0	3.5	5.0	8.5	6.5	7.5
25	1.0	0.5	0.5	4.0	1.5	2.5	8.0	5.0	6.0	9.5	7.5	8.5
26	1.5	0.5	0.5	5.0	2.5	4.0	8.0	5.5	7.0	10.5	9.0	10.0
27	0.5	0.0	0.5	5.0	3.5	4.5	7.5	6.5	7.0	11.0	9.5	10.0
28	0.5	0.0	0.5	5.0	3.0	4.0	7.5	6.0	6.5	10.5	9.5	10.0
29	---	---	---	4.5	3.0	3.5	8.5	5.5	7.0	11.0	9.5	10.0
30	---	---	---	5.0	3.5	4.0	9.0	6.5	8.0	11.0	9.5	10.0
31	---	---	---	5.5	3.0	4.5	---	---	---	11.0	8.5	9.5
MONTH	2.0	0.0	0.5	5.5	0.0	1.5	9.0	0.5	5.5	12.5	5.5	8.5

PEND OREILLE RIVER BASIN

12340000 BLACKFOOT RIVER NEAR BONNER, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	11.0	9.0	10.0	14.5	13.0	13.5	18.0	14.0	16.0	16.5	14.5	15.5
2	10.0	9.0	9.5	14.5	13.0	14.0	18.5	14.5	16.5	16.5	13.0	15.0
3	10.5	8.5	9.5	15.0	13.5	14.5	18.0	14.0	16.0	17.5	14.0	15.5
4	10.5	9.5	10.0	16.5	14.0	15.0	17.0	14.5	16.0	18.0	14.5	16.5
5	11.0	10.0	10.5	16.0	14.0	15.0	17.5	15.0	16.0	18.0	15.0	17.0
6	11.0	10.0	10.5	17.0	14.5	15.5	17.0	14.5	15.5	17.0	14.5	15.5
7	11.0	9.5	10.0	17.5	16.0	16.5	16.0	14.0	15.0	15.0	13.5	14.5
8	10.0	8.5	9.0	16.5	14.5	16.0	15.0	13.0	14.0	15.0	12.5	14.0
9	8.5	7.0	7.5	16.0	13.5	14.5	16.5	13.0	14.5	14.5	11.5	13.0
10	7.5	7.0	7.0	18.0	15.0	16.0	17.5	13.5	15.5	15.0	11.5	13.5
11	9.0	7.0	8.0	19.5	16.5	18.0	17.0	15.0	16.0	15.5	12.0	14.0
12	11.0	8.5	9.5	20.5	17.5	19.0	18.0	14.5	16.0	16.0	12.5	14.5
13	12.5	10.0	11.0	21.0	18.0	19.5	18.0	14.5	16.5	16.0	12.5	14.5
14	13.5	11.5	12.5	21.5	19.0	20.0	18.5	15.5	17.0	15.5	12.0	14.0
15	13.5	12.5	13.0	21.5	19.0	20.0	18.0	14.5	16.5	15.5	12.5	14.5
16	13.5	12.5	13.0	20.5	18.0	19.0	17.5	14.0	16.0	15.0	13.0	14.0
17	14.0	12.5	13.0	20.5	17.5	19.0	16.5	13.0	15.0	14.5	13.0	13.5
18	12.5	11.0	11.5	21.0	17.5	19.5	17.0	13.0	15.0	13.5	12.5	13.0
19	11.0	9.5	10.0	21.5	18.5	20.0	17.0	13.5	15.5	13.5	11.0	12.5
20	12.0	9.0	10.5	21.0	18.0	19.5	16.0	14.0	15.0	14.0	12.0	13.0
21	13.5	11.5	12.5	21.0	17.0	19.0	14.5	13.0	14.0	12.5	10.0	11.5
22	14.0	13.0	13.5	20.5	17.0	18.5	15.5	13.0	14.0	12.0	8.5	10.5
23	14.0	12.5	13.5	20.5	17.5	19.0	16.5	12.5	14.5	12.5	9.0	11.0
24	14.5	12.5	13.5	21.0	18.0	19.5	17.0	14.0	15.5	12.5	9.5	11.0
25	15.0	13.0	14.0	21.0	18.0	19.5	18.0	14.5	16.5	12.5	9.5	11.0
26	15.5	14.0	15.0	20.0	17.5	18.5	17.5	14.5	16.0	11.5	9.5	10.5
27	16.0	14.5	15.5	19.0	17.0	18.0	16.5	14.0	15.0	11.0	10.0	10.5
28	16.0	14.5	15.0	18.5	15.5	17.0	17.5	14.5	16.0	11.5	9.0	10.5
29	15.0	13.5	14.5	18.0	15.5	17.0	18.0	14.5	16.5	11.0	9.5	10.5
30	14.0	12.5	13.5	19.0	15.5	17.5	17.5	15.0	16.5	10.5	9.0	10.0
31	---	---	---	18.5	15.5	17.0	18.0	14.5	16.5	---	---	---
MONTH	16.0	7.0	11.5	21.5	13.0	17.5	18.5	12.5	15.5	18.0	8.5	13.0

PEND OREILLE RIVER BASIN

12340500 CLARK FORK ABOVE MISSOULA, MT

LOCATION.--Lat 46°52'38", long 113°55'53" (NAD 27), in NW$^1/_4$NW$^1/_4$NW$^1/_4$ sec.19, T.13 N., R.18 W., Missoula County, Hydrologic Unit 17010204, on right bank 0.2 mi downstream from county road bridge, 2.8 mi east of Missoula, 2.8 mi downstream from Milltown Dam, 3.0 mi downstream from Blackfoot River, and at river mile 361.6.

DRAINAGE AREA.--5,999 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1929 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1042: 1936. WSP 1152: 1942. WSP 1246: 1929-30, 1935, drainage area. WSP 1316: 1932-33.

GAGE.--Water-stage recorder. Datum of gage is 3,198.30 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to May 27, 1929, nonrecording gage.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Diurnal fluctuation caused by powerplant at Milltown. Diversions for irrigation of about 120,000 acres upstream from station. U. S. Geological Survey satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1908 reached a discharge of 48,000 ft^3/s, provided by The Montana Power Company.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	856	1400	1130	e1000	1020	1030	1900	3060	11500	6030	1680	1090
2	860	1340	1100	e900	1030	1000	2000	3240	11400	5430	1610	1160
3	861	1310	1120	e900	953	948	1640	3610	11200	4850	1560	1160
4	856	1300	1130	e1000	953	1030	1560	3910	10400	4580	1500	1080
5	874	1290	1070	e1100	982	1060	1570	3870	9650	4220	1750	1080
6	899	1280	1050	e1100	965	1060	1910	3800	9520	3970	1780	1140
7	930	1260	1100	1100	1060	923	2650	3640	9400	3730	1730	1230
8	949	1220	1110	1210	1100	885	2590	3410	8890	3700	1750	1270
9	963	1230	1050	1300	1130	976	2410	3190	8420	3690	1800	1320
10	980	1210	1010	1250	965	996	2350	2940	8490	3450	1780	1300
11	1030	1190	1020	1160	1070	1120	2530	2840	8360	3240	1680	1260
12	1060	1190	991	1160	985	1280	2710	2670	7580	2970	1600	1210
13	1110	1190	1010	1160	953	1620	3000	2730	7060	2840	1530	1170
14	1160	1190	1150	1120	978	1420	3910	3160	6920	2680	1460	1150
15	1210	1190	1060	1060	887	1340	5220	3770	7410	2570	1400	1110
16	1200	1170	967	1020	937	1240	5200	3960	8210	2630	1350	1120
17	1180	1190	1070	1020	964	1170	4710	3930	9090	2580	1300	1110
18	1120	1180	988	1010	1060	1020	4340	4100	9640	2380	1250	1110
19	1190	1170	936	978	1030	1110	3920	4670	9430	2360	1230	1150
20	1230	1170	e950	1010	1010	1110	3600	6480	8470	2380	1200	1150
21	1230	1190	e1050	1040	980	886	3460	9060	7480	2240	1210	1120
22	1230	1220	1090	1030	1050	962	3340	10400	7190	2180	1260	1100
23	1240	1210	1010	986	1220	1150	3310	9650	7870	2120	1270	1060
24	1250	1220	e850	962	1110	1280	3360	8300	8210	2090	1230	1060
25	1250	1180	e750	1050	859	1400	3220	7260	7740	2020	1230	1060
26	1230	1170	e650	1100	e650	1460	3150	6730	7280	2030	1230	1060
27	1220	1150	e600	1060	882	1600	3120	6960	6900	2050	1200	1060
28	1240	1120	e550	935	1010	1730	3070	7690	6880	1980	1210	1090
29	1270	1030	e700	903	---	1640	2990	8810	6770	1890	1210	1090
30	1310	1110	e850	896	---	1580	2980	10400	6620	1860	1120	1160
31	1310	---	e1000	981	---	1640	---	11400	---	1740	1010	---
TOTAL	34298	36270	30112	32501	27793	37666	91720	169640	253980	92480	44120	34230
MEAN	1106	1209	971.4	1048	992.6	1215	3057	5472	8466	2983	1423	1141
MAX	1310	1400	1150	1300	1220	1730	5220	11400	11500	6030	1800	1320
MIN	856	1030	550	896	650	885	1560	2670	6620	1740	1010	1060
AC-FT	68030	71940	59730	64470	55130	74710	181900	336500	503800	183400	87510	67900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

MEAN	1565	1560	1420	1330	1476	1860	3707	7895	8289	3177	1493	1404
MAX	2987	2852	3323	2546	3431	4124	10080	17240	19270	8759	3448	2874
(WY)	1960	1960	1976	1976	1996	1986	1934	1976	1975	1975	1975	1965
MIN	854	882	874	606	674	1037	1191	2005	2122	868	627	653
(WY)	1936	1938	1945	1937	1933	1937	1941	1941	1992	1931	1988	1937

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1929 - 2002	
ANNUAL TOTAL	646986		884810			
ANNUAL MEAN	1773		2424		2939	
HIGHEST ANNUAL MEAN					5071	1976
LOWEST ANNUAL MEAN					1344	1941
HIGHEST DAILY MEAN	6780	May 16	11500	Jun 1	30800	Jun 21 1975
LOWEST DAILY MEAN	550	Dec 28	550	Dec 28	340	Sep 27 1937
ANNUAL SEVEN-DAY MINIMUM	707	Dec 24	707	Dec 24	446	Jan 7 1937
MAXIMUM PEAK FLOW			a12300	May 30	32300	Jun 21 1975
MAXIMUM PEAK STAGE			8.21	May 30	13.75	Jun 21 1975
INSTANTANEOUS LOW FLOW					b115	Oct 25 1943
ANNUAL RUNOFF (AC-FT)	1283000		1755000		2129000	
10 PERCENT EXCEEDS	4450		6910		6950	
50 PERCENT EXCEEDS	1190		1230		1660	
90 PERCENT EXCEEDS	851		963		1000	

a--Result of regulation.
b--Gage height, 0.64 ft.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-71, 1977-83, 1986 to current year. Water years 1969-71 samples collected 3.4 miles downstream from gaging station.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: June 1977 to September 1983, February 2002 to September 2002.
SUSPENDED-SEDIMENT DISCHARGE: July 1986 to April 1987, June 1988 to January 1996, March 1996 to present.

INSTRUMENTATION.--Temperature recorder installed Nov. 19, 2001.

REMARKS.--Missing temperature date for April 11 and 12 due to equipment problems. Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (water years 1977-83): Maximum, 22.5°C, Aug. 7, 8, 1983, July 13-15, 2002; minimum, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATION: Maximum daily mean, 592 mg/L, May 18, 1997; minimum daily mean, 1 mg/L, on many days from 1990 to 1994, and 1999 to 2001.
SEDIMENT LOAD: Maximum daily, 42,200 tons, May 18, 1997; minimum daily, 1.6 tons, Dec. 27, 1992.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 22.5°C, July 13-15; minimum, 0.0°C on many days in February and March.
SEDIMENT CONCENTRATION: Maximum daily mean, 155 mg/L, Aug. 12; minimum daily mean, 2 mg/L, on several days in December through February.
SEDIMENT LOAD: Maximum daily, 2,970 tons, June 1; minimum daily, 4.0 tons, Dec. 25.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	TURBID-ITY LAB HACH 2100AN (NTU) (99872)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)
NOV												
08...	1500	854	--	8.4	349	8.0	4.0	160	43.3	12.2	3.5	4
MAR												
13...	1020	1630	9.1	8.2	315	8.0	1.0	130	36.7	10.2	5.6	6
APR												
10...	0830	2450	11	8.3	262	7.0	6.5	120	31.7	9.32	3.7	4
MAY												
08...	1400	3390	--	8.3	200	8.0	7.0	93	24.6	7.62	1.8	E2
24...	0815	7890	26	8.0	160	5.5	7.0	75	20.2	6.10	1.8	3
JUN												
05...	0735	9790	20	8.1	160	14.0	11.5	76	20.4	6.09	2.1	4
25...	1350	7730	20	8.2	180	29.5	15.5	82	21.8	6.57	2.3	3
AUG												
*04...	1430	1470	--	8.4	274	--	17.5	130	33.4	11.0	3.0	3
*06...	1515	1740	--	8.4	273	--	17.0	130	34.3	10.9	2.9	3
*08...	1300	1750	--	8.2	280	--	14.5	130	34.4	10.7	3.8	4
*10...	1600	1800	--	8.3	288	--	17.5	130	35.7	11.0	5.0	8
*11...	1130	1680	--	8.2	293	--	17.0	140	37.0	11.3	4.6	8
*12...	1100	1620	--	8.1	292	--	17.0	140	36.1	11.1	4.9	13
*13...	1245	1560	--	8.2	293	--	18.0	140	35.9	11.2	5.2	10
*14...	0915	1490	--	8.2	288	--	17.0	130	35.1	11.3	4.6	9
*15...	1030	1410	--	8.2	289	--	16.5	130	34.1	10.9	4.5	7
*16...	1245	1350	--	8.2	290	--	17.0	130	35.4	11.2	4.6	8
*17...	1130	1300	--	8.1	290	--	15.5	140	35.8	11.5	5.2	10
*18...	1130	1250	--	8.2	289	--	16.0	140	35.5	11.5	4.7	9
*19...	1100	1230	--	8.2	289	--	15.5	130	34.4	11.2	4.5	8
*20...	1245	1200	--	8.2	291	--	16.0	140	35.5	11.6	4.4	9
21...	1040	1200	20	8.3	292	15.0	14.5	140	35.8	11.6	3.4	8
*23...	1215	1280	--	8.2	293	--	15.0	140	36.3	11.5	4.3	6
*24...	1200	1240	--	8.2	294	--	16.0	140	36.9	11.8	4.5	6
*29...	1030	1220	--	8.2	298	--	16.5	140	36.5	11.7	4.5	7
*31...	1900	835	--	8.4	300	--	18.0	140	37.1	11.8	3.2	3

*--Supplemental samples collected by sediment observer during Milltown Resevoir drawdown; samples were collected by depth integration at a single vertical near midstream.
E--Estimated.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)
NOV										
08...	<.1	<.1	E1.1	4.1	<10	70	<1	<1	9.4	17
MAR										
13...	.2	E.1	5.4	17.3	35	450	.18	3	16.5	61
APR										
10...	<.1	<.1	3.0	9.6	58	360	.17	2	24.4	49
MAY										
08...	<.1	<.1	1.3	3.7	13	140	<.08	<1	12.6	21
24...	<.04	.09	1.5	13.9	29	800	E.04	2	8.4	67
JUN										
05...	<.04	.15	1.6	14.4	22	670	E.07	3	8.3	60
25...	E.02	.05	1.6	6.3	11	400	E.05	1	8.1	40
AUG										
*04...	E.04	E.03	1.4	3.6	<10	70	E.05	<1	1.1	20
*06...	<.04	E.02	1.6	6.4	E6	110	E.06	<1	5.7	29
*08...	E.03	.23	1.8	25.9	11	570	.11	4	.7	81
*10...	E.02	.33	2.1	34.4	E7	830	.09	6	.9	80
*11...	<.04	.42	1.9	50.6	E8	1300	.12	9	1.0	102
*12...	<.04	.77	1.5	84.8	17	2130	.19	15	2.9	162
*13...	E.02	.63	1.7	71.1	14	1880	.15	13	.9	144
*14...	<.04	.47	1.4	54.4	15	1460	.14	9	1.2	113
*15...	E.03	.33	1.6	39.6	E6	1050	E.07	7	.5	87
*16...	<.04	.48	1.5	52.6	11	1350	.13	9	.9	103
*17...	.04	.60	1.8	62.4	E9	1570	.11	11	.5	121
*18...	E.03	.48	1.7	57.0	E9	1370	.12	10	.6	108
*19...	E.03	.42	1.4	45.8	E10	1190	.40	8	.9	93
*20...	<.04	.43	1.4	51.5	13	1210	.19	9	5.0	97
21...	<.04	.40	1.1	46.8	15	1170	.12	8	29.8	92
*23...	E.03	.28	1.9	32.4	<10	890	.13	6	.4	67
*24...	E.03	.29	1.9	34.0	E5	880	.10	6	.6	69
*29...	E.03	.31	1.9	35.3	E9	950	E.08	6	.6	83
*31...	E.02	.09	1.7	4.7	<10	110	<.08	<1	.4	21

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV					
08...	2	7	92	5	11.5
MAR					
13...	8	31	97	27	119
APR					
10...	2	13	99	17	112
MAY					
08...	1	6	92	9	82.4
24...	1	20	91	59	1260
JUN					
05...	2	25	88	52	1370
25...	1	9	93	35	730
AUG					
*04...	1	4	93	4	15.9
*06...	1	7	93	7	32.9
*08...	4	50	91	33	156
*10...	5	69	85	61	296
*11...	6	95	81	89	404
*12...	5	172	81	162	709
*13...	7	151	73	155	653
*14...	4	116	70	120	483
*15...	6	84	71	87	331
*16...	5	109	75	106	386
*17...	10	134	73	123	432
*18...	7	116	76	114	385
*19...	5	101	75	92	306
*20...	5	106	73	106	343
21...	2	99	76	93	301
*23...	7	66	68	68	235
*24...	7	67	68	71	238
*29...	7	70	71	71	234
*31...	4	12	74	7	15.8

*--Supplemental samples collected by sediment observer during Milltown Resevoir drawdown; samples were collected by depth integration at a single vertical near midstream.
E--Estimated.

PEND OREILLE RIVER BASIN

12340500 CLARK FORK ABOVE MISSOULA, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	0.0	0.0	0.0	0.5	0.0	0.0	6.5	3.5	5.5	10.5	8.0	9.0
2	0.5	0.0	0.5	0.0	0.0	0.0	3.5	2.0	2.5	10.5	8.5	9.5
3	0.5	0.0	0.5	0.0	0.0	0.0	4.5	2.5	3.0	10.5	8.5	9.5
4	1.0	0.0	0.5	0.0	0.0	0.0	6.0	4.0	5.0	9.5	7.5	8.5
5	1.0	0.0	0.5	0.0	0.0	0.0	7.5	6.0	6.5	8.5	7.5	8.0
6	1.0	0.0	0.5	0.5	0.0	0.0	8.0	7.5	7.5	8.5	6.5	7.5
7	1.5	1.0	1.0	0.0	0.0	0.0	8.0	7.0	7.5	8.5	6.5	7.0
8	1.5	1.0	1.5	0.0	0.0	0.0	8.0	5.5	6.5	8.0	6.0	7.0
9	1.5	1.0	1.0	0.5	0.0	0.0	8.0	5.5	6.5	8.0	6.0	7.0
10	1.5	0.5	1.0	0.5	0.0	0.5	8.5	6.0	7.0	9.5	7.0	8.0
11	1.5	0.5	1.0	1.5	0.5	1.0	---	---	---	10.0	8.0	9.0
12	1.5	0.5	0.5	2.0	1.5	2.0	9.5	---	---	12.5	8.5	10.0
13	1.0	0.0	0.5	1.5	0.0	1.0	9.0	7.0	8.0	13.5	11.0	12.0
14	1.0	0.5	0.5	2.5	1.0	1.5	8.5	7.0	7.5	13.5	11.0	12.0
15	1.0	0.0	0.5	2.5	1.5	2.0	7.5	5.0	6.0	11.5	8.5	9.5
16	1.0	0.0	0.5	2.5	1.5	2.0	6.5	5.0	5.5	11.0	8.0	9.0
17	1.5	0.5	1.0	2.0	1.0	1.0	6.5	5.5	5.5	11.0	9.0	10.0
18	1.5	1.5	1.5	1.5	1.0	1.0	6.0	4.5	5.5	11.5	9.5	10.5
19	1.5	1.0	1.5	1.5	1.0	1.5	7.0	4.5	5.5	12.5	10.5	11.5
20	2.0	1.5	1.5	1.5	0.0	1.0	8.0	5.5	6.5	12.0	10.5	11.5
21	2.0	1.5	1.5	1.0	0.0	0.0	8.0	6.5	7.0	10.5	7.5	9.0
22	3.0	2.0	2.5	1.5	0.0	0.5	9.0	6.5	7.5	7.5	6.5	7.0
23	2.5	1.0	2.0	3.0	0.5	1.5	9.0	6.0	7.0	7.0	6.5	6.5
24	1.0	0.0	0.0	4.0	3.0	3.5	7.5	5.0	6.0	9.5	7.0	8.0
25	0.5	0.0	0.0	4.5	4.0	4.0	8.5	5.5	7.0	10.0	8.0	9.0
26	0.0	0.0	0.0	5.5	4.0	4.5	9.0	7.0	8.0	11.5	9.5	10.5
27	0.0	0.0	0.0	6.0	5.0	5.5	9.0	7.5	7.5	12.5	10.0	11.0
28	0.0	0.0	0.0	5.5	4.0	4.5	8.0	6.5	7.5	12.0	10.5	11.0
29	---	---	---	5.0	4.5	4.5	9.5	7.0	8.0	11.5	10.0	10.5
30	---	---	---	5.5	4.5	5.0	10.0	8.0	9.0	11.5	10.5	11.0
31	---	---	---	6.0	5.0	5.5	---	---	---	11.5	9.0	10.5
MONTH	3.0	0.0	1.0	6.0	0.0	1.5	---	---	---	13.5	6.0	9.5

		JUNE			JULY			AUGUST			SEPTEMBER	
1	11.5	10.0	10.5	15.5	13.5	14.5	18.0	16.5	17.0	17.5	15.5	16.5
2	10.5	10.0	10.0	16.0	13.5	14.5	18.0	17.0	17.5	16.0	15.0	15.5
3	11.0	9.5	10.0	16.0	14.5	15.0	18.0	16.5	17.0	17.5	16.0	16.5
4	11.5	10.0	11.0	17.5	15.0	16.0	17.5	16.0	17.0	18.0	16.5	17.0
5	11.5	11.0	11.0	17.5	15.0	16.0	17.5	16.5	17.0	18.0	16.5	17.5
6	12.0	11.0	11.5	18.5	15.5	16.5	17.5	16.0	16.5	17.5	15.5	17.0
7	11.0	10.0	11.0	19.0	16.5	17.5	16.5	15.0	15.5	15.5	14.5	15.0
8	10.5	9.0	10.0	18.0	16.0	17.0	15.0	13.5	14.5	14.5	13.5	14.5
9	9.0	7.0	8.0	17.5	14.0	15.5	17.0	13.5	15.0	14.5	13.5	14.0
10	7.5	6.5	7.0	19.0	15.5	17.0	17.5	15.0	16.0	14.5	13.5	14.0
11	10.0	7.0	8.5	21.0	17.0	18.5	18.0	16.0	17.0	15.5	14.5	15.0
12	12.0	9.5	10.5	21.5	18.5	20.0	18.5	15.5	17.0	15.5	14.5	15.0
13	13.5	10.5	12.0	22.5	19.5	20.5	18.5	16.0	17.5	16.0	14.5	15.5
14	15.0	12.0	13.5	22.5	20.0	21.0	18.5	16.5	17.5	15.5	14.5	15.0
15	15.5	13.0	14.0	22.5	20.5	21.0	18.5	16.0	17.5	15.5	14.5	15.0
16	15.0	13.5	14.0	22.0	19.0	20.0	18.0	15.5	17.0	15.5	14.5	15.0
17	14.5	13.0	14.0	21.0	18.5	19.5	17.0	14.5	16.0	15.0	14.0	14.5
18	13.0	11.5	12.5	21.5	18.5	20.0	17.0	14.5	16.0	14.0	13.0	13.5
19	11.5	10.0	10.5	21.5	19.5	20.5	17.0	14.5	16.0	13.5	12.5	13.0
20	13.0	9.5	11.0	21.5	19.5	20.0	17.0	15.0	16.0	14.0	12.5	13.5
21	15.0	12.5	13.5	21.0	19.0	20.0	15.5	14.0	15.0	13.0	11.5	12.5
22	15.0	13.5	14.0	21.0	18.5	19.5	15.5	13.5	14.5	12.0	10.5	11.5
23	15.5	13.5	14.5	21.0	19.5	20.0	16.5	13.5	15.0	12.0	11.0	11.5
24	15.5	13.5	14.5	21.5	20.0	20.5	17.0	15.0	16.0	12.5	11.5	12.0
25	17.0	14.0	15.0	21.5	19.5	20.5	17.5	15.0	16.5	12.5	11.5	12.0
26	17.0	15.0	16.0	21.0	19.0	19.5	17.5	15.5	16.5	12.5	11.0	12.0
27	17.5	16.0	16.5	20.0	18.5	19.0	17.5	15.0	16.5	11.0	10.5	11.0
28	17.0	16.0	16.5	19.5	17.0	18.0	18.5	15.5	17.0	11.0	10.0	10.5
29	16.5	14.5	15.5	18.0	17.0	17.5	18.0	16.0	17.5	11.5	10.5	11.0
30	15.0	13.5	14.0	19.0	17.5	18.0	18.0	16.0	17.0	10.5	10.0	10.5
31	---	---	---	19.0	17.5	18.0	17.5	16.0	17.0	---	---	---
MONTH	17.5	6.5	12.5	22.5	13.5	18.5	18.5	13.5	16.5	18.0	10.0	14.0

PEND OREILLE RIVER BASIN

12340500 CLARK FORK ABOVE MISSOULA, MT--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	OCTOBER MEAN CONCEN-TRATION (MG/L)	OCTOBER LOAD (TONS/DAY)	NOVEMBER MEAN CONCEN-TRATION (MG/L)	NOVEMBER LOAD (TONS/DAY)	DECEMBER MEAN CONCEN-TRATION (MG/L)	DECEMBER LOAD (TONS/DAY)	JANUARY MEAN CONCEN-TRATION (MG/L)	JANUARY LOAD (TONS/DAY)	FEBRUARY MEAN CONCEN-TRATION (MG/L)	FEBRUARY LOAD (TONS/DAY)	MARCH MEAN CONCEN-TRATION (MG/L)	MARCH LOAD (TONS/DAY)
1	4	9.2	6	23	4	12	2	5.4	2	5.5	3	8.3
2	4	9.3	6	22	4	12	5	12	2	5.5	3	8.1
3	7	16	6	21	4	12	6	15	3	7.7	3	7.7
4	7	16	6	21	4	12	5	14	3	7.7	3	8.3
5	7	17	6	21	4	12	4	12	3	8.0	5	14
6	6	15	5	17	4	11	4	12	4	10	4	11
7	6	15	5	17	5	15	5	15	5	14	3	7.5
8	5	13	5	17	5	15	5	16	7	21	4	9.6
9	6	16	6	20	4	11	5	18	8	24	4	11
10	6	16	6	20	4	11	5	17	7	18	5	13
11	6	17	6	19	4	11	4	13	6	17	7	21
12	7	20	5	16	3	8.0	4	13	5	13	11	38
13	7	21	5	16	3	8.2	3	9.4	5	13	24	105
14	7	22	5	16	3	9.3	3	9.1	4	11	16	62
15	7	23	5	16	3	8.6	3	8.6	3	7.2	10	36
16	7	23	5	16	3	7.8	3	8.3	3	7.6	8	27
17	7	22	5	16	3	8.6	3	8.3	4	10	7	22
18	7	21	6	19	3	8.0	3	8.2	4	11	7	19
19	7	23	6	19	2	5.1	3	7.9	5	14	8	24
20	7	23	6	19	2	5.1	3	8.2	5	14	8	24
21	7	23	6	19	2	5.7	3	8.4	5	13	4	9.6
22	7	23	5	16	2	5.9	4	11	6	17	4	10
23	6	20	4	13	2	5.4	4	11	7	23	7	22
24	6	20	3	9.9	2	4.6	4	10	8	24	9	31
25	6	20	3	9.6	2	4.0	4	11	8	19	12	45
26	6	20	4	13	3	5.3	5	15	8	14	17	67
27	6	20	4	12	3	4.9	4	11	8	19	21	91
28	6	20	4	12	3	4.5	4	10	6	16	29	135
29	7	24	4	11	4	7.6	4	9.8	---	---	16	71
30	6	21	4	12	3	6.9	3	7.3	---	---	13	56
31	6	21	---	---	2	5.4	2	5.3	---	---	12	53
TOTAL	---	589.5	---	498.5	---	262.9	---	340.2	---	384.2	---	1067.1

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	15	77	8	66	96	2970	16	260	5	23	7	21
2	21	113	9	79	79	2420	15	220	5	22	7	22
3	17	75	9	88	68	2050	13	170	4	17	7	22
4	14	59	10	106	57	1610	10	124	4	16	6	18
5	12	51	10	104	47	1230	10	114	10	47	6	17
6	14	72	9	92	41	1050	8	86	8	38	8	25
7	29	207	9	88	37	939	8	81	15	70	10	33
8	38	266	8	74	37	888	6	60	32	151	11	38
9	25	163	7	60	31	705	5	50	49	239	9	32
10	18	114	7	56	30	688	5	47	59	283	8	28
11	16	109	6	46	35	790	5	44	92	418	7	24
12	16	117	7	51	34	696	5	40	155	672	5	16
13	19	154	5	37	27	515	6	46	154	635	5	16
14	22	232	7	60	24	449	6	43	114	449	6	19
15	38	535	10	102	25	500	6	42	90	340	6	18
16	30	421	10	107	35	776	6	43	106	386	6	18
17	24	305	10	106	48	1180	6	42	121	425	6	18
18	22	258	11	122	58	1510	5	32	111	376	8	24
19	13	138	15	189	55	1400	12	76	94	311	9	28
20	11	107	40	700	43	983	17	109	103	334	9	28
21	11	103	102	2490	30	606	15	91	92	299	9	27
22	9	81	97	2720	25	485	13	77	80	272	8	24
23	10	89	73	1900	28	595	12	69	70	239	8	23
24	7	64	49	1100	53	1180	10	57	70	232	7	20
25	6	52	36	705	37	773	9	49	66	220	7	20
26	6	51	29	527	27	531	7	38	56	186	9	26
27	7	59	26	488	25	466	7	39	52	169	10	29
28	8	66	31	643	27	501	6	32	59	192	10	29
29	8	64	46	1090	21	384	6	31	71	233	10	29
30	7	56	84	2360	19	340	5	25	34	103	10	31
31	---	---	94	2880	---	---	5	23	8	22	---	---
TOTAL	---	4258	---	19236	---	29210	---	2260	---	7419	---	723

TOTAL LOAD FOR YEAR: 166248.4 tons

PEND OREILLE RIVER BASIN

12342500 WEST FORK BITTERROOT RIVER NEAR CONNER, MT

LOCATION.--Lat 45°43'30", long 114°16'50" (NAD 27), in SE$^1/_4$NE$^1/_4$NW$^1/_4$ sec.26, T.1 S., R.22 W., Ravalli County, Hydrologic Unit 17010205, on right bank 0.6 mi downstream from Painted Rocks Lake, 6.4 mi upstream from Nez Perce Creek, 16.1 mi southwest of Conner, and at river mile 19.2.
DRAINAGE AREA.--317 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1941 to current year.
REVISED RECORDS.--WSP 1246: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 4,581.36 ft (NGVD 29) (U.S. Forest Service bench mark).
REMARKS.--Water-discharge records good. Flow regulated by Painted Rocks Lake (station 12342000). Diversions for irrigation of about 200 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	127	52	71	66	78	74	75	194	1680	394	228	333
2	123	52	71	66	78	74	76	195	1690	363	270	329
3	122	52	71	66	77	74	76	197	1560	338	262	328
4	87	52	71	66	76	74	76	199	1380	317	262	324
5	50	52	71	66	76	74	76	201	1250	301	262	324
6	50	54	71	66	76	74	78	204	1190	288	262	366
7	50	54	71	66	76	74	79	204	1170	281	261	387
8	50	54	71	72	76	74	80	205	1110	275	298	383
9	50	54	71	80	76	74	80	206	1010	263	329	322
10	50	54	71	78	76	74	81	244	922	224	328	278
11	50	54	69	78	76	74	81	270	823	214	324	275
12	51	54	69	78	76	74	82	270	742	214	324	274
13	51	54	69	78	76	74	83	270	681	210	324	273
14	51	54	69	78	76	74	84	270	661	204	321	270
15	51	54	69	78	76	74	115	270	683	197	338	270
16	51	54	69	78	76	74	146	270	727	194	351	270
17	51	54	69	78	76	74	145	270	767	191	348	270
18	51	54	69	78	76	74	148	272	784	189	346	266
19	51	54	69	78	75	74	148	275	773	195	346	266
20	51	54	69	78	74	74	148	854	688	214	342	262
21	51	54	69	78	74	74	150	1540	635	200	339	262
22	51	55	69	78	74	74	151	1500	620	184	366	258
23	52	55	69	78	74	74	172	1230	650	175	365	257
24	52	55	69	78	75	74	190	1040	617	170	346	200
25	52	55	69	78	74	74	190	937	529	168	343	175
26	52	55	68	78	74	74	190	904	507	168	342	174
27	52	55	67	78	74	74	190	962	507	168	341	174
28	52	55	67	78	74	74	190	1090	468	168	338	174
29	52	55	67	77	---	74	190	1290	454	168	338	174
30	52	66	67	77	---	74	194	1530	443	168	333	174
31	52	---	66	78	---	74	---	1690	---	168	333	---
TOTAL	1838	1630	2147	2328	2115	2294	3764	19053	25721	6971	9910	8092
MEAN	59.29	54.33	69.26	75.10	75.54	74.00	125.5	614.6	857.4	224.9	319.7	269.7
MAX	127	66	71	80	78	74	194	1690	1690	394	366	387
MIN	50	52	66	66	74	74	75	194	443	168	228	174
AC-FT	3650	3230	4260	4620	4200	4550	7470	37790	51020	13830	19660	16050

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

MEAN	157.4	113.0	91.28	84.01	80.35	94.13	203.2	806.5	916.9	266.9	200.4	177.6
MAX	484	416	270	243	215	277	719	2011	1960	633	439	385
(WY)	1943	1945	1960	1957	1957	1952	1956	1947	1964	1975	1995	1973
MIN	52.3	53.3	27.8	21.4	6.80	7.85	8.65	119	118	127	84.5	62.4
(WY)	1999	1988	1958	1977	1944	1944	1944	1977	1987	1973	1945	1944

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1941 - 2002	
ANNUAL TOTAL	57779		85863			
ANNUAL MEAN	158.3		235.2		267.8	
HIGHEST ANNUAL MEAN					457	1976
LOWEST ANNUAL MEAN					120	1977
HIGHEST DAILY MEAN	948	May 16	a1690	May 31	3900	May 9 1947
LOWEST DAILY MEAN	48	Jan 1	b50	Oct 5	e0.60	May 3 1954
ANNUAL SEVEN-DAY MINIMUM	48	Jan 1	50	Oct 5	0.66	May 1 1954
MAXIMUM PEAK FLOW			c1710	May 31	4060	May 9 1947
MAXIMUM PEAK STAGE			4.11	May 31	6.18	May 9 1947
INSTANTANEOUS LOW FLOW			d8.9	Sep 24	f0.20	Nov 25 1952
ANNUAL RUNOFF (AC-FT)	114600		170300		194000	
10 PERCENT EXCEEDS	364		564		636	
50 PERCENT EXCEEDS	91		78		116	
90 PERCENT EXCEEDS	48		54		58	

a--Also June 2.
b--October 5-11.
c--May 31, June 1, 2.
d--Momentary dam shut down. Gage height, 0.60 ft.
e--May 3-7, 1954.
f--Dam shut down.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 2001 to current year.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001									
29...	1615	52	7.7	72	12.5	5.5	.24	.037	E.002
APR 2002									
16...	1640	148	7.9	71	9.5	4.5	.21	.187	<.002
JUN									
04...	0945	1410	7.5	42	11.0	9.0	.18	.019	<.002
25...	1730	402	7.8	45	27.0	11.5	.14	.014	<.002
SEP									
03...	1615	329	7.8	62	29.0	15.5	.16	.023	E.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC PARTIC-ULATE TOTAL (MG/L AS C) (00689)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001							
29...	<.007	.019	2.3	.5	92	2	.28
APR 2002							
16...	<.007	.022	3.3	.5	93	6	2.4
JUN							
04...	<.007	.020	3.8	.3	97	4	15.2
25...	<.007	.018	3.0	.4	86	3	3.3
SEP							
03...	<.007	.011	2.2	.2	93	3	2.7

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
JUN 2002											
04...	0945	16	5.05	.809	.56	.2	1.79	19	.65	.1	10.7
25...	1730	16	5.18	.818	.55	.2	1.80	20	.82	E.1	11.0

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)
JUN 2002										
04...	1.9	.05	126	33	.3	<2	<.04	<.1	<.8	<.8
25...	1.7	.05	36.6	34	.3	<2	<.04	<.1	<.8	<.8

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
JUN 2002								
04...	1.9	2.5	.09	<1	.19	<1	<1	2
25...	1.5	1.8	.10	<1	.07	<1	2	2

E--Estimated.

PEND OREILLE RIVER BASIN

455550113432001 MOOSE CREEK NEAR SULA, MT

LOCATION.--Lat 45°55'50", long 113°43'20" (NAD 27), in SE$^1/_4$SE$^1/_4$SW$^1/_4$ sec.9, T.2 N., R.17 W., Ravalli, Hydrologic Unit 17010205, 50 ft upstream from culvert at U.S. Forest Service campground, 0.6 mi north of East Fork Service Station (U.S. Forest Service), and 13.5 mi northeast of Sula.
PERIOD OF RECORD.--March 2001 to current year.
GAGE.--Elevation at site is 5,260 ft (NGVD 29).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)
OCT											
30...	0920	7.7	7.9	89	4.5	3.5	E.06	<.013	<.002	E.005	.011
APR											
17...	0900	14	7.8	80	1.0	0.5	.17	.027	<.002	E.004	.011
JUN											
03...	1235	136	8.1	39	12.0	4.5	.17	<.013	<.002	<.007	.016
25...	1430	72	8.0	49	25.0	11.0	.11	<.013	<.002	E.004	.012
SEP											
04...	0930	8.0	7.9	88	6.0	7.5	.13	<.013	<.002	E.006	.012

DATE	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC PARTIC-ULATE TOTAL (MG/L AS C) (00689)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT					
30...	2.6	.2	83	2	.04
APR					
17...	5.5	.3	80	2	.08
JUN					
03...	5.8	.4	44	8	2.9
25...	3.4	.3	52	2	.39
SEP					
04...	1.5	.7	40	2	.04

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
JUN											
03...	1235	17	5.69	.587	.73	.1	.90	19	E.19	<.1	8.3
25...	1430	23	7.82	.740	.80	.1	.99	25	E.18	<.1	8.6

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
JUN											
03...	1.2	.4	<2	<.04	<.1	<.8	<.8	.7	.8	.10	<1
25...	1.3	.3	<2	<.04	E.1	<.8	<.8	.4	.9	<.08	<1

DATE	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
JUN				
03...	.19	<1	<1	1
25...	<.06	<1	<1	1

E--Estimated.

PEND OREILLE RIVER BASIN

12343400 EAST FORK BITTERROOT RIVER NEAR CONNER, MT

LOCATION.--Lat 45°53'00", long 114°03'53" (NAD 27), in NE$^1/_4$SW$^1/_4$NE$^1/_4$ sec.34, T.2 N., R.20 W., Ravalli County, Hydrologic Unit 17010205, on right bank 10 ft downstream from private bridge, 4.3 mi southwest of Conner, and at river mile 6.1.
DRAINAGE AREA.--381 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1956 to September 1972, October 2000 to current year.
GAGE.--Water-stage recorder. Datum of gage is 4,191.81 ft (NGVD 29).
REMARKS.--Water-discharge records good except those for Apr. 15-23, which are fair, and those for estimated daily discharges, which are poor. Diversions for irrigation of about 2,200 acres above station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	124	81	e80	e77	e75	101	354	1400	491	144	108
2	66	113	88	e77	e73	e60	97	386	1510	454	141	101
3	64	110	89	e80	e67	e55	89	449	1390	426	138	100
4	64	107	70	e77	e70	e67	98	441	1240	397	148	100
5	66	103	e65	e73	e70	e70	121	472	1160	373	156	98
6	67	102	e70	e77	e70	e70	158	465	1150	357	154	100
7	67	100	e80	e90	e75	e60	176	444	1090	347	150	137
8	68	90	e70	e105	e75	e65	158	414	1030	334	173	138
9	74	92	e75	e110	e70	e70	161	378	972	310	165	120
10	75	93	e55	e95	e67	e73	173	366	934	293	136	110
11	84	104	e60	e93	e70	74	175	346	880	274	127	106
12	85	106	e65	e95	e63	93	180	336	865	256	122	99
13	91	103	e80	e90	e65	78	216	360	815	248	118	98
14	97	103	e90	e77	e70	73	372	440	823	249	113	95
15	98	101	e70	e80	e63	65	492	510	858	281	110	92
16	86	99	e75	e77	e67	68	398	525	902	282	106	88
17	87	99	e80	e75	e70	67	331	579	964	275	98	90
18	88	103	e65	e75	e70	64	292	672	966	228	100	96
19	83	98	e70	e73	e70	65	265	863	924	244	100	93
20	98	96	e70	e77	67	70	253	1140	792	234	99	89
21	97	99	e75	e80	69	65	260	1340	735	207	115	87
22	90	100	e70	e70	77	71	248	1190	778	193	134	86
23	115	98	e45	e70	79	81	276	972	866	187	118	85
24	104	89	e37	e77	74	85	236	853	759	185	116	84
25	94	88	e33	e83	e50	88	236	821	698	180	113	83
26	90	87	e30	e80	e55	87	250	827	655	193	109	83
27	91	81	e35	e73	e73	99	279	906	620	178	128	84
28	98	53	e50	e60	e80	89	275	1010	594	171	125	87
29	111	e75	e70	e50	---	85	280	1170	596	161	117	86
30	110	e90	e75	e70	---	85	315	1440	573	154	115	92
31	115	---	e75	e77	---	88	---	1440	---	150	114	---
TOTAL	2690	2906	2063	2466	1946	2305	6961	21909	27539	8312	3902	2915
MEAN	86.77	96.87	66.55	79.55	69.50	74.35	232.0	706.7	918.0	268.1	125.9	97.17
MAX	115	124	90	110	80	99	492	1440	1510	491	173	138
MIN	64	53	30	50	50	55	89	336	573	150	98	83
AC-FT	5340	5760	4090	4890	3860	4570	13810	43460	54620	16490	7740	5780

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2002, BY WATER YEAR (WY)*

MEAN	116.8	104.3	89.89	84.11	90.34	107.5	243.7	945.3	1111	303.9	129.3	113.5
MAX	206	137	168	115	170	215	476	1482	1962	520	203	187
(WY)	2001	1960	1965	1969	1963	1972	1969	1971	1972	1964	1965	1965
MIN	83.3	78.5	39.4	56.8	51.6	74.4	109	520	355	126	72.6	81.1
(WY)	1967	1967	1961	1961	2001	2002	1970	1966	1966	1966	1961	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1956 - 2002*	
ANNUAL TOTAL	67290		85914			
ANNUAL MEAN	184.4		235.4		284.4	
HIGHEST ANNUAL MEAN					400	1965
LOWEST ANNUAL MEAN					170	1966
HIGHEST DAILY MEAN	1120	May 15	1510	Jun 2	3640	Jun 2 1972
LOWEST DAILY MEAN	30	Dec 26	30	Dec 26	25	Dec 8 1960
ANNUAL SEVEN-DAY MINIMUM	43	Dec 22	43	Dec 22	27	Dec 6 1960
MAXIMUM PEAK FLOW			1610	May 31	4000	Jun 2 1972
MAXIMUM PEAK STAGE			5.46	May 31	7.17	Jun 2 1972
INSTANTANEOUS LOW FLOW					a23	Nov 29 1960
ANNUAL RUNOFF (AC-FT)	133500		170400		206100	
10 PERCENT EXCEEDS	556		745		815	
50 PERCENT EXCEEDS	91		99		115	
90 PERCENT EXCEEDS	55		67		72	

*--During period of operation (April 1956 to September 1972, and October 2000 to current year).
a--Discharge measurement, result of freezeup.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 2001 to current year.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001									
29...	1250	114	8.1	113	13.5	6.5	.13	<.013	<.002
APR 2002									
02...	0915	100	--	125	-7.0	.0	--	--	--
16...	1320	380	8.0	97	16.0	3.5	.37	.440	E.002
JUN									
03...	1630	1320	8.0	55	19.0	10.0	.26	.066	<.002
25...	1050	705	8.3	68	25.0	11.5	.20	<.013	<.002
JUL									
17...	1300	265	--	85	32.0	16.5	--	--	--
SEP									
03...	1340	100	8.4	116	30.0	15.0	.14	<.013	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC PARTIC-ULATE TOTAL (MG/L AS C) (00689)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001							
29...	.007	.021	1.9	.6	80	6	1.8
APR 2002							
02...	--	--	--	--	91	26	7.0
16...	.021	.104	5.5	3.1	10	492	505
JUN							
03...	.013	.041	4.2	1.3	49	23	82.0
25...	.012	.034	3.2	.9	69	10	19.0
JUL							
17...	--	--	--	--	96	935	669
SEP							
03...	.014	.030	2.1	.5	92	3	.81

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
JUN 2002											
03...	1630	21	6.92	.990	.74	.2	1.87	24	.90	E.1	10.5
25...	1050	29	9.26	1.31	.74	.2	2.24	32	.99	<.1	11.1

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)
JUN 2002											
03...	2.3	.05	139	39	.4	<2	<.04	<.1	<.8	<.8	1.4
25...	2.3	.06	89.7	47	.4	<2	<.04	E.1	<.8	E.4	1.2

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
JUN 2002							
03...	2.4	.13	<1	.21	<1	2	4
25...	5.2	.21	<1	E.04	<1	2	3

E--Estimated.

PEND OREILLE RIVER BASIN

12344000 BITTERROOT RIVER NEAR DARBY, MT

LOCATION.--Lat 45°58'20", long 114°08'26" (NAD 27), in SW$^1/_4$SE$^1/_4$NE$^1/_4$ sec.36, T.3 N., R.21 W., Ravalli County, Hydrologic Unit 17010205, on left bank 50 ft upstream from bridge on U.S. Highway 93, 0.3 mi downstream from Chaffin Creek, 4.1 mi southeast of Darby, and at river mile 77.2.
DRAINAGE AREA.--1,049 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1937 to current year. Monthly discharge only for April 1937, published in WSP 1316.
REVISED RECORDS.--WSP 1246: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 3,942.14 ft (NGVD 29). Prior to Oct. 1, 1987, at datum 1.00 ft higher. Prior to Aug. 2, 1939, nonrecording gage at highway bridge 45 ft upstream at same datum.
REMARKS.--Water-discharge records good. Some regulation by Painted Rocks Lake (station number 12342000). Diversions for irrigation of about 5,000 acres upstream from station. Ditch bypassing station irrigates about 500 acres downstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	218	362	240	228	235	238	322	1210	5350	1940	431	484
2	216	326	247	222	226	e190	328	1330	5660	1690	490	468
3	215	312	248	228	215	e180	313	1530	5060	1540	474	463
4	214	300	220	224	218	236	336	1460	4490	1480	508	460
5	166	293	207	219	216	244	403	1470	4130	1380	532	454
6	159	290	221	230	217	245	544	1400	4230	1260	506	477
7	157	283	243	259	227	193	672	1280	4040	1260	496	560
8	157	263	219	290	228	215	625	1180	3690	1280	532	568
9	168	259	233	302	221	226	630	1070	3320	1150	570	522
10	171	255	181	269	212	238	674	1040	3030	994	529	435
11	198	263	188	266	219	244	697	1010	2730	935	511	422
12	204	270	203	271	204	286	710	983	2550	904	501	411
13	225	267	239	261	207	249	832	1060	2430	873	490	403
14	243	262	263	240	218	240	1540	1360	2640	848	480	398
15	250	262	214	242	204	226	2140	1560	3000	842	479	391
16	215	259	226	234	212	227	1630	1540	3260	820	491	385
17	210	262	245	231	222	224	1290	1630	3480	772	480	387
18	213	271	195	230	221	217	1100	1870	3360	701	476	393
19	204	259	222	228	219	223	936	2500	3070	719	475	390
20	256	254	222	234	222	229	869	3840	2580	728	472	381
21	255	263	237	238	218	218	836	5190	2520	642	508	375
22	233	267	231	220	244	224	807	4670	2760	580	548	371
23	297	267	e165	220	258	244	908	3720	2980	548	546	370
24	279	251	e140	233	254	257	895	3120	2740	540	513	357
25	249	245	e130	251	e170	270	877	2820	2670	538	504	295
26	238	241	e125	245	e180	274	908	2830	2560	565	492	298
27	239	231	e140	230	e235	299	964	3240	2550	524	523	297
28	255	170	e175	e185	249	290	928	3780	2460	490	518	300
29	283	215	e215	e160	---	286	944	4540	2420	465	514	299
30	291	260	222	224	---	285	1060	5470	2310	446	507	307
31	336	---	221	235	---	292	---	5700	---	432	500	---
TOTAL	7014	7982	6477	7349	6171	7509	25718	75403	98070	27886	15596	12121
MEAN	226.3	266.1	208.9	237.1	220.4	242.2	857.3	2432	3269	899.5	503.1	404.0
MAX	336	362	263	302	258	299	2140	5700	5660	1940	570	568
MIN	157	170	125	160	170	180	313	983	2310	432	431	295
AC-FT	13910	15830	12850	14580	12240	14890	51010	149600	194500	55310	30930	24040

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2002, BY WATER YEAR (WY)

MEAN	358.1	316.1	280.8	250.5	270.0	351.8	964.3	2868	3067	983.4	407.9	348.6
MAX	1020	788	765	421	791	1011	2530	5995	6235	2608	751	634
(WY)	1947	1947	1947	1947	1996	1972	1943	1947	1964	1975	1975	1941
MIN	143	144	138	125	125	139	306	1110	678	210	141	129
(WY)	1938	1988	1988	1988	1941	1944	1937	1977	1987	1940	1940	1937

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1937 - 2002	
ANNUAL TOTAL	202524		297296			
ANNUAL MEAN	554.9		814.5		879.0	
HIGHEST ANNUAL MEAN					1423	1976
LOWEST ANNUAL MEAN					454	1987
HIGHEST DAILY MEAN	3370	May 16	5700	May 31	11000	May 9 1947
LOWEST DAILY MEAN	125	Dec 26	125	Dec 26	80	Feb 9 1939
ANNUAL SEVEN-DAY MINIMUM	156	Dec 23	156	Dec 23	98	Jan 1 1988
MAXIMUM PEAK FLOW			6140	May 31	b11500	May 9 1947
MAXIMUM PEAK STAGE			6.57	May 31	8.43	May 17 1997
INSTANTANEOUS LOW FLOW			121	Dec 24	c71	Feb 9 1939
INSTANTANEOUS LOW STAGE			a0.81	Dec 24		
ANNUAL RUNOFF (AC-FT)	401700		589700		636800	
10 PERCENT EXCEEDS	1560		2550		2380	
50 PERCENT EXCEEDS	293		302		368	
90 PERCENT EXCEEDS	167		214		195	

a--Result of freezeup.
b--Gage height, 8.18 ft, datum then in use.
c--Observed.
e--Estimated.

12344000 BITTERROOT RIVER NEAR DARBY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1997-98, October 2000 to to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Seasonal records, April 2001 to current year.

INSTRUMENTATION.--Temperature probe installed Mar. 27, 2001.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (Seasonal records): Maximum, 24.5°C, Aug. 8, 2001; minimum,0.5°C, Apr.2, 3, 2002.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum, 19.5°C, several days in July; minimum, 0.5°C, Apr. 2, 3.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001									
29...	1340	285	7.9	81	14.5	6.5	.11	.016	<.002
APR 2002									
02...	1100	334	--	90	-3.0	2.0	--	--	--
16...	1430	1570	7.9	66	9.5	5.0	.44	.246	<.002
JUN									
04...	0730	4680	7.5	40	12.0	7.0	.17	.035	<.002
25...	0830	2780	7.9	37	18.5	9.5	.15	<.013	<.002
JUL									
17...	1445	772	--	60	30.0	18.5	--	--	--
SEP									
03...	1415	463	8.0	74	27.5	16.5	.11	E.011	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC PARTIC-ULATE TOTAL (MG/L AS C) (00689)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001							
29...	E.004	.013	1.8	.3	88	3	2.3
APR 2002							
02...	--	--	--	--	91	15	13.5
16...	.016	.091	4.9	3.2	64	79	335
JUN							
04...	<.007	.024	3.4	.7	30	26	329
25...	<.007	.016	2.6	.7	50	10	75.1
JUL							
17...	--	--	--	--	96	885	1840
SEP							
03...	E.004	.012	1.9	.3	89	2	2.5

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
JUN 2002											
04...	0730	15	4.65	.714	.52	.2	1.55	18	.46	E.1	9.1
25...	0830	15	4.87	.726	.51	.2	1.48	18	.67	<.1	8.2

E--Estimated.

12344000 BITTERROOT RIVER NEAR DARBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)
JUN 2002										
04...	1.6	.04	373	29	.2	<2	<.04	<.1	<.8	<.8
25...	1.4	.04	216	29	.2	<2	<.04	<.1	<.8	<.8

DATE	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
JUN 2002								
04...	1.2	2.3	E.08	<1	.19	<1	2	3
25...	1.9	10.2	.23	<1	E.03	<1	2	5

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	5.0	2.5	4.0	9.5	4.5	7.0	9.0	7.0	8.0	14.5	10.0	12.0
2	5.0	0.5	3.0	9.5	4.0	6.5	8.5	6.5	7.5	15.0	9.5	12.0
3	6.5	0.5	3.5	8.5	5.5	7.0	10.0	6.5	8.0	15.5	10.5	13.0
4	8.0	1.5	5.0	8.5	3.5	6.0	9.5	6.5	8.0	16.0	11.5	13.5
5	8.0	2.5	5.5	7.5	5.0	6.0	10.0	7.0	8.5	15.5	10.5	13.0
6	8.0	4.0	6.0	7.0	4.0	5.5	11.0	7.0	9.0	16.0	11.0	13.5
7	5.5	3.5	4.5	6.0	4.0	5.0	10.0	6.5	8.5	15.5	12.0	14.0
8	7.5	2.0	5.0	7.5	2.5	5.0	8.0	6.0	7.0	15.5	11.5	13.5
9	6.0	3.0	4.5	6.5	2.5	5.0	7.0	5.5	6.0	16.0	10.5	13.5
10	6.5	3.5	5.0	9.0	4.0	6.5	8.0	5.0	6.5	17.5	11.0	14.5
11	6.5	3.0	5.0	10.0	3.5	7.0	11.0	6.0	8.5	19.0	12.5	16.0
12	7.5	4.0	5.5	11.0	4.5	8.0	12.5	7.0	9.5	19.0	13.5	16.5
13	8.0	4.0	6.0	11.5	5.5	9.0	13.0	7.0	10.0	18.0	14.0	16.5
14	6.5	3.0	5.0	10.5	6.5	8.5	12.5	8.0	10.0	19.0	14.5	17.0
15	4.0	1.5	3.0	8.0	4.5	6.5	12.5	8.0	10.5	18.5	14.5	16.5
16	5.5	2.0	3.5	10.0	5.0	7.5	12.0	8.0	10.0	17.5	14.0	16.0
17	4.5	3.0	3.5	9.5	5.0	7.5	11.5	8.5	10.0	18.5	14.0	16.0
18	4.5	2.0	3.5	10.5	5.5	8.0	10.0	8.0	9.0	19.0	14.0	16.5
19	7.0	2.0	4.5	10.0	5.5	8.0	11.0	7.0	9.0	18.0	14.5	16.0
20	7.5	2.0	5.0	8.5	5.0	7.0	13.0	7.5	10.0	19.5	13.5	16.5
21	7.0	3.0	5.0	7.5	5.5	6.0	13.0	8.5	10.5	19.0	13.5	16.5
22	9.5	4.0	7.0	7.0	5.5	6.0	12.5	9.0	10.5	19.0	13.5	16.5
23	8.0	4.5	6.0	7.0	5.0	6.0	12.0	8.5	10.0	19.0	14.5	16.5
24	7.5	2.0	5.0	9.5	5.0	7.0	13.5	9.0	11.0	19.5	14.0	16.5
25	8.5	3.0	5.5	9.0	5.5	7.5	14.5	9.5	12.0	17.5	13.5	16.0
26	8.5	4.0	6.0	10.0	6.5	8.5	14.5	10.0	12.5	19.0	13.5	16.0
27	7.5	4.0	5.5	9.5	6.5	8.0	14.0	10.5	12.5	18.5	14.5	16.5
28	9.0	3.5	6.0	10.5	6.5	8.5	14.5	10.5	12.5	19.0	13.0	16.0
29	10.0	3.5	7.0	10.5	7.0	8.5	13.5	11.0	12.0	19.5	14.0	16.5
30	10.0	4.5	7.0	10.0	6.5	8.0	14.5	9.5	12.0	19.5	13.5	16.5
31	---	---	---	10.5	6.0	8.0	---	---	---	18.5	13.5	16.0
MONTH	10.0	0.5	5.0	11.5	2.5	7.0	14.5	5.0	9.5	19.5	9.5	15.5

PEND OREILLE RIVER BASIN

12344000 BITTERROOT RIVER NEAR DARBY, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER	
1	18.0	11.5	14.5	16.5	13.0	15.5
2	17.5	11.5	15.0	18.5	13.0	16.0
3	17.0	11.5	14.5	17.5	13.0	15.5
4	17.5	13.0	15.0	18.0	13.0	15.5
5	16.5	13.0	15.0	17.0	13.5	15.5
6	15.5	12.5	14.0	15.5	13.5	14.5
7	14.0	12.0	13.0	14.5	13.0	13.5
8	14.5	11.0	12.5	15.0	10.5	13.0
9	16.5	10.0	13.0	16.0	10.5	13.5
10	17.5	11.0	14.5	16.5	11.0	14.0
11	16.5	12.0	14.5	17.0	11.5	14.5
12	17.0	11.0	14.5	17.0	11.5	14.5
13	17.5	11.5	14.5	16.5	12.0	14.5
14	17.5	11.5	15.0	16.5	11.0	14.0
15	17.5	11.5	15.0	16.5	12.5	14.5
16	16.5	11.5	14.5	16.0	12.5	14.5
17	16.0	10.0	13.5	15.0	13.0	14.0
18	17.0	11.0	14.0	14.5	12.0	13.0
19	16.0	11.0	14.0	15.5	10.0	12.5
20	15.0	12.0	13.5	15.0	11.5	13.0
21	15.5	11.5	13.0	13.0	9.0	11.0
22	14.5	10.5	12.5	13.5	8.5	11.0
23	16.0	10.5	13.5	14.0	9.5	12.0
24	16.0	12.5	14.5	14.0	10.0	12.0
25	17.5	12.0	14.5	13.5	9.5	11.5
26	17.0	12.5	15.0	12.5	9.0	11.0
27	17.5	13.0	15.0	11.5	10.5	11.0
28	18.5	13.0	16.0	13.0	8.5	10.5
29	17.0	13.0	15.0	12.0	8.5	10.5
30	16.5	12.5	14.5	10.5	8.0	9.5
31	18.0	12.5	15.0	---	---	---
MONTH	18.5	10.0	14.5	18.5	8.0	13.0

PEND OREILLE RIVER BASIN

12346500 SKALKAHO CREEK NEAR HAMILTON, MT

LOCATION (REVISED).--Lat 46°09'40", long 113°56'52" (NAD 27), in SE$^1/_4$SE$^1/_4$NE$^1/_4$, sec. 27, T.5 N., R.19 W., Ravalli County, Hydrologic Unit 17010205, Bitterroot National Forest, on right bank 2 mi downstream from Daly Creek, 11.4 mi southeast of Hamilton, and at river mile 13.3.
DRAINAGE AREA.--87.8 mi^2.

WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 4,393.16 ft (NGVD 29).
PERIOD OF RECORD.--December 1948 to September 1953, August 1957 to September 1979, October 2000 to current year. April 1920 to September 1924 at site 3 mi downstream; records not equivalent owing to inflow, and minor diversions.
REMARKS,--Water-discharge records good except those for estimated daily discharges, which are poor. During irrigation season, flow is supplemented by releases from Kent and Dam Creek Lakes, combined capacity, 200 acre-ft. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	41	29	e25	e22	e22	22	84	433	173	66	49
2	31	37	29	e24	e23	e20	21	95	390	160	65	47
3	31	37	29	e26	e22	e19	23	106	393	150	64	46
4	31	36	30	e26	e24	e21	22	103	382	143	76	45
5	31	35	30	e25	24	e21	25	106	378	135	78	44
6	31	34	29	e26	24	e20	31	101	382	128	69	46
7	31	33	30	28	24	e18	32	97	376	132	68	56
8	31	32	30	28	23	e19	31	92	374	132	74	50
9	33	32	29	26	22	e20	32	88	327	120	68	46
10	32	31	e22	25	23	22	37	87	305	113	64	44
11	36	31	e23	25	22	22	36	83	282	108	62	43
12	34	31	e25	25	e22	22	40	83	270	104	60	43
13	38	31	e28	25	e21	21	48	94	252	101	58	42
14	38	31	e30	24	e22	21	100	113	263	99	57	41
15	36	31	e26	24	e20	21	105	121	298	99	56	40
16	34	31	e23	24	e22	21	84	121	328	96	55	40
17	36	32	e27	24	e22	20	73	136	352	93	54	41
18	33	32	e22	23	22	20	65	171	358	90	57	42
19	33	31	e23	25	22	20	60	256	302	91	56	40
20	38	31	e23	24	22	21	57	355	261	92	55	39
21	34	31	e24	24	22	22	57	389	257	85	59	38
22	33	31	e25	23	22	23	58	334	265	81	59	38
23	39	31	e20	23	23	22	62	269	260	80	56	38
24	34	29	e16	24	23	22	58	241	239	79	60	37
25	33	30	e15	24	e19	22	58	233	227	77	61	36
26	33	29	e14	24	e20	22	61	250	213	91	55	36
27	33	28	e15	24	e21	22	65	278	205	78	53	36
28	36	e25	e16	e20	e24	21	64	332	203	74	53	36
29	36	e24	e17	e17	---	21	67	372	212	72	52	36
30	37	29	e20	e19	---	21	78	437	191	70	51	40
31	43	---	e24	e22	---	21	---	426	---	68	51	---
TOTAL	1061	947	743	746	622	650	1572	6053	8978	3214	1872	1255
MEAN	34.23	31.57	23.97	24.06	22.21	20.97	52.40	195.3	299.3	103.7	60.39	41.83
MAX	43	41	30	28	24	23	105	437	433	173	78	56
MIN	31	24	14	17	19	18	21	83	191	68	51	36
AC-FT	2100	1880	1470	1480	1230	1290	3120	12010	17810	6370	3710	2490

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2002, BY WATER YEAR (WY)*

MEAN	40.91	34.89	29.46	26.54	25.28	25.82	50.82	230.0	375.1	149.1	67.10	47.11
MAX	66.9	59.5	52.6	49.0	43.1	39.0	94.1	449	644	329	109	74.3
(WY)	1976	1976	1976	1976	1976	1976	1969	1976	1972	1975	1975	1975
MIN	28.5	23.7	21.4	17.6	17.3	17.8	25.2	88.7	109	55.9	38.6	34.8
(WY)	1953	1953	2001	2001	2001	1950	1975	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1949 - 2002*	
ANNUAL TOTAL	21807		27713			
ANNUAL MEAN	59.7		75.9		91.6	
HIGHEST ANNUAL MEAN					138	1976
LOWEST ANNUAL MEAN					48.5	1977
HIGHEST DAILY MEAN	316	May 15	437	May 30	1010	Jun 3 1972
LOWEST DAILY MEAN	13	Jan 8	14	Dec 26	13	Dec 22 1966
ANNUAL SEVEN-DAY MINIMUM	16	Dec 23	16	Dec 23	15	Mar 24 1950
MAXIMUM PEAK FLOW			a491	May 30	d1210	Jun 1 1972
MAXIMUM PEAK STAGE			b3.78	Feb 26	b5.18	Feb 29 1960
INSTANTANEOUS LOW FLOW			11	Mar 18	10	Apr 2 1953
INSTANTANEOUS LOW STAGE			c1.62	Mar 18	c1.26	Apr 2 1953
ANNUAL RUNOFF (AC-FT)	43250		54970		66370	
10 PERCENT EXCEEDS	163		235		259	
50 PERCENT EXCEEDS	33		36		40	
90 PERCENT EXCEEDS	18		21		23	

*--During periods of operation (December 1948 to Septemebr 1953, August 1957 to September 1979, and October 2000 to current year).
a--Gage height, 3.71 ft.
b--Backwater from ice.
c--Result of freezeup.
d--Gage height, 4.84 ft.
e--Estimated.

PEND OREILLE RIVER BASIN

12346500 SKALKAHO CREEK NEAR HAMILTON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1955, June to July 1980, March 2001 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001									
30...	1310	37	8.4	177	8.0	4.0	E.09	.052	<.002
APR 2002									
16...	1830	81	8.2	161	10.5	4.0	.16	.356	<.002
JUN									
04...	1245	358	7.8	134	17.0	5.5	.16	.157	<.002
24...	1745	231	8.2	143	29.0	11.0	.11	.062	<.002
SEP									
04...	1220	46	8.4	196	23.0	9.5	.12	.077	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC PARTIC-ULATE TOTAL (MG/L AS C) (00689)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001							
30...	.009	.012	1.8	.3	62	3	.30
APR 2002							
16...	.017	.030	3.6	.7	54	6	1.3
JUN							
04...	.008	.027	3.0	.8	55	12	11.6
24...	.007	.017	2.1	.3	57	5	3.1
SEP							
04...	.009	.013	1.5	.3	68	2	.25

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
JUN 2002											
04...	1245	66	17.9	5.16	.96	.1	1.11	67	1.09	<.1	8.9
24...	1745	70	19.1	5.40	.99	.1	1.18	72	.70	<.1	9.1

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)
JUN 2002										
04...	3.4	.11	76.8	79	.5	<2	<.04	<.1	<.8	<.8
24...	2.9	.11	51.5	83	.6	<2	<.04	<.1	<.8	<.8

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
JUN 2002								
04...	.4	.6	<.08	<1	.40	<1	<1	<1
24...	.5	.6	<.08	<1	<.06	<1	<1	1

E--Estimated.

PEND OREILLE RIVER BASIN

12350250 BITTERROOT RIVER AT BELL CROSSING, NEAR VICTOR, MT

LOCATION.--Lat 46°26'36", long 114°07'22" (NAD 27), in NW$^1/_4$NW$^1/_4$NE$^1/_4$ sec. 20, T.8 N., R.20 W., Ravalli County, Hydrologic Unit 17010205, on right bank 20 ft downstream from highway bridge at Bell Crossing, 1.5 mi northeast of Victor, 2.0 mi upstream from Big Creek, and at river mile 38.3.

DRAINAGE AREA.--1,963 mi^2.

PERIOD OF RECORD.--April 1987 to current year (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 3,330 ft (NGVD 29).

REMARKS.--Seasonal records good except those for estimated daily discharges, which are fair. Some regulation by Painted Rocks Lake (station number 12342000). Diversions for irrigation of about 80,000 acres upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				e560	1820	7490	3910	383	e517			
2				e590	2010	7500	3370	388	e507			
3				e600	2330	7180	3010	393	e497			
4				e620	2290	6490	2850	438	e507			
5				e670	2180	5980	2700	599	e492			
6				e800	2070	6270	2460	579	e497			
7				e1050	1900	6050	2410	557	e547			
8				e1050	1740	5340	2450	564	e616			
9				e1100	1570	4750	2280	607	e600			
10				e1170	1440	4470	1990	590	e589			
11				e1230	1350	3980	1830	533	e522			
12				e1270	1260	3670	1760	497	e482			
13				e1400	1320	3580	1650	456	e445			
14				e2000	1720	3940	1560	433	e440			
15				e3500	2090	4540	1440	410	e431			
16				e3300	2130	5060	1330	397	e427			
17				e2850	2270	5500	1190	403	e435			
18				e2300	2710	5240	1080	390	e454			
19				e2000	3770	5060	1160	393	e440			
20				e1800	6010	4170	1120	375	e427			
21				e1700	6970	4010	1010	396	e418			
22				e1600	7070	4350	862	e512	e418			
23				1580	5850	5000	775	e547	e442			
24				1590	4790	4770	729	e552	e422			
25				1500	4140	4760	654	e552	e440			
26				1480	4060	4760	662	e547	e436			
27				1560	4850	4810	670	e537	e440			
28				1550	5640	4880	594	e512	e445			
29				1500	6310	4810	525	e502	e459			
30				1580	7870	4930	454	e507	e473			
31				---	8340	---	410	e512	---			
TOTAL				45500	109870	153340	48895	15061	14265			
MEAN				1517	3544	5111	1577	485.8	475.5			
MAX				3500	8340	7500	3910	607	616			
MIN				560	1260	3580	410	375	418			
AC-FT				90250	217900	304100	96980	29870	28290			

STATISTICS OF MONTHLY MEAN DATA SEASONS 1987 - 2002

MEAN	1612	3613	5060	1252	384.5	379.4	541.3	1798
MAX	3052	5027	11060	2665	670	595	947	1798
(WY)	1990	1993	1996	1996	1993	1996	1996	1996
MIN	747	3092	1372	207	95.8	145	397	1798
(WY)	1991	1987	1987	1987	1988	1987	1989	1996

SUMMARY STATISTICS	FOR 2002 SEASON		SEASONS 1987 - 2002	
HIGHEST DAILY MEAN	8340	May 31	17500	Jun 9 1996
LOWEST DAILY MEAN	375	Aug 20	63	Jul 16 1987
MAXIMUM PEAK FLOW	8760	May 31	a18700	Jun 9 1996
MAXIMUM PEAK STAGE	9.84	May 31	b10.67	May 18 1997
INSTANTANEOUS LOW FLOW			60	Jul 16 1987

a--Gage height, 10.07 ft.
b--Flood on or about May 18, 1997 may have exceeded stage of 10.67 ft, discharge unknown.
e--Estimated.

PEND OREILLE RIVER BASIN

12352500 BITTERROOT RIVER NEAR MISSOULA, MT

LOCATION--Lat 46°49'55", long 114°03'11" (NAD 27), in SW1/4NW1/4NE1/4 sec. 1, T.12 N., R.20 W., Missoula County, Hydrologic Unit 17010205, on right bank 40 ft downstream from bridge on U.S. Highway 93, 0.5 mi south of Fort Missoula, and at river mile 5.7.
DRAINAGE AREA.--2,814 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1898 to November 1901, May 1903 to December 1904, July 1989 to current year.
GAGE.--Water-stage recorder. Elevation of gage is 3,110 ft (NGVD 29). Prior to Jan. 1, 1905, nonrecording gage at site 1.5 mi upstream at different datum.
REMARKS.--Water-discharge records good except those for May 24 to July 5, which are fair, and those for estimated daily discharges, which are poor. Some regulation by Painted Rocks Lake (station number 12342000). Diversions for irrigation of about 111,000 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	562	1420	863	726	748	e720	889	2620	14300	7980	882	1010
2	565	1400	851	733	758	e660	916	2930	13500	6560	833	969
3	558	1260	852	727	724	e640	927	3350	14100	5740	812	928
4	554	1220	844	737	718	703	922	3630	12700	5310	828	884
5	581	1180	808	733	711	774	949	3380	11300	4960	1090	865
6	596	1130	801	725	704	791	1070	3240	11400	4410	1160	875
7	588	1100	816	746	718	e700	1410	3010	11300	4190	1110	953
8	580	1060	825	857	775	e660	1690	2830	10100	4340	1100	1050
9	578	1010	800	1030	767	764	1700	2590	9120	4130	1150	1100
10	590	982	794	991	738	750	1790	2380	8740	3620	1170	1070
11	615	960	751	919	719	758	1970	2220	7880	3290	1090	975
12	636	953	742	894	707	871	2060	2080	7110	3110	1020	930
13	676	953	763	882	676	1020	2280	2040	6670	2950	951	896
14	707	952	817	852	685	937	3100	2370	7010	2790	891	845
15	746	939	846	822	690	873	6240	2960	8060	2640	840	819
16	755	940	796	808	663	835	6130	3170	9350	2440	796	798
17	733	931	808	796	685	808	4700	3280	10200	2240	776	774
18	709	936	798	785	710	792	3850	3730	10200	2050	774	775
19	723	939	740	768	703	772	3280	4840	9790	2090	762	758
20	753	926	767	775	705	784	2890	7440	8390	2080	743	726
21	797	923	794	781	703	769	2650	10300	7420	1920	734	707
22	822	951	802	775	709	742	2500	12900	7850	1730	879	705
23	841	961	753	745	801	773	2420	10900	9110	1580	983	712
24	909	950	673	752	852	816	2490	8590	9410	1490	1000	745
25	907	919	603	781	e600	831	2390	7510	9210	1420	1010	746
26	862	902	549	827	e580	850	2340	6890	9150	1310	996	710
27	834	885	e480	809	e660	877	2360	7630	9120	1340	951	709
28	843	844	e470	e660	e740	903	2460	8980	9250	1250	930	714
29	916	806	605	e560	---	899	2370	10600	9420	1150	933	720
30	982	834	695	e600	---	885	2380	12500	9840	1040	968	729
31	1120	---	725	e660	---	877	---	14300	---	950	983	---
TOTAL	22638	30166	23231	24256	19949	24834	73123	175190	291000	92100	29145	25197
MEAN	730.3	1006	749.4	782.5	712.5	801.1	2437	5651	9700	2971	940.2	839.9
MAX	1120	1420	863	1030	852	1020	6240	14300	14300	7980	1170	1100
MIN	554	806	470	560	580	640	889	2040	6670	950	734	705
AC-FT	44900	59830	46080	48110	39570	49260	145000	347500	577200	182700	57810	49980

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1898 - 2002, BY WATER YEAR (WY)*

MEAN	1017	1089	1006	901.8	985.9	1254	2735	6703	8526	3260	1045	889.3
MAX	1570	2211	3141	1791	3030	2021	4944	13430	21880	14510	3412	1623
(WY)	1904	1996	1996	1997	1996	1997	1996	1997	1899	1899	1899	1899
MIN	568	614	530	542	477	801	1336	4039	2397	980	503	455
(WY)	1905	1905	1905	1993	1994	2002	2001	1990	1992	1994	2000	1904

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1898 - 2002*	
ANNUAL TOTAL	511428		830829			
ANNUAL MEAN	1401		2276		2449	
HIGHEST ANNUAL MEAN					4864	1899
LOWEST ANNUAL MEAN					1366	1992
HIGHEST DAILY MEAN	8160	May 26	14300	May 31	37400	Jun 20 1899
LOWEST DAILY MEAN	470	Dec 28	470	Dec 28	300	Feb 9 1994
ANNUAL SEVEN-DAY MINIMUM	540	Feb 14	572	Oct 1	370	Sep 16 1904
MAXIMUM PEAK FLOW			14900	Jun 1	b38300	Jun 20 1899
MAXIMUM PEAK STAGE			10.33	Jun 1	13.11	May 18 1997
INSTANTANEOUS LOW FLOW			a412	Dec 28	300	Feb 9 1994
ANNUAL RUNOFF (AC-FT)	1014000		1648000		1774000	
10 PERCENT EXCEEDS	3930		7560		6340	
50 PERCENT EXCEEDS	806		907		1120	
90 PERCENT EXCEEDS	561		702		644	

*--During periods of operation (July 1898 to November 1901, May 1903 to December 1904, and July 1989 to current year).
a--May have been less during period of ice affect.
b--Observed gage height, 11.55 ft, site and datum then in use.
e--Estimated.

12352500 BITTERROOT RIVER NEAR MISSOULA, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1997 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: November 1999 to current year.
INSTRUMENTATION.--Temperature probe installed Nov. 4, 1999.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE : Maximum, 24.5°C, Aug. 1, 2000; minimum, 0.0°C, many days during winter months.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 23.0°C, July 24; minimum, 0.0°C, many days from December through March.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001									
30...	1545	990	8.3	145	10.5	9.0	.18	.031	<.002
APR 2002									
17...	1300	4620	7.6	64	8.5	5.5	.37	.169	<.002
MAY									
30...	0730	12100	7.4	42	13.5	11.0	.34	.035	<.002
JUN									
24...	1420	9410	7.6	46	28.0	14.0	.21	E.010	<.002
SEP									
04...	1430	882	8.5	169	27.0	19.0	.18	.038	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	CARBON, OGANIC, DIS SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC PARTIC-ULATE TOTAL (MG/L AS C) (00689)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001							
30...	<.007	.017	1.8	.6	79	5	13.4
APR 2002							
17...	.011	.057	4.2	1.8	72	42	524
MAY							
30...	E.006	.077	3.6	2.0	34	186	6080
JUN							
24...	E.004	.034	2.7	.9	41	44	1120
SEP							
04...	<.007	.018	2.1	.2	87	2	4.8

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
APR 2002											
17...	1300	23	6.80	1.49	.89	.2	2.31	27	1.10	<.1	10.8
MAY											
30...	0730	15	4.57	.983	.72	.2	1.69	19	.59	E.1	8.1
JUN											
24...	1420	17	5.11	1.14	.62	.2	1.67	21	.78	<.1	7.9

E--Estimated.

12352500 BITTERROOT RIVER NEAR MISSOULA, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)
APR 2002										
17...	2.7	.06	534	43	--	<2	--	<.1	--	E.6
MAY										
30...	1.7	.04	968	30	.3	<2	E.02	<.1	<.8	1.3
JUN										
24...	1.2	.04	790	31	.3	<2	<.04	<.1	<.8	<.8

DATE	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
APR 2002								
17...	--	2.4	--	<1	--	<1	--	4
MAY								
30...	1.2	4.3	.14	2	.26	1	1	7
JUN								
24...	1.9	6.3	.17	3	.07	<1	1	4

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	15.5	12.0	14.0	8.5	8.0	8.5	3.5	2.5	3.0	1.5	1.0	1.0
2	15.0	12.5	14.0	8.5	7.5	8.0	3.0	2.5	3.0	1.0	0.5	1.0
3	15.0	12.0	13.5	9.0	7.5	8.0	4.0	3.0	3.5	2.0	1.0	1.5
4	13.0	11.0	12.0	8.0	6.5	7.5	3.0	2.5	3.0	2.0	1.0	1.5
5	12.0	9.0	10.5	7.0	6.0	6.5	2.5	2.0	2.0	2.0	1.5	1.5
6	11.0	8.5	10.0	7.5	6.0	7.0	2.5	1.5	2.0	3.0	1.5	2.0
7	11.5	9.5	10.5	7.0	6.0	6.5	3.5	2.5	3.0	4.0	2.5	3.0
8	12.5	10.5	11.0	6.0	4.5	5.0	3.5	2.5	3.0	4.5	4.0	4.0
9	12.0	10.0	11.0	5.0	3.5	4.5	3.0	2.0	2.5	4.0	2.5	3.5
10	11.0	9.0	10.5	5.0	3.0	4.0	2.0	1.0	1.5	2.5	1.5	2.0
11	10.5	10.0	10.0	5.0	3.0	4.0	2.5	1.5	2.0	2.5	1.5	2.0
12	10.0	9.0	9.0	5.5	3.5	4.5	2.5	1.5	2.0	3.0	2.0	2.5
13	10.5	8.5	9.5	5.5	4.0	5.0	3.0	2.0	2.5	3.5	2.0	2.5
14	10.5	9.5	10.0	6.0	4.5	5.5	4.0	3.0	3.5	2.0	1.5	2.0
15	11.5	9.0	10.0	7.0	5.5	6.0	3.5	2.0	2.5	2.0	1.0	1.5
16	11.0	8.5	10.0	6.5	6.0	6.5	3.0	2.0	2.5	2.0	1.0	1.5
17	11.0	9.0	10.0	7.0	6.0	6.5	4.0	3.0	3.0	1.5	0.5	1.0
18	9.5	8.5	9.0	7.0	6.0	6.5	3.0	1.5	2.0	2.0	0.5	1.5
19	9.0	8.5	8.5	6.0	4.5	5.5	2.5	1.5	2.0	2.0	1.0	1.5
20	10.5	8.5	9.0	6.0	4.5	5.5	2.0	1.5	2.0	2.0	1.5	1.5
21	9.5	8.5	9.0	7.0	6.0	6.5	2.5	1.5	2.0	2.5	1.5	2.0
22	9.5	8.5	9.0	6.5	6.0	6.5	3.0	1.5	2.0	2.5	1.0	1.5
23	9.5	8.0	9.0	6.5	6.0	6.5	1.5	1.0	1.5	1.5	0.5	1.0
24	8.5	7.5	8.0	6.0	5.0	5.5	1.5	0.5	1.0	2.0	1.0	1.5
25	8.5	7.5	8.0	5.0	4.0	4.5	1.0	0.5	0.5	3.5	2.0	2.5
26	8.5	6.0	7.5	5.0	4.0	4.5	1.0	0.5	0.5	3.0	2.5	3.0
27	8.5	6.5	7.5	5.0	3.5	4.5	1.0	0.0	0.5	2.5	1.0	2.0
28	8.5	8.5	8.5	3.5	2.5	2.5	1.0	0.0	0.5	1.0	0.0	0.5
29	9.5	8.0	9.0	3.5	2.5	3.0	1.0	0.5	0.5	1.0	0.0	0.5
30	9.5	9.0	9.5	4.0	3.0	3.5	1.0	0.5	0.5	0.5	0.0	0.5
31	9.5	8.5	9.0	---	---	---	1.5	0.5	1.0	1.5	0.0	1.0
MONTH	15.5	6.0	10.0	9.0	2.5	5.5	4.0	0.0	2.0	4.5	0.0	2.0

12352500 BITTERROOT RIVER NEAR MISSOULA, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	2.0	1.0	1.5	2.0	0.0	1.0	9.0	6.0	7.5	12.0	9.0	10.5
2	3.0	1.5	2.5	1.5	0.0	0.5	7.0	3.5	5.5	12.0	9.0	10.5
3	2.5	1.0	2.0	1.0	0.0	0.5	8.0	4.0	6.0	11.0	9.5	10.5
4	4.0	2.0	2.5	1.5	0.5	1.0	9.5	5.0	7.5	10.5	8.5	9.0
5	3.5	1.5	2.5	4.0	0.5	2.0	10.5	6.5	8.5	9.5	8.5	9.0
6	3.5	1.5	2.5	3.0	0.0	1.5	11.5	9.0	10.0	9.0	8.0	8.0
7	4.0	3.0	3.5	0.5	0.0	0.0	10.5	8.5	9.5	8.0	6.0	7.0
8	4.5	3.5	4.0	0.5	0.0	0.0	10.0	6.5	8.5	8.5	5.5	7.0
9	4.5	2.5	3.5	2.5	0.5	1.5	9.0	7.5	8.0	9.0	6.5	7.5
10	4.0	2.0	3.0	5.5	2.5	4.0	9.0	7.0	8.0	11.0	7.5	9.0
11	4.0	2.5	3.0	6.5	4.0	5.0	9.5	7.5	8.5	11.0	8.5	10.0
12	3.5	1.5	2.5	7.0	5.0	5.5	10.0	8.0	9.0	13.5	9.5	11.0
13	3.5	1.5	2.5	5.5	4.0	4.5	9.5	7.5	8.5	14.0	10.5	12.5
14	4.0	2.0	3.0	5.5	3.5	4.5	9.5	7.5	9.0	13.5	11.5	12.5
15	4.0	1.5	2.5	5.5	3.5	4.5	7.5	4.5	5.5	12.0	10.5	11.0
16	4.0	1.5	2.5	6.0	3.5	4.5	6.0	4.0	5.0	11.5	9.0	10.0
17	5.0	2.0	3.0	4.5	2.0	3.5	6.0	5.5	5.5	11.5	10.0	10.5
18	4.0	3.5	3.5	4.5	2.5	3.5	6.5	5.0	5.5	12.0	9.5	10.5
19	4.5	3.0	3.5	4.5	3.0	4.0	8.0	4.5	6.0	12.5	11.0	12.0
20	5.5	3.0	4.0	4.5	0.5	2.5	9.0	6.0	7.5	12.5	10.0	11.0
21	4.5	3.0	4.0	3.0	0.0	1.5	8.5	7.5	8.0	11.0	7.5	9.0
22	6.0	4.5	5.0	5.0	1.0	3.0	11.0	7.0	9.0	7.5	7.0	7.0
23	5.5	3.0	4.5	6.5	3.0	4.5	10.5	8.0	9.5	7.5	6.5	7.0
24	3.0	0.0	1.0	8.0	5.5	6.5	9.5	6.5	8.0	10.0	7.0	8.0
25	0.5	0.0	0.0	8.5	6.0	7.0	10.0	7.5	8.5	10.5	9.0	10.0
26	0.5	0.0	0.0	8.5	5.5	7.5	10.5	8.0	9.0	11.5	10.0	11.0
27	1.5	0.0	0.5	9.0	6.5	8.0	9.5	8.5	9.0	12.5	10.5	11.5
28	2.5	0.0	1.0	8.0	6.0	6.5	10.0	7.5	8.5	12.0	10.0	11.0
29	---	---	---	8.5	6.0	7.0	11.0	8.0	9.5	12.0	10.0	11.0
30	---	---	---	8.0	7.0	7.5	11.5	9.0	10.0	12.0	10.5	11.5
31	---	---	---	9.5	6.5	8.0	---	---	---	12.5	10.0	11.0
MONTH	6.0	0.0	2.5	9.5	0.0	4.0	11.5	3.5	8.0	14.0	5.5	10.0

		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.5	10.5	11.0	16.0	13.5	14.5	20.5	16.0	18.5	18.0	16.0	17.0
2	10.5	9.5	10.0	16.0	13.5	15.0	21.0	16.5	18.5	19.5	15.0	17.0
3	11.5	9.0	10.5	16.5	14.0	15.0	20.5	15.5	18.0	20.0	16.5	18.0
4	11.5	10.0	11.0	17.5	15.0	16.0	20.0	16.5	18.0	19.0	16.0	18.0
5	11.5	10.0	10.5	17.0	14.5	16.0	18.5	16.5	17.5	19.0	16.5	17.5
6	12.0	10.0	11.0	18.0	15.0	16.5	18.0	16.0	17.0	17.5	15.5	16.0
7	12.0	10.0	11.0	18.0	16.5	17.0	16.5	15.0	16.0	16.5	15.0	16.0
8	11.0	9.0	9.5	17.0	15.0	16.0	17.0	14.5	15.5	17.0	13.5	15.0
9	9.5	7.5	8.0	17.5	14.0	15.5	19.0	14.5	16.5	17.0	13.0	15.0
10	8.5	7.0	7.5	19.0	15.5	17.0	20.0	15.5	17.5	17.5	13.5	15.5
11	11.5	8.0	9.5	20.5	17.0	18.5	19.0	17.0	18.0	18.5	14.5	16.5
12	13.0	10.5	12.0	21.0	18.0	19.5	21.0	17.0	19.0	18.5	14.5	16.5
13	14.5	11.5	13.0	21.5	18.5	20.0	21.0	17.0	19.0	18.5	15.0	16.5
14	14.5	12.5	13.5	22.5	19.0	20.5	21.0	17.0	19.0	18.0	14.5	16.0
15	14.5	12.5	13.5	22.0	19.5	20.5	21.0	16.5	19.0	18.0	15.0	16.5
16	14.5	12.5	13.5	21.0	18.5	20.0	20.0	16.5	18.5	17.0	14.5	16.0
17	14.5	12.5	13.0	21.5	18.0	19.5	19.5	15.0	17.5	16.0	14.5	15.0
18	13.0	11.5	12.0	21.5	18.0	20.0	20.0	15.5	17.5	16.0	13.5	14.5
19	12.0	10.0	11.0	21.0	19.0	20.0	20.0	15.5	17.5	17.0	13.5	15.0
20	13.5	10.5	12.0	22.0	18.5	20.0	18.5	16.0	17.5	16.5	14.0	15.5
21	15.0	12.5	13.5	21.5	18.5	20.0	17.5	15.5	16.5	15.5	12.0	14.0
22	14.5	12.5	13.5	22.0	18.0	20.0	17.5	14.5	16.0	15.0	11.0	13.0
23	14.0	12.5	13.5	22.5	19.0	20.5	18.5	14.0	16.0	15.0	11.5	13.5
24	15.0	12.5	13.5	23.0	19.0	21.0	18.5	15.5	17.0	15.0	12.0	14.0
25	16.0	13.5	14.5	22.5	19.0	21.0	18.5	15.5	17.0	15.5	12.0	13.5
26	16.0	14.0	15.5	21.5	18.0	20.0	18.5	16.0	17.0	14.0	12.0	13.5
27	16.5	14.5	15.5	21.0	18.0	19.5	19.5	15.5	17.5	13.5	11.5	12.5
28	16.5	14.5	15.5	21.0	17.5	19.0	21.0	16.5	18.5	13.5	10.0	11.5
29	16.0	14.0	15.0	22.0	18.0	19.5	20.0	17.0	18.5	12.5	11.0	12.0
30	14.5	13.0	14.0	22.0	18.0	20.0	19.0	16.5	18.0	12.0	10.0	11.0
31	---	---	---	20.5	17.5	19.5	20.0	16.0	17.5	---	---	---
MONTH	16.5	7.0	12.0	23.0	13.5	18.5	21.0	14.0	17.5	20.0	10.0	15.0

PEND OREILLE RIVER BASIN

12353000 CLARK FORK BELOW MISSOULA, MT

LOCATION.--Lat 46°52'09", long 114°07'33" (NAD 27), in NW$^1/_4$NE$^1/_4$SE$^1/_4$ sec.21, T.13 N., R.20 W., Missoula County, Hydrologic Unit 17010204, on right bank 1.0 mi downstream from Bitterroot River, 4.5 mi west of Missoula, and at river mile 349.5.

DRAINAGE AREA.--9,003 mi^2.

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

REVISED RECORDS.--WSP 1042: 1931. WSP 1246: Drainage area. WSP 1316: 1932(M), 1935(M), 1946(M).

GAGE.--Water-stage recorder. Datum of gage is 3,083.88 ft (NGVD 29) (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good. Some diurnal fluctuation at low flow caused by powerplant at Milltown 14.9 mi upstream. Diversions for irrigation of about 235,000 acres upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1420	2810	2050	1780	1870	1920	2820	5780	27000	14800	2630	2090
2	1430	2810	2020	1640	1910	1760	3120	6280	26100	12600	2520	2160
3	1430	2650	2020	1680	1820	1670	2760	7030	26400	11000	2440	2110
4	1410	2580	2030	1790	1760	1770	2660	7710	24400	10200	2410	2050
5	1460	2530	1970	1880	1800	1970	2660	7500	22100	9470	2800	1970
6	1530	2490	1910	1870	1770	1980	3020	7300	21700	8690	2960	2050
7	1560	2440	1980	1900	1860	1790	4040	6920	21700	8160	2880	2190
8	1570	2360	2020	2130	2000	1610	4420	6490	20000	8200	2880	2320
9	1590	2350	1940	2430	2000	1760	4260	6000	18400	8050	2960	2410
10	1600	2270	1900	2400	1840	1860	4280	5540	17900	7340	2970	2390
11	1670	2230	1840	2240	1870	1970	4590	5230	16800	6770	2840	2280
12	1720	2220	1820	2180	1810	2200	4880	4930	15100	6320	2690	2180
13	1810	2210	1850	2170	1740	2770	5360	4880	14200	5980	2560	2120
14	1900	2220	2020	2110	1760	2560	6930	5600	14300	5650	2430	2070
15	1980	2220	2020	2020	1700	2370	11300	6890	15900	5370	2330	2000
16	2000	2210	1860	1950	1690	2230	11700	7380	18100	5230	2240	1970
17	1950	2190	1930	1930	1730	2140	9830	7450	20000	5010	2160	1960
18	1900	2190	1890	1910	1860	1980	8560	8030	20800	4620	2120	1960
19	1940	2200	1740	1870	1830	1990	7560	9700	20200	4550	2080	1970
20	2010	2170	1770	1890	1820	2050	6800	14200	17900	4560	2040	1940
21	2050	2180	1880	1920	1790	1780	6380	19900	15600	4290	2030	1890
22	2100	2220	1960	1910	1850	1780	6080	23900	15600	4040	2180	1880
23	2120	2250	1870	1850	2090	2000	5920	21800	17700	3810	2280	1860
24	2210	2230	1620	1820	2160	2200	6040	17900	18500	3660	2260	1890
25	2220	2180	1420	1910	1750	2320	5840	15200	17600	3500	2260	1910
26	2150	2140	1260	2040	1420	2420	5700	13900	17000	3370	2250	1880
27	2110	2100	1120	2010	1650	2560	5680	14700	16600	3390	2190	1870
28	2120	2040	1110	1780	1930	2750	5720	17000	16700	3260	2170	1920
29	2230	1910	1360	1510	---	2710	5560	20000	16800	3080	2180	1920
30	2340	1960	1610	1610	---	2630	5540	23500	17000	2940	2140	1980
31	2480	---	1760	1750	---	2650	---	26800	---	2750	2060	---
TOTAL	58010	68560	55550	59880	51080	66150	170010	355440	568100	190660	74940	61190
MEAN	1871	2285	1792	1932	1824	2134	5667	11470	18940	6150	2417	2040
MAX	2480	2810	2050	2430	2160	2770	11700	26800	27000	14800	2970	2410
MIN	1410	1910	1110	1510	1420	1610	2660	4880	14200	2750	2030	1860
AC-FT	115100	136000	110200	118800	101300	131200	337200	705000	1127000	378200	148600	121400

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2002, BY WATER YEAR (WY)

MEAN	2725	2739	2482	2248	2490	3085	6365	14780	16740	5866	2304	2290
MAX	6617	5110	6064	4401	6697	7012	16500	30440	33970	16320	5530	5160
(WY)	1960	1960	1996	1934	1996	1972	1934	1997	1972	1975	1975	1965
MIN	1393	1471	1414	871	1108	1743	2302	5113	4619	1361	810	909
(WY)	1938	1938	1988	1937	1933	1937	1941	1941	1987	1931	1931	1937

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1930 - 2002	
ANNUAL TOTAL	1191890		1779570			
ANNUAL MEAN	3265		4876		5346	
HIGHEST ANNUAL MEAN					8832	1976
LOWEST ANNUAL MEAN					2582	1937
HIGHEST DAILY MEAN	15300	May 16	27000	Jun 1	54100	May 18 1997
LOWEST DAILY MEAN	1110	Dec 28	1110	Dec 28	580	Jan 19 1933
ANNUAL SEVEN-DAY MINIMUM	1280	Aug 30	1360	Dec 24	660	Dec 8 1932
MAXIMUM PEAK FLOW			27500	May 31	55100	May 18 1997
MAXIMUM PEAK STAGE			8.56	May 31	12.18	May 18 1997
INSTANTANEOUS LOW FLOW			a1010	Dec 28	b388	Jan 18 1933
INSTANTANEOUS LOW STAGE			a0.53	Dec 28	-0.05	Feb 3 1989
ANNUAL RUNOFF (AC-FT)	2364000		3530000		3873000	
10 PERCENT EXCEEDS	8800		15100		13400	
50 PERCENT EXCEEDS	2050		2210		2800	
90 PERCENT EXCEEDS	1440		1760		1620	

a-Result of freezeup.
b-Gage height 0.58 ft, result of freezeup.

PEND OREILLE RIVER BASIN

12354000 ST. REGIS RIVER NEAR ST. REGIS, MT

LOCATION.--Lat 47°17'49", long 115°07'18", (NAD 27) near center of NW$^1/_4$NE$^1/_4$ sec.26, T.18 N., R.28 W., Mineral County, on left bank 50 ft downstream from road bridge, 500 ft upstream from Little Joe Creek, 1.2 mi west of St. Regis, and at river mile 1.7.

DRAINAGE AREA.--303 mi^2.

PERIOD OF RECORD.--September 1910 to September 1917 (no winter records), annual maximum, water year 1948, published in WSP 1080, September 1958 to September 1975, February 2002 to September 2002. Monthly discharge only for some periods, published in WSP 1316, 1736.

REVISED RECORDS.--WSP 1246: water year 1912; WSP 1316: drainage area, 1911.

GAGE.--Water-stage recorder. Datum of gage is 2,645.00 ft (NGVD 29). September 1910 to September 1917, non-recording gage at site 2 mi upstream at different datum.

REMARKS.--Records good. Minor diversions for irrigation of hay meadows above station. U.S. Geological Survey satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood on or about Dec. 20, 1933, reached a stage of about 14.5 ft, from information by local residents (discharge unknown). Flood of May 19, 1954, reached a discharge of about 11,000 ft^3/s, gage height, 9.4 ft, from rating curve extended above 5,100 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					182	324	538	1460	3760	1160	229	141
2					177	295	591	1640	3420	1050	224	136
3					173	285	576	1930	3290	967	217	132
4					170	287	572	1950	3120	906	213	133
5					167	274	599	1790	3080	843	210	131
6					169	269	694	1640	3040	790	218	131
7					173	259	834	1460	2650	752	216	133
8					178	245	983	1310	2230	741	208	132
9					169	239	1020	1190	1930	719	202	128
10					165	241	1030	1110	1800	661	193	125
11					166	263	1230	1050	1670	628	190	121
12					150	501	1350	1050	1600	596	186	119
13					144	450	1730	1240	1670	563	182	116
14					156	414	3700	1700	1970	533	175	115
15					143	390	3720	1890	2310	499	169	114
16					143	373	2540	1800	2570	468	166	112
17					152	344	1980	1810	2570	442	164	113
18					158	320	1660	1870	2310	415	161	117
19					156	316	1470	2180	2090	398	158	115
20					158	318	1360	3300	1800	372	157	112
21					158	281	1320	3580	1690	351	192	110
22					342	283	1340	3870	1710	336	193	110
23					650	283	1370	3370	1780	321	174	110
24					515	285	1330	2690	1750	311	164	109
25					407	282	1300	2300	1680	298	159	109
26					377	295	1290	2240	1610	278	157	107
27					363	364	1280	2690	1580	270	160	108
28					344	377	1210	3480	1500	263	153	110
29					---	384	1200	4160	1480	254	149	109
30					---	398	1310	4330	1350	247	146	114
31					---	439	---	4000	---	240	145	---
TOTAL					6405	10078	41127	70080	65010	16672	5630	3572
MEAN					228.8	325.1	1371	2261	2167	537.8	181.6	119.1
MAX					650	501	3720	4330	3760	1160	229	141
MIN					143	239	538	1050	1350	240	145	107
AC-FT					12700	19990	81580	139000	128900	33070	11170	7090

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1910 - 2002, BY WATER YEAR (WY)*

MEAN	142.6	234.9	214.5	281.7	300.7	408.3	1247	2214	1567	405.7	165.2	131.9
MAX	350	590	555	1363	759	1366	2057	4700	3367	1150	313	204
(WY)	1960	1915	1959	1974	1971	1972	1916	1917	1974	1916	1916	1914
MIN	85.5	101	92.4	89.3	86.6	94.2	349	671	388	155	83.1	77.3
(WY)	1974	1962	1964	1964	1964	1964	1975	1915	1915	1973	1973	1973

SUMMARY STATISTICS	FOR 2002 WATER YEAR		WATER YEARS 1910 - 2002*	
ANNUAL MEAN			580	
HIGHEST ANNUAL MEAN			938	1974
LOWEST ANNUAL MEAN			256	1973
HIGHEST DAILY MEAN	4330	May 30	8500	Jan 16 1974
LOWEST DAILY MEAN	107	Sep 26	45	Dec 11 1961
ANNUAL SEVEN-DAY MINIMUM			59	Dec 5 1972
MAXIMUM PEAK FLOW	4950	Apr 14	a9640	Jan 16 1974
MAXIMUM PEAK STAGE	7.54	Apr 14	7.54	Apr 14 2002
INSTANTANEOUS LOW FLOW			b41	Dec 30 2001
ANNUAL RUNOFF (AC-FT)			420400	
10 PERCENT EXCEEDS			1630	
50 PERCENT EXCEEDS			222	
90 PERCENT EXCEEDS			101	

*--During period of operation (September 1910 to September 1917 (no winter records), September 1958 to September 1975, February 2002 to current year).
a--Gage height, 7.38 ft.
b--Result of freezeup.

PEND OREILLE RIVER BASIN

12354500 CLARK FORK AT ST. REGIS, MT

LOCATION.--Lat 47°18'07", long 115°05'11" (NAD 27), in NW$^1/_4$SE$^1/_4$SW$^1/_4$ sec.19, T.18 N., R.27 W., Mineral County, Hydrologic Unit 17010204, on left bank at St. Regis, 0.4 mi downstream from St. Regis River, and at river mile 270.3.

DRAINAGE AREA.--10,709 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1910 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1246: Drainage area. WSP 1316: 1916-17, 1920, 1929-31(M), 1933(M).

GAGE.--Water-stage recorder. Datum of gage is 2,600.37 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to Nov. 29, 1933, nonrecording gage at same site and datum.

REMARKS.--Water-discharge records good. Diversions for irrigation of about 244,000 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1710	3330	2480	2120	2260	2650	3940	e8530	38200	23100	3900	2820
2	1710	3460	2570	2140	2360	2600	4280	e9520	37100	18700	3740	2830
3	1710	3410	2540	2020	2380	2410	4410	e10300	36500	16400	3610	2880
4	1720	3250	2530	2040	2300	2380	4150	e11300	35800	14800	3520	2850
5	1710	3160	2520	2140	2240	2460	4120	e11900	33200	13800	3500	2780
6	1750	3090	2460	2230	2260	2670	4320	e11700	31500	12800	3860	2720
7	1820	3020	2400	2340	2280	2650	5060	e11100	30900	11900	3970	2810
8	1850	2960	2440	3010	2400	2420	6280	e10300	29000	11400	3910	2930
9	1880	2880	2460	3350	2480	2310	6640	e10100	26300	11300	3920	3030
10	1910	2850	2380	3400	2460	2410	6630	e9320	25000	10700	3940	3120
11	1970	2770	2340	3250	2330	2540	7020	e8930	24200	9840	3900	3090
12	2040	2730	2280	3060	2320	2990	7630	e9130	22500	9270	3760	2980
13	2120	2700	2250	2980	2250	3230	8630	e9130	21100	8680	3610	2890
14	2220	2690	2320	2910	2210	3670	12700	e9720	21200	8230	3450	2800
15	2310	2720	2470	2810	2200	3460	16900	e11300	22900	7810	3310	2730
16	2370	2700	2450	2690	2140	3270	18100	e12300	25700	7410	3190	2670
17	2380	2690	2340	2600	2150	3110	15700	e13100	28000	7160	3090	2650
18	2330	2690	2390	2550	2190	2990	13400	e13900	29200	6780	3010	2660
19	2310	2680	2310	2520	2300	2850	11900	e15800	28400	6430	2940	2640
20	2390	2680	2190	2480	2270	2890	10700	e20600	25500	6320	2890	2620
21	2440	2680	2200	2510	2260	2850	9890	e28300	21100	6130	2920	2590
22	2490	2760	2290	2500	2480	2590	9510	e34000	19700	5800	2950	2540
23	2620	2790	2360	2470	2980	2570	9270	33800	22300	5490	3030	2520
24	2640	2800	2250	2400	3120	2770	9140	28200	26100	5230	3100	2490
25	2680	2780	2020	2430	2940	2980	9010	23800	25700	5010	3080	2540
26	2640	2710	1790	2570	2420	3160	8580	21600	24800	4810	3070	2540
27	2550	2670	1540	2620	2340	3420	8350	22200	24200	4650	3070	2530
28	2590	2620	1500	2500	2460	3630	8190	25400	24100	4610	2990	2520
29	2600	2550	1510	2190	---	3820	8060	29700	25100	4460	2950	2560
30	2730	2440	1730	2070	---	3790	8150	33500	25000	4280	2950	2580
31	3060	---	1970	2180	---	3780	---	36800	---	4100	2920	---
TOTAL	69250	85260	69280	79080	66780	91320	260660	545280	810300	277400	104050	81910
MEAN	2234	2842	2235	2551	2385	2946	8689	17590	27010	8948	3356	2730
MAX	3060	3460	2570	3400	3120	3820	18100	36800	38200	23100	3970	3120
MIN	1710	2440	1500	2020	2140	2310	3940	8530	19700	4100	2890	2490
MED	2310	2740	2340	2500	2310	2850	8270	12300	25600	7410	3190	2690
AC-FT	137400	169100	137400	156900	132500	181100	517000	1082000	1607000	550200	206400	162500
CFSM	0.21	0.27	0.21	0.24	0.22	0.28	0.81	1.64	2.52	0.84	0.31	0.25
IN.	0.24	0.30	0.24	0.27	0.23	0.32	0.91	1.89	2.81	0.96	0.36	0.28

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2002, BY WATER YEAR (WY)*

MEAN	3417	3574	3452	3122	3469	4278	9211	20210	21540	7699	3159	2982
MAX	8042	7047	10710	8520	10660	11490	24880	42140	42410	19460	6747	6252
(WY)	1960	1934	1934	1934	1996	1972	1934	1997	1972	1975	1975	1965
MIN	1854	1942	1909	1474	1592	2199	3333	7190	6021	1998	1454	1351
(WY)	1938	1932	1937	1937	1936	1937	1937	1941	1987	1931	1931	1937

12354500 CLARK FORK AT ST. REGIS, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1930 - 2002*	
ANNUAL TOTAL	1508620		2540570			
ANNUAL MEAN	4133		6960		7180	
HIGHEST ANNUAL MEAN					11560	1997
LOWEST ANNUAL MEAN					3420	1941
HIGHEST DAILY MEAN	19400	May 16	38200	Jun 1	68500	May 18 1997
LOWEST DAILY MEAN	1500	Dec 28	1500	Dec 28	800	Feb 3 1989
ANNUAL SEVEN-DAY MINIMUM	1600	Aug 31	1720	Dec 25	1130	Jan 31 1936
MAXIMUM PEAK FLOW			38700	Jun 1	b68900	May 18 1997
MAXIMUM PEAK STAGE			15.43	Jun 1	20.27	May 18 1997
INSTANTANEOUS LOW FLOW			a1410	Dec 28	c732	Feb 3 1989
ANNUAL RUNOFF (AC-FT)	2992000		5039000		5202000	
ANNUAL RUNOFF (CFSM)	0.39		0.65		0.67	
ANNUAL RUNOFF (INCHES)	5.24		8.83		9.11	
10 PERCENT EXCEEDS	11000		22200		17800	
50 PERCENT EXCEEDS	2550		2950		3690	
90 PERCENT EXCEEDS	1790		2230		2200	

*--Statistics not computed prior to 1930 as the 1924 to 1929 period of record was estimated.
a--Gage height, 4.27ft.
b--Also May 24, 1948. Gage height, 19.96 ft.
c--Gage height, 3.29 ft, result of upstream freezeup.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--September 1998 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: April 2002 to September 2002 (seasonal records).
INSTRUMENTATION.--Temperature probe installed Oct. 26, 2001.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records): Maximum, 18.0°C, several days in July and August, 2002; minimum, 3.5°C, Apr. 2 and 3, 2002.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum, 18.0°C, several days in July and August; minimum, 3.5°C, Apr. 2, 3.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
APR									
24...	0945	9090	8.0	158	6.0	3.5	.23	.023	<.002
MAY									
16...	0930	E12300	8.1	250	12.0	6.0	.22	<.013	<.002
JUN									
18...	1030	29200	8.1	101	15.0	4.5	.23	.026	E.002
SEP									
11...	1100	3090	8.3	239	12.5	13.5	.18	.017	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
APR					
24...	<.007	.038	98	11	270
MAY					
16...	<.007	.025	69	15	E498
JUN					
18...	E.005	.054	55	83	6540
SEP					
11...	<.007	.015	86	6	50.1

E--Estimated.

PEND OREILLE RIVER BASIN

12354500 CLARK FORK AT ST. REGIS, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
APR											
24...	0945	67	18.1	5.30	1.05	.3	5.28	70	1.80	.1	10.4
JUN											
18...	1030	47	12.9	3.56	.67	.1	2.21	47	.89	E.1	8.39

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
APR											
24...	11.3	.13	2340	95	E2	<.1	<.8	3.8	<1	<1	5
JUN											
18...	3.8	.08	4780	61	E1	<.1	<.8	10.8	2	<1	13

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

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

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002--Continued

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

PEND OREILLE RIVER BASIN

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA

LOCATION.--Lat 49°00'05", long 114°28'34" (NAD 27), Hydrologic Unit 17010206, on leftt bank 200 ft north of international boundary at Flathead, British Columbia, 1.6 mi upstream from Sage Creek, 6.5 mi northwest of Trail Creek, MT, and at river mile 216.6.

DRAINAGE AREA.--427 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1929 to June 1995 (no winter records prior to 1952). Prior to 1934, published as Flathead River near Trail Creek, MT. October 1970 to September 1972, published as North Fork Flathead River at Flathead British Columbia. October 1999 to current year gage re-established and operated by USGS at site on left bank in British Columbia.

GAGE.--Water-stage recorder. Datum of gage is 3,964.95 ft (NGVD 29). Prior to Sept. 1, 1949, nonrecording gage and Sept. 1, 1949 to Oct. 4, 1964, water-stage recorder at site 1,200 ft upstream at datum 11.01 ft higher. Oct. 5, 1964, to Aug. 1, 1973, water-stage recorder at site on left bank 155 ft upstream at datum 1.79 ft higher. Aug. 2, 1973 to June 28, 1995 operated by Water Survey Canada at site on right bank at datum 3.21 ft. higher. October 1999 to current year at site 200 ft upstream from International Border in British Columbia on left bank.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	177	192	e75	e220	e210	160	1140	7490	3760	641	304
2	117	167	187	e120	e210	e170	138	1450	7160	3140	612	304
3	117	159	181	e150	e190	e185	143	1780	6600	2820	590	297
4	116	153	177	e160	e200	e200	146	1700	6180	2580	576	297
5	116	151	184	e170	e190	e210	149	1500	6620	2390	589	324
6	115	154	177	e160	e200	e180	179	1350	6850	2210	575	370
7	114	155	161	e230	199	e150	226	1200	5750	2070	550	376
8	114	146	158	e400	196	e160	232	1090	5120	2240	525	365
9	114	141	156	e500	185	e190	245	1020	5310	2150	508	340
10	115	137	153	640	177	e220	287	973	6040	1940	489	318
11	134	133	e145	454	166	e230	329	986	5330	1800	480	305
12	131	128	e130	388	e130	e250	379	1080	4660	1720	467	296
13	127	128	e150	333	e120	e230	583	1410	4950	1640	451	287
14	125	137	e170	284	e130	e200	1110	2090	5830	1530	437	280
15	122	181	e160	229	e150	e190	1530	2270	6350	1450	429	275
16	119	254	e150	e190	e170	e150	1350	2080	7070	1320	417	268
17	125	473	e170	e200	e180	e120	1120	2060	7530	1200	403	274
18	125	469	e150	e150	e170	e130	967	2100	6980	1130	388	276
19	123	365	e140	e180	173	e110	884	2450	6340	1060	378	266
20	121	313	e165	e230	160	e90	861	5430	5360	994	369	259
21	120	286	e180	e220	190	e85	904	7780	5190	944	361	252
22	129	262	e150	e200	266	e95	949	7630	5380	893	355	247
23	142	254	e140	e180	465	e110	950	5380	6310	846	345	243
24	134	235	e135	e220	e400	e130	852	3860	6340	814	337	239
25	129	213	e130	e250	e260	e130	798	3100	6010	780	333	237
26	125	193	e130	e240	e220	e140	773	2960	5520	758	342	234
27	127	185	e120	e200	e250	e145	738	3570	5360	789	355	233
28	158	186	e110	e150	e270	e140	746	5230	5200	724	339	228
29	155	193	e95	e140	---	e135	814	6780	4670	689	328	231
30	149	189	e100	e160	---	e140	1010	8160	4600	663	322	252
31	173	---	e90	e200	---	146	---	8480	---	656	314	---
TOTAL	3950	6317	4636	7403	5837	4971	19552	98089	178100	47700	13605	8477
MEAN	127.4	210.6	149.5	238.8	208.5	160.4	651.7	3164	5937	1539	438.9	282.6
MAX	173	473	192	640	465	250	1530	8480	7530	3760	641	376
MIN	114	128	90	75	120	85	138	973	4600	656	314	228
AC-FT	7830	12530	9200	14680	11580	9860	38780	194600	353300	94610	26990	16810
CFSM	0.30	0.49	0.35	0.56	0.49	0.38	1.53	7.41	13.9	3.60	1.03	0.66
IN.	0.34	0.55	0.40	0.64	0.51	0.43	1.70	8.55	15.52	4.16	1.19	0.74

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)*

MEAN	326.8	348.3	239.1	187.3	172.7	199.8	913.5	3510	3096	987.4	384.5	290.8
MAX	1285	1261	881	458	345	685	2957	5584	6691	2418	937	785
(WY)	1948	2000	1976	1981	1971	1986	1934	1948	1974	1954	1976	1951
MIN	127	124	97.0	87.3	83.3	97.7	189	1540	824	279	188	132
(WY)	2002	1937	2001	2001	2001	2001	1970	1977	1977	1977	1931	2001

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1929 - 2002*	
ANNUAL TOTAL	139113		398637			
ANNUAL MEAN	381.1		1092		908.4	
HIGHEST ANNUAL MEAN					1376	1974
LOWEST ANNUAL MEAN					377	2001
HIGHEST DAILY MEAN	3770	May 14	8480	May 31	a16800	Jun 7 1995
LOWEST DAILY MEAN	70	Feb 7	75	Jan 1	62	Jan 2 1977
ANNUAL SEVEN-DAY MINIMUM	75	Feb 11	101	Dec 27	71	Dec 31 1976
MAXIMUM PEAK FLOW			9220	May 31	b16300	Jun 8 1964
MAXIMUM PEAK STAGE			10.00	May 31	c10.00	May 31 2002
ANNUAL RUNOFF (AC-FT)	275900		790700		658100	
ANNUAL RUNOFF (CFSM)	0.89		2.56		2.13	
ANNUAL RUNOFF (INCHES)	12.12		34.73		28.91	
10 PERCENT EXCEEDS	1130		4660		2740	
50 PERCENT EXCEEDS	145		254		296	
90 PERCENT EXCEEDS	87		128		135	

*--During periods of operation. (no winter records prior to 1952).
a--Instantaneous peak flow not determined.
b--Gage height, 8.00 ft, site and datum then in use.
c--At present site and datum. Flood of June 7, 1995 reached a stage of 9.66 ft (site and datum then in use) which is 12.86 ft at current datum.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949-50, 1965, 1970, 1975-93 and August 1999 to current year.
REMARKS.--Missing metals data for June 17 due to sample loss in transit to lab.
PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: November 1974 to September 1981.
WATER TEMPERATURE: November 1974 to September 1991.
SUSPENDED-SEDIMENT DISCHARGE: April 1975 to October 1978, August 1985 to June 1991.
EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1975-81): Maximum daily, 309 microsiemens per centimeter (µS/cm) at 25.0°C, Jan. 12, 28, 1975, Jan. 20, 1980; minimum daily, 130 µS/cm at 25.0°C, May 20, 1976.
WATER TEMPERATURE (water years 1975-91): Maximum 19.5°C, Aug 2, 1977; minimum 0.0°C on many days during winters.
SEDIMENT CONCENTRATION (water years 1975-78, 1985-91): Maximum daily mean, 1,310 mg/L, June 20,1975; minimum daily mean, 1 mg/L on many days most years.
SEDIMENT LOAD (water years 1975-78, 1985-91): Maximum daily, 36,100 tons, June 20, 1975; minimum daily, 0.24 ton, Feb. 1, 23, 1988.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV 2001										
01...	0930	176	7.8	265	10.0	4.5	<.015	E.05	E.009	<.002
APR 2002										
18...	1100	984	8.4	212	12.0	2.0	<.015	E.10	.028	<.002
JUN										
17...	1015	8110	8.8	154	21.0	5.5	<.015	.60	.021	<.002
JUL										
23...	0845	854	8.2	229	15.0	10.0	<.015	E.06	<.013	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001					
01...	<.007	<.004	71	3	1.4
APR 2002					
18...	<.007	.025	77	39	104
JUN					
17...	E.004	.42	65	542	11900
JUL					
23...	E.004	.007	96	12	27.7

E--Estimated.

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--

DATE	TIME	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
NOV 2001									
01...	0930	3.5	E1	<.1	<.8	<.6	<1	<1	<1
JUN 2002									
*17...	1015	16	--	--	--	--	--	--	--

E--Estimated.
*--Missing data due to sample loss in transit to lab.

PEND OREILLE RIVER BASIN

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT

LOCATION.--Lat 48°29'44", long 114°07'36" (NAD 27), in NE$^1/_4$SW$^1/_4$NW$^1/_4$ sec.35, T.32 N., R.20 W., Flathead County, Hydrologic Unit 17010206, on right bank 1.5 mi downstream from Canyon Creek, 3.8 mi upstream from Middle Fork, 8.8 mi northeast of Columbia Falls, and at river mile 162.1.

DRAINAGE AREA.--1,548 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1910 to September 1917 (no winter records in water years 1913, 1916, 1917), April 1929 to February 1935 (incomplete), June 1935 to current year. Monthly discharge only for some periods, published in WSP 1316. Published as Flathead River near Columbia Falls 1915-17, 1929-70.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1246: 1911, 1912(M), 1915-17(M), 1929 (M), 1938-39(M), 1946(M).

GAGE.--Water-stage recorder. Datum of gage is 3,145.59 ft (NGVD 29). September 1910 to September 1917 and April to August 1929, nonrecording gages, and May 1, 1930, to Sept. 30, 1962, water-stage recorder, all at site 2.7 mi downstream at different datums.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. A few small diversions from tributaries for irrigation of hay meadows upstream from station. Bureau of Reclamation satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	509	798	747	e330	879	e900	1130	4230	21400	13200	2620	1240
2	502	763	744	e450	873	e800	1010	4800	19500	11200	2470	1220
3	493	744	745	e600	858	e850	982	5760	18000	9910	2320	1200
4	489	722	720	e670	816	e900	1000	5900	16600	9080	2210	1180
5	484	703	698	e700	730	e930	1050	5470	16500	8460	2180	1210
6	478	691	687	e650	735	e800	1250	5050	17600	7850	2160	1310
7	472	689	672	e900	729	e700	1720	4620	16500	7530	2070	1400
8	465	669	657	1660	732	e750	2120	4160	14200	8010	1980	1410
9	461	647	647	1870	703	e900	2180	3840	14100	9060	1910	1330
10	461	625	619	1760	683	1020	2330	3590	14600	8410	1830	1270
11	520	608	608	1580	685	1050	2960	3450	14300	7700	1770	1220
12	538	592	576	1440	e550	1190	3410	3510	12400	7280	1730	1180
13	527	583	619	1320	e530	1090	4740	4070	12100	7030	1680	1140
14	521	578	708	1180	e570	1000	7980	5500	13500	6690	1630	1110
15	516	590	644	978	623	985	8510	6700	15300	6410	1600	1080
16	498	637	609	e770	658	e700	6810	6570	17200	5950	1590	1060
17	491	745	710	e800	682	e600	5600	6360	19700	5430	1600	1070
18	495	1010	607	e650	675	e630	4860	6430	20300	5050	1530	1100
19	492	1030	579	e730	658	e600	4450	6950	19000	4780	1490	1070
20	483	971	670	e930	645	e530	4290	10900	16400	4490	1440	1030
21	482	933	721	e900	629	e500	4340	17100	14900	4200	1410	1000
22	507	905	615	e850	949	e600	4490	19800	14900	3890	1390	986
23	604	924	583	e800	1200	e800	4560	16300	16500	3620	1350	963
24	583	903	556	e900	1090	878	4170	13000	18500	3480	1320	944
25	549	857	545	996	e900	903	3810	11200	17700	3320	1300	925
26	527	804	542	962	e870	958	3600	10400	16700	3250	1330	913
27	514	763	e500	858	e970	979	3420	10900	16400	3280	1390	902
28	528	743	e450	e700	e1050	949	3310	13100	16500	3210	1360	883
29	566	757	e400	e600	---	939	3300	16300	15900	3010	1310	889
30	580	756	e430	e650	---	946	3730	19700	15400	2850	1310	978
31	704	---	e370	781	---	982	---	21800	---	2730	1280	---
TOTAL	16039	22740	18978	28965	21672	26359	107112	277460	492600	190360	52560	33213
MEAN	517.4	758.0	612.2	934.4	774.0	850.3	3570	8950	16420	6141	1695	1107
MAX	704	1030	747	1870	1200	1190	8510	21800	21400	13200	2620	1410
MIN	461	578	370	330	530	500	982	3450	12100	2730	1280	883
AC-FT	31810	45100	37640	57450	42990	52280	212500	550300	977100	377600	104300	65880
CFSM	0.33	0.49	0.40	0.60	0.50	0.55	2.31	5.78	10.6	3.97	1.10	0.72
IN.	0.39	0.55	0.46	0.70	0.52	0.63	2.57	6.67	11.84	4.57	1.26	0.80

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

MEAN	1181	1201	942.2	763.1	740.3	879.7	3264	9929	10100	4109	1651	1166
MAX	3650	3733	3388	2131	2017	2597	6877	15160	20780	9262	3232	2653
(WY)	1952	1990	1996	1974	1996	1986	1943	1954	1974	1954	1976	1959
MIN	517	486	433	398	342	406	833	4986	3353	1436	747	552
(WY)	2002	1988	2001	1988	2001	1944	1975	1944	1941	1977	1941	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002	
ANNUAL TOTAL	558621		1288058			
ANNUAL MEAN	1530		3529		3001	
HIGHEST ANNUAL MEAN					4721	1974
LOWEST ANNUAL MEAN					1383	1944
HIGHEST DAILY MEAN	11100	May 26	21800	May 31	58000	Jun 9 1964
LOWEST DAILY MEAN	270	Feb 15	330	Jan 1	200	Nov 24 1993
ANNUAL SEVEN-DAY MINIMUM	300	Feb 13	419	Dec 27	289	Nov 22 1993
MAXIMUM PEAK FLOW			22600	May 31	a69100	Jun 9 1964
MAXIMUM PEAK STAGE			10.29	May 31	b18.60	Jun 9 1964
INSTANTANEOUS LOW FLOW					c187	Feb 8 2001
INSTANTANEOUS LOW STAGE					d0.86	Jan 8 1953
ANNUAL RUNOFF (AC-FT)	1108000		2555000		2174000	
ANNUAL RUNOFF (CFSM)	0.99		2.28		1.94	
ANNUAL RUNOFF (INCHES)	13.42		30.95		26.34	
10 PERCENT EXCEEDS	4700		13000		8580	
50 PERCENT EXCEEDS	609		1030		1200	
90 PERCENT EXCEEDS	390		544		555	

a--From rating curve extended above 30,000 ft^3/s on basis of slope-area measurement of peak flow.
b--From floodmark.
c--Gage height, 0.87 ft, result of freezeup.
d--Discharge, 198 ft^3/s, site and datum then in use.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950, 1970, 1976 to current year.
PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to October 1978.
WATER TEMPERATURE: October 1975 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1975 to November 1978.
INSTRUMENTATION.--Temperature recorder since Oct. 1, 1975.
REMARKS.--Missing temperataure data for Feb. 28 to Mar. 3 due to equipment problems. Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1976-79): Maximum daily, 246 microsiemens per centimeter (µS/cm) at 25.0°C, Dec. 31, 1976; minimum daily, 128 µS/cm at 25.0°C, June 30, July 1, 1976.
WATER TEMPERATURE: Maximum, 23.0°C, Aug. 12, 1997; minimum, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATION (water years 1976-79): Maximum daily mean, 931 mg/L, May 11, 1976; minimum daily mean, 1 mg/L on many days each year.
SEDIMENT LOAD (water years 1976-79): Maximum daily, 56,800 tons, May 11, 1976; minimum daily, 1.1 tons, Mar. 3, 1978.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 17.5°C, July 24; minimum, 0.0°C on many days from November to April.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
NOV 2001									
01...	1215	805	7.7	206	6.5	6.0	E.10	.023	<.002
APR 2002									
18...	1400	4740	8.1	158	10.0	3.5	.43	.068	<.002
JUN									
17...	1245	19700	8.6	130	26.0	6.0	.35	.029	<.002
JUL									
23...	1245	3620	8.3	162	26.5	14.5	E.05	E.009	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
NOV 2001					
01...	<.007	E.004	83	4	8.7
APR 2002					
18...	E.005	.027	75	46	589
JUN					
17...	<.007	.20	71	371	19700
JUL					
23...	<.007	.005	96	18	176

E--Estimated.

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
NOV 2001											
01...	1215	100	29.7	7.46	.33	.0	1.04	104	.41	E.1	4.94
JUN 2002											
17...	1245	63	18.5	4.13	.32	.0	.66	69	E.24	<.10	4.67

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
NOV 2001											
01...	8.3	.16	249	115	E1	<.1	<.8	E.3	<1	<1	<1
JUN 2002											
17...	2.4	E.10	E3840	E72	E2	.3	3.8	11.5	4	6	24

E--Estimated.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.5	8.5	10.0	6.0	5.0	5.5	1.0	0.0	0.5	0.0	0.0	0.0
2	11.5	9.0	10.0	5.5	5.0	5.5	1.5	0.0	1.0	0.0	0.0	0.0
3	10.5	8.0	9.0	6.5	5.5	6.0	1.5	0.5	1.0	0.0	0.0	0.0
4	9.5	6.5	8.0	5.5	4.5	5.0	1.0	0.0	0.5	0.0	0.0	0.0
5	8.0	5.5	6.5	5.0	4.0	4.5	1.0	0.0	0.5	0.0	0.0	0.0
6	7.5	5.0	6.0	4.0	3.5	3.5	0.5	0.0	0.5	0.0	0.0	0.0
7	8.5	6.0	7.0	3.5	2.5	3.0	1.5	0.5	1.0	0.0	0.0	0.0
8	8.5	7.5	8.0	3.0	1.5	2.5	1.5	1.0	1.0	0.5	0.0	0.0
9	8.0	6.5	7.5	2.5	1.5	2.0	2.0	1.5	1.5	1.0	0.5	1.0
10	8.5	6.5	7.5	2.0	1.5	1.5	1.5	0.5	1.0	1.0	0.5	1.0
11	8.0	6.5	7.5	2.0	1.0	1.5	0.5	0.0	0.0	1.5	0.5	1.0
12	6.5	5.5	6.0	2.0	1.0	1.5	0.0	0.0	0.0	1.5	1.0	1.0
13	6.5	5.0	6.0	3.0	1.5	2.0	0.0	0.0	0.0	1.5	0.5	1.0
14	7.5	6.0	6.5	4.5	3.0	3.5	0.0	0.0	0.0	1.0	0.0	0.5
15	6.5	5.0	5.5	6.0	4.5	5.0	0.5	0.0	0.0	0.0	0.0	0.0
16	7.0	5.0	6.0	6.0	5.0	5.5	0.5	0.0	0.0	0.0	0.0	0.0
17	7.0	5.0	6.5	6.5	5.5	6.0	1.5	0.5	1.0	0.0	0.0	0.0
18	5.5	4.5	4.5	5.5	4.0	5.0	1.0	0.0	0.0	0.0	0.0	0.0
19	6.0	4.5	5.0	4.0	3.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0
20	6.5	5.0	5.5	3.5	3.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0
21	5.5	4.5	5.0	4.5	3.5	4.0	0.0	0.0	0.0	0.0	0.0	0.0
22	6.0	5.0	5.5	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
23	5.5	5.0	5.5	4.0	3.5	4.0	0.5	0.0	0.0	0.0	0.0	0.0
24	5.5	4.5	5.0	4.0	3.0	3.5	0.5	0.0	0.5	0.0	0.0	0.0
25	5.0	4.0	4.5	3.0	1.5	2.5	0.5	0.0	0.0	0.0	0.0	0.0
26	6.0	4.5	5.0	1.5	1.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
27	6.0	5.0	5.5	1.5	1.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
28	7.0	6.0	6.5	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
29	6.5	5.5	6.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	6.5	6.0	6.5	1.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0
31	7.0	6.0	6.5	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0
MONTH	11.5	4.0	6.5	6.5	0.0	3.5	2.0	0.0	0.5	1.5	0.0	0.0

PEND OREILLE RIVER BASIN

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	0.0	0.0	0.0	---	---	---	4.0	1.5	2.5	7.5	4.5	6.0
2	0.0	0.0	0.0	---	---	---	2.0	0.0	1.0	7.5	5.5	6.5
3	0.0	0.0	0.0	---	---	---	3.0	0.0	1.5	7.5	4.5	5.5
4	0.0	0.0	0.0	0.0	0.0	0.0	4.0	1.5	3.0	5.5	4.5	4.5
5	0.0	0.0	0.0	0.0	0.0	0.0	5.5	3.0	4.5	5.0	3.5	4.0
6	0.0	0.0	0.0	0.0	0.0	0.0	5.5	4.0	5.0	6.0	4.0	4.5
7	1.0	0.0	0.5	0.0	0.0	0.0	4.5	3.5	4.0	4.5	2.0	3.0
8	0.5	0.0	0.5	0.0	0.0	0.0	5.0	2.5	4.0	6.0	2.5	3.5
9	1.0	0.5	0.5	0.0	0.0	0.0	5.0	2.5	3.5	6.5	4.0	5.5
10	1.0	0.5	1.0	0.0	0.0	0.0	5.0	3.0	4.0	7.5	4.5	6.0
11	1.5	0.5	1.0	0.0	0.0	0.0	5.0	3.0	4.0	8.0	5.5	6.5
12	0.5	0.0	0.0	0.0	0.0	0.0	5.0	3.0	4.0	9.5	6.0	7.5
13	0.5	0.0	0.0	0.5	0.0	0.0	5.0	3.0	4.0	9.5	7.0	8.5
14	0.5	0.0	0.0	1.5	0.5	1.0	4.0	3.0	3.5	9.0	7.0	8.0
15	0.5	0.0	0.0	1.5	0.5	1.0	3.5	2.0	2.5	7.5	5.0	6.0
16	0.5	0.0	0.0	1.0	0.0	0.0	4.5	2.5	3.0	7.0	5.0	6.0
17	0.5	0.0	0.0	0.5	0.0	0.0	5.5	2.5	4.0	7.0	5.0	6.0
18	0.5	0.0	0.0	0.0	0.0	0.0	6.0	3.0	4.5	7.0	5.0	6.0
19	1.0	0.5	0.5	0.0	0.0	0.0	6.5	3.5	5.0	9.5	6.0	7.5
20	2.5	1.0	1.5	0.0	0.0	0.0	6.5	3.5	5.0	9.5	7.5	8.0
21	1.5	0.5	1.0	0.0	0.0	0.0	6.5	4.0	5.0	7.5	5.0	6.0
22	2.0	0.5	1.5	0.0	0.0	0.0	5.5	4.5	5.0	5.0	2.0	3.5
23	1.0	0.0	0.0	0.0	0.0	0.0	4.5	2.5	3.5	5.5	2.5	3.5
24	0.0	0.0	0.0	0.5	0.0	0.0	5.5	1.5	3.0	6.5	4.5	5.0
25	0.0	0.0	0.0	2.5	0.5	2.0	6.0	4.0	5.0	6.5	5.5	6.0
26	0.0	0.0	0.0	3.0	2.0	2.5	6.0	5.0	5.5	7.5	5.5	6.5
27	0.0	0.0	0.0	3.0	2.0	2.5	6.0	3.5	5.0	8.5	6.0	7.0
28	---	---	---	3.0	2.0	2.5	5.5	4.5	5.0	7.5	6.0	7.0
29	---	---	---	3.5	2.0	3.0	7.0	4.0	5.5	8.0	6.0	7.0
30	---	---	---	4.0	3.0	3.5	7.0	6.0	6.5	8.5	6.0	7.0
31	---	---	---	4.5	3.0	3.5	---	---	---	8.0	6.0	7.0
MONTH	---	---	---	---	---	---	7.0	0.0	4.0	9.5	2.0	6.0

		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.5	6.0	7.0	10.5	8.0	9.0	14.5	11.5	13.0	15.0	13.5	14.0
2	7.0	6.5	7.0	11.0	8.0	9.5	15.0	13.0	14.0	14.0	12.0	13.0
3	7.5	6.0	6.5	11.0	9.0	10.0	14.5	12.5	13.5	14.0	12.0	13.5
4	8.5	6.5	7.5	11.5	9.5	10.5	14.0	12.0	13.0	15.0	13.5	14.0
5	8.0	7.0	7.5	12.0	9.0	10.5	14.5	12.0	13.0	14.5	12.0	13.0
6	7.5	6.0	7.0	13.0	10.0	11.5	14.0	12.0	13.0	12.5	11.0	12.0
7	7.5	5.5	6.5	13.5	11.0	12.0	13.5	11.5	12.5	12.5	11.5	12.0
8	7.0	5.0	6.0	13.5	10.5	11.5	14.0	12.0	13.0	12.0	10.5	11.5
9	5.5	4.0	4.5	13.5	9.5	11.0	15.0	12.0	13.5	12.0	10.0	11.0
10	6.0	5.0	5.5	14.5	11.0	12.5	15.5	13.5	14.5	13.0	10.0	11.5
11	7.5	5.0	6.0	15.5	12.0	13.5	16.0	14.0	15.0	13.5	11.0	12.5
12	9.5	6.5	7.5	16.0	12.5	14.5	16.0	13.5	14.5	14.0	11.5	13.0
13	10.0	7.5	9.0	16.0	13.0	14.5	16.0	13.5	15.0	13.5	11.5	13.0
14	10.0	8.0	9.0	16.5	14.0	15.5	16.0	14.5	15.5	13.5	11.5	12.5
15	10.0	8.0	9.0	16.0	13.0	14.5	15.5	13.0	14.5	13.5	11.5	12.5
16	10.0	8.0	9.0	15.5	13.0	14.0	15.0	13.0	13.5	13.0	11.5	12.0
17	9.5	8.0	8.5	16.5	13.0	14.5	14.5	11.5	13.0	11.5	10.5	11.0
18	8.5	7.0	7.5	16.5	14.0	15.5	15.0	12.5	14.0	11.5	10.5	11.0
19	8.0	6.0	7.0	16.5	14.0	15.5	14.5	12.5	13.5	12.0	9.5	11.0
20	9.5	7.0	8.0	16.5	13.5	15.0	14.0	12.0	13.0	12.0	10.5	11.5
21	10.5	7.5	9.0	16.0	13.5	15.0	14.5	12.0	13.5	11.5	9.0	10.0
22	10.0	8.5	9.5	16.5	13.5	15.0	15.0	12.5	14.0	10.5	8.0	9.5
23	10.5	9.0	9.5	16.5	14.0	15.0	15.0	12.5	14.0	10.5	8.5	10.0
24	10.5	8.5	9.5	17.5	14.0	15.5	15.5	13.0	14.5	11.0	9.0	10.0
25	11.0	8.5	9.5	17.0	14.5	16.0	15.5	13.5	14.5	10.5	8.5	9.5
26	12.0	9.0	10.5	16.5	14.5	15.5	14.5	13.0	13.5	10.0	8.5	9.5
27	12.0	10.0	11.0	16.5	14.5	15.5	13.0	12.0	12.5	10.5	9.0	9.5
28	11.5	10.0	10.5	16.5	14.5	15.0	15.0	11.5	13.0	9.5	8.0	9.0
29	10.5	9.0	9.5	15.5	13.5	14.5	15.5	13.5	14.5	9.5	9.0	9.0
30	10.0	8.0	9.0	15.0	13.5	14.5	15.0	13.5	14.5	9.0	8.0	8.5
31	---	---	---	14.5	12.5	13.5	16.0	13.0	14.5	---	---	---
MONTH	12.0	4.0	8.0	17.5	8.0	13.5	16.0	11.5	14.0	15.0	8.0	11.5

PEND OREILLE RIVER BASIN

12358500 MIDDLE FORK FLATHEAD RIVER NEAR WEST GLACIER, MT

LOCATION.--Lat 48°29'43", long 114°00'33" (NAD 27), in S1/2SW$^1/_4$NE$^1/_4$ sec.34, T.32 N., R.19 W., Flathead County, Hydrologic Unit 17010207, on left bank 0.8 mi downstream from McDonald Creek, 1.3 mi west of West Glacier, and at river mile 3.8.
DRAINAGE AREA.--1,128 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1939 to current year. Prior to October 1947, published as "near Belton."
REVISED RECORDS.--WSP 1216: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 3,128.72 ft (NGVD 29). Prior to Nov. 22, 1950, nonrecording gage at present site and datum.
REMARKS.--Water-discharge records good. Bureau of Reclamation satellite at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	383	856	684	308	716	1210	797	3260	20500	11700	2230	956
2	375	820	672	284	689	1100	747	3650	17500	9910	2030	970
3	370	784	666	345	648	1040	725	4590	15400	9220	1920	924
4	363	780	654	406	633	1010	738	4970	15000	8800	1820	913
5	353	778	617	400	604	986	755	4630	15800	8600	1800	900
6	343	772	602	397	591	893	825	4220	18100	7840	1780	918
7	334	753	582	493	585	852	1060	3870	16300	7720	1760	982
8	323	728	570	1310	590	e820	1300	3540	14100	8930	1640	1010
9	322	700	564	2060	568	e800	1380	3240	13100	9410	1570	947
10	324	675	549	1770	548	e840	1520	3020	12900	8240	1520	887
11	356	648	535	1540	536	867	1790	2920	12100	7680	1470	844
12	359	615	518	1410	506	969	2160	3010	11000	7540	1410	822
13	351	597	525	1330	463	949	3400	3800	11500	7360	1360	804
14	358	587	556	1220	488	873	7210	5840	12800	7070	1330	789
15	349	588	540	1110	476	837	8790	6690	15300	6800	1310	772
16	335	615	523	1030	461	811	6730	6530	17800	6110	1270	755
17	335	687	552	1000	477	764	5340	6410	20000	5550	1230	745
18	339	779	545	951	478	733	4460	6690	19100	5180	1160	744
19	343	818	503	931	466	681	4010	7840	16900	4800	1120	723
20	342	820	492	922	460	602	3810	14700	14500	4480	1080	701
21	345	816	481	889	457	764	3860	20300	13500	4130	1070	690
22	362	812	488	847	635	715	3870	18400	14600	3750	1080	678
23	421	841	485	820	e1770	763	3900	14000	16900	3460	1060	658
24	419	833	467	808	e1800	788	3690	11000	17500	3300	1030	643
25	400	792	458	815	e1600	750	3400	9200	16700	3210	1030	626
26	378	750	437	796	1410	713	3200	8660	16200	3100	1030	614
27	370	717	384	784	1370	732	2990	10000	16200	3010	1020	612
28	423	697	343	755	1320	716	2820	13500	16500	2830	1030	605
29	466	696	379	720	---	695	2720	16700	15900	2620	1030	592
30	487	686	348	701	---	683	2980	21100	14500	2490	999	624
31	606	---	345	705	---	705	---	21700	---	2420	1000	---
TOTAL	11634	22040	16064	27857	21345	25661	90977	267980	468200	187260	42189	23448
MEAN	375.3	734.7	518.2	898.6	762.3	827.8	3033	8645	15610	6041	1361	781.6
MAX	606	856	684	2060	1800	1210	8790	21700	20500	11700	2230	1010
MIN	322	587	343	284	457	602	725	2920	11000	2420	999	592
MED	358	752	525	820	587	800	2990	6530	15900	6110	1270	764
AC-FT	23080	43720	31860	55250	42340	50900	180500	531500	928700	371400	83680	46510
CFSM	0.33	0.65	0.46	0.80	0.68	0.73	2.69	7.66	13.8	5.36	1.21	0.69
IN.	0.38	0.73	0.53	0.92	0.70	0.85	3.00	8.84	15.44	6.18	1.39	0.77

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

MEAN	1051	1173	914.0	705.4	709.4	852.6	3174	9595	10090	3975	1362	946.7
MAX	3004	5598	3750	2420	2686	2779	7093	14670	19870	8162	2364	2510
(WY)	1960	1990	1996	1974	1971	1986	1943	1957	1964	1954	1976	1968
MIN	367	279	262	282	244	307	664	5259	3576	1249	576	420
(WY)	1940	1953	1953	2001	2001	1944	1975	1941	1941	1944	1941	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002	
ANNUAL TOTAL	589414		1204655			
ANNUAL MEAN	1615		3300		2885	
HIGHEST ANNUAL MEAN					4071	1974
LOWEST ANNUAL MEAN					1437	1941
HIGHEST DAILY MEAN	12600	May 26	21700	May 31	92700	Jun 9 1964
LOWEST DAILY MEAN	207	Feb 15	284	Jan 2	189	Nov 27 1952
ANNUAL SEVEN-DAY MINIMUM	228	Feb 12	336	Dec 28	205	Nov 26 1952
MAXIMUM PEAK FLOW			22400	May 31	a140000	Jun 9 1964
MAXIMUM PEAK STAGE			9.10	May 31	36.46	Jun 9 1964
INSTANTANEOUS LOW FLOW			268	Jan 2	b173	Nov 27 1952
INSTANTANEOUS LOW STAGE			1.28	Jan 2	b0.72	Nov 27 1952
ANNUAL RUNOFF (AC-FT)	1169000		2389000		2090000	
ANNUAL RUNOFF (CFSM)	1.43		2.93		2.56	
ANNUAL RUNOFF (INCHES)	19.44		39.73		34.75	
10 PERCENT EXCEEDS	5530		11900		8480	
50 PERCENT EXCEEDS	535		893		1100	
90 PERCENT EXCEEDS	258		414		436	

a--About 140,000 ft^3/s, from rating curve extended above 31,000 ft^3/s, on the basis of a contracted-opening measurement at gage height, 19.42 ft, and flood volume-hydrographic comparison.
b--Stage below intakes.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--1949-50, 1970, 1998 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT									
31...	0845	550	7.3	188	8.5	8.0	E.07	.097	<.002
APR									
18...	1515	4330	8.3	162	10.0	5.0	E.07	.190	<.002
JUN									
17...	1430	20500	8.6	123	26.0	5.5	.23	.106	<.002
JUL									
23...	1415	3460	8.2	127	26.0	15.0	<.10	.074	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT					
31...	<.007	<.004	84	4	5.9
APR					
18...	<.007	.026	86	14	164
JUN					
17...	<.007	.198	54	441	24400
JUL					
23...	<.007	E.003	60	5	46.7

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT 2001											
31...	0845	93	25.6	7.10	.32	.0	.98	97	.36	<.1	4.38
JUN 2002											
17...	1430	59	16.8	4.14	.34	.0	.54	63	<.30	<.1	3.87

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT 2001											
31...	6.6	.14	154	104	<2	<.1	<.8	<.6	<1	<1	<1
JUN 2002											
17...	1.8	E.09	E3630	E66	E2	.1	4.4	12.4	4	6	21

E--Estimated.

PEND OREILLE RIVER BASIN

12359800 SOUTH FORK FLATHEAD RIVER ABOVE TWIN CREEK, NEAR HUNGRY HORSE, MT

LOCATION.--Lat 47°58'45", long 113°33'36" (NAD 27), in NE$^1/_4$NW$^1/_4$NE$^1/_4$ sec.36, T.26 N., R.16 W., Flathead County, Hydrologic Unit 17010209, Flathead National Forest, on left bank 0.1 mi downstream from Tin Creek, 0.4 mi upstream from Twin Creek, 36.3 mi southeast of Hungry Horse, and at river mile 42.2.

DRAINAGE AREA.--1,160 mi^2.

PERIOD OF RECORD.--October 1964 to September 1982, October 1984 to current year (no winter records).

GAGE.--Water-stage recorder. Elevation of gage is 3,575 ft (NGVD 29), from river-profile map.

REMARKS.--Seasonal records good except those for Apr. 1 to May 17, and those for estimated daily discharges, which are poor. No known regulation or diversions upstream from station. Bureau of Reclamation satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 8, 1964, reached a stage of 20.87 ft, from high-water profile; discharge, 50,900 ft^3/s, by slope-area measurement of peak flow.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				564	2140	15700	7740	1080	526	397	e220	
2				e495	2500	13800	6450	1040	522	381	e240	
3				e525	3110	12800	5850	994	498	371	e247	
4				549	3210	12600	5590	967	490	366	e255	
5				579	3060	12900	5400	989	481	368	e260	
6				752	2870	14600	4890	994	491	389	e290	
7				929	2660	13100	4710	954	598	388	285	
8				997	2460	11200	5160	938	622	379	288	
9				1040	2280	9140	5240	899	577	370	295	
10				1070	2140	7840	4490	848	540	364	289	
11				1140	2060	6920	4100	808	512	369	285	
12				1260	2150	6470	3920	782	488	365	281	
13				1670	2830	6900	3720	754	472	354	297	
14				3300	4410	7870	3580	726	456	348	298	
15				4490	5030	10300	3380	703	446	343	294	
16				3730	4970	13200	3040	684	436	339	282	
17				3110	4890	14600	2750	667	425	336	287	
18				2670	5350	14100	2520	645	424	330	285	
19				2440	7370	11700	2330	625	418	326	289	
20				2310	13900	9290	2180	607	407	323	301	
21				2340	18400	8680	2010	623	399	320	315	
22				2300	14500	10100	1850	632	391	318	328	
23				2390	10200	12000	1730	605	385	311	363	
24				2280	7890	12600	1630	586	379	298	342	
25				2130	6520	12100	1540	579	370	e275	e250	
26				2050	6120	11700	1460	573	366	e270	e270	
27				1980	7510	11600	1440	559	374	e275	e310	
28				1910	10300	11800	1380	558	370	293	306	
29				1870	13200	11800	1290	536	366	286	318	
30				2020	17100	10200	1200	522	389	e210	308	
31				---	16800	---	1140	530	---	e200	---	
TOTAL				54890	207930	337610	103710	23007	13618	10262	8678	
MEAN				1830	6707	11250	3345	742.2	453.9	331.0	289.3	
MAX				4490	18400	15700	7740	1080	622	397	363	
MIN				495	2060	6470	1140	522	366	200	220	
AC-FT				108900	412400	669600	205700	45630	27010	20350	17210	
CFSM				1.58	5.78	9.70	2.88	0.64	0.39	0.29	0.25	
IN.				1.76	6.67	10.83	3.33	0.74	0.44	0.33	0.28	

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2002, BY WATER YEAR (WY)*

MEAN	478.6	519.6	587.6	2442	7747	8474	2761	790.4	576.8	568.7	704.1	514.4
MAX	1197	2285	1342	4490	12580	15910	5904	1331	1853	1878	3098	1323
(WY)	1974	1971	1972	1990	1997	1974	1975	1972	1985	1986	1990	1976
MIN	207	201	252	464	4738	2522	844	339	245	225	204	249
(WY)	1980	1980	1980	1975	1977	1987	1977	1988	1988	1988	1988	1972

SUMMARY STATISTICS	FOR 2002 SEASON		FOR 1985 - 2002 SEASONS		WATER YEARS 1965 - 2002*	
ANNUAL MEAN					2310	
HIGHEST ANNUAL MEAN					2988	1971
LOWEST ANNUAL MEAN					1175	1977
HIGHEST DAILY MEAN	18400	May 21	28500	May 17 1997	29500	Jun 16 1974
LOWEST DAILY MEAN	200	Oct 31	176	Nov 30 1987	135	Jan 29 1980
ANNUAL SEVEN-DAY MINIMUM					155	Jan 26 1980
MAXIMUM PEAK FLOW	19400	May 21	29100	May 17 1997	30200	Jun 16 1974
MAXIMUM PEAK STAGE	12.78	May 21	15.01	May 17 1997	15.20	Jun 16 1974
INSTANTANEOUS LOW FLOW					a127	Nov 30 1979
ANNUAL RUNOFF (AC-FT)					1673000	
ANNUAL RUNOFF (CFSM)					1.99	
ANNUAL RUNOFF (INCHES)					27.06	
10 PERCENT EXCEEDS					7420	
50 PERCENT EXCEEDS					646	
90 PERCENT EXCEEDS					290	

*--Seasonal records only October 1984 to current year.
a--Gage height, 4.13 ft.
e--Estimated.

PEND OREILLE RIVER BASIN

12362000 HUNGRY HORSE RESERVOIR NEAR HUNGRY HORSE, MT

LOCATION.--Lat 48°20'28", long 114°00'48" (NAD 27), in NE$^1/_4$NE$^1/_4$NW$^1/_4$ sec.27, T.30 N., R.19 W., Flathead County, Hydrologic Unit 17010209, in block 14 of Hungry Horse Dam on South Fork Flathead River, 3.8 mi southeast of Hungry Horse, and at river mile 5.3.

DRAINAGE AREA.--1,654 mi^2.

PERIOD OF RECORD.--September 1951 to current year.

GAGE.--Water-stage recorder equipped with remote indicator in power house. Datum of gage is 3,196 ft (NGVD 29) (levels by U.S. Bureau of Reclamation). During construction and prior to May 1, 1953, various types of nonrecording gages were used.

REMARKS.--Reservoir and flow completely controlled by concrete arch-gravity dam; construction began in 1948; completed in 1952. Storage began Sept. 21, 1951. Usable capacity, 3,451,000 acre-ft, top of 1.0 ft flash-boards; 3,427,000 acre-ft between elevations 3,196 ft, lowest outlet, and 3,560 ft, controlled spillway elevation. Dead storage, 39,730 acre-ft below elevation 3,196 ft. Minimum operating level, 445,400 acre-ft, elevation, 3,336 ft for on-site power generation. All elevations are referenced to the National Geodetic Vertical Datum of 1929. Water is used for power production, flood control, irrigation and recreation. Controlled spillway is an adjustable ring gate with 1.0 ft flashboards. Figures given herein represent usable contents. Capacity table in use is dated August 1969.

COOPERATION.--Capacity table and daily elevations provided by U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 3,461,000 acre-ft, July 3, 4, 1955, Aug. 6, 1956; maximum elevation observed, 3,561.40 ft, July 3, 4, 1955; minimum contents observed since normal low operating level reached in May 1952, 607,700 acre-ft, Jan. 13, 1953, elevation, 3,362.50 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 3,469,000 acre-ft, July 13, elevation, 3,560.06 ft; minimum, 2,387,000 acre-ft, Apr. 7, 8, elevation, 3,508.97 ft.

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

Elevation	Contents
3,470	1,707,000
3,510	2,367,000
3,550	3,195,000

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 2359 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3533.49	3528.03	3525.03	3519.76	3517.00	3512.86	3509.42	3515.64	3533.32	3557.63	3557.00	3544.80
2	3533.29	3527.99	3524.92	3519.54	3516.84	3512.83	3509.34	3515.59	3534.86	3557.79	3556.58	3544.45
3	3533.08	3527.94	3524.80	3519.32	3516.67	3512.73	3509.23	3515.55	3535.87	3558.02	3556.19	3544.19
4	3532.84	3527.86	3524.68	3519.12	3516.51	3512.64	3509.13	3515.56	3536.88	3558.32	3555.78	3543.93
5	3532.64	3527.78	3524.57	3518.91	3516.29	3512.57	3509.03	3515.48	3537.99	3558.59	3555.40	3543.49
6	3532.38	3527.67	3524.45	3518.71	3516.12	3512.50	3508.98	3515.37	3539.30	3558.80	3555.05	3543.23
7	3532.16	3527.59	3524.31	3518.66	3515.96	3512.34	3508.97	3515.21	3540.33	3559.04	3554.64	3543.06
8	3531.96	3527.47	3524.10	3518.71	3515.81	3512.19	3508.97	3515.03	3540.95	3559.33	3554.23	3542.80
9	3531.76	3527.37	3523.97	3518.77	3515.63	3512.05	3508.99	3514.71	3541.31	3559.56	3553.85	3542.54
10	3531.56	3527.26	3523.82	3518.83	3515.40	3511.93	3509.09	3514.33	3541.53	3559.72	3553.42	3542.28
11	3531.37	3527.11	3523.65	3518.86	3515.21	3511.83	3509.20	3513.93	3541.65	3559.83	3553.01	3541.93
12	3531.19	3526.96	3523.50	3518.94	3515.02	3511.78	3509.44	3513.59	3541.65	3559.90	3552.58	3541.67
13	3531.01	3526.79	3523.38	3518.96	3514.78	3511.75	3509.88	3513.35	e3541.65	3560.06	3552.15	3541.32
14	3530.84	3526.67	3523.25	3518.96	3514.58	3511.68	3510.87	3513.39	3541.87	3560.01	3551.72	3541.06
15	3530.65	3526.47	3523.11	3518.91	3514.37	3511.60	3511.64	3513.47	3542.52	3560.01	3551.28	3540.71
16	3530.41	3526.33	3522.95	3518.82	3514.14	3511.49	3512.22	3513.56	3543.77	3559.96	3550.84	3540.37
17	3530.21	3526.21	3522.81	3518.70	3513.92	3511.34	3512.62	3513.67	3545.46	3559.79	3550.35	3540.11
18	3530.03	3526.12	3522.67	3518.62	3513.72	3511.23	3512.94	3513.84	3547.20	3559.63	3549.95	3539.67
19	3529.81	3526.01	3522.49	3518.55	3513.51	3511.12	3513.21	3514.31	3548.53	3559.44	3549.50	3539.41
20	3529.63	3525.93	3522.30	3518.48	3513.29	3511.00	3513.46	3516.00	3549.36	3559.33	3549.02	3539.06
21	3529.43	3525.89	3522.11	3518.38	3513.11	3510.78	3513.73	3518.51	3550.12	3559.20	3548.56	3538.72
22	3529.30	3525.85	3521.96	3518.30	3512.95	3510.60	3514.07	3520.68	3551.02	3559.26	3548.16	3538.46
23	3529.16	3525.84	3521.76	3518.18	3512.98	3510.49	3514.28	3521.92	3552.22	3559.11	3547.72	3538.28
24	3529.00	3525.75	3521.57	3518.09	3512.95	3510.38	3514.48	3522.64	3553.34	3558.95	3547.25	3538.02
25	3528.83	3525.67	3521.38	3517.98	3512.92	3510.24	3514.66	3523.12	3554.23	3558.79	3546.81	3537.92
26	3528.62	3525.56	3521.16	3517.93	3512.88	3510.07	3514.85	3523.60	3555.00	3558.62	3546.37	3537.76
27	3528.45	3525.45	3520.95	3517.80	3512.87	3509.96	3514.99	3524.31	3555.73	3558.46	3546.05	3537.59
28	3528.32	3525.32	3520.71	3517.65	3512.87	3509.85	3515.16	3525.33	3556.41	3558.26	3545.72	3537.41
29	3528.17	3525.25	3520.48	3517.48	---	3509.74	3515.31	3526.69	3556.93	3558.03	3545.43	3537.33
30	3528.10	3525.15	3520.24	3517.30	---	3509.61	3515.51	3528.92	3557.47	3557.73	3545.41	3537.15
31	3528.09	---	3520.03	3517.12	---	3509.47	---	3531.23	---	3557.38	3545.06	---
MAX	3533.49	3528.03	3525.03	3519.76	3517.00	3512.86	3515.51	3531.23	3557.47	3560.06	3557.00	3544.80
MIN	3528.09	3525.15	3520.03	3517.12	3512.87	3509.47	3508.97	3513.35	3533.32	3557.38	3545.06	3537.15

CONTENTS, IN THOUSANDS OF ACRE-FEET, AT END OF MONTH

2761	2701	2599	2542	2461	2397	2511	2826	3407	3405	3124	2951

CHANGE IN CONTENTS, IN ACRE-FEET

- 77,000	-60,000	-102,000	-57,000	-81,000	-64,000	+114,000	+315,000	+581,000	-2,000	-281,000	-173,000

CAL YR 2001 . . . . . +79,000
WTR YR 2002 . . . . . +113,000

e--Estimated.

PEND OREILLE RIVER BASIN

12362500 SOUTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT

LOCATION.--Lat 48°21'24", long 114°02'12" (NAD 27), in SW$^1/_4$SE$^1/_4$SW$^1/_4$ sec.16, T.30 N., R.19 W., Flathead County, Hydrologic Unit 17010209, on right bank 1.7 mi downstream from Hungry Horse Dam, 6.8 mi east of Columbia Falls, and at river mile 3.5.

DRAINAGE AREA.--1,663 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1910 to January 1911 (discharge measurements only), February 1911 to September 1913 (no winter records), October 1913 to August 1916 (scattered daily discharge only), water years 1917-22 (annual maximum), April 1923 to November 1924 (no winter records), July to October 1925, May to November 1927, May 1928 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1923-24(M), 1926-27(M), 1932(M), 1935-36(M). WSP 1636: 1958 (adjusted runoff).

GAGE.--Water-stage recorder. Elevation of gage is 3,040 ft (NGVD 29) (levels by the U.S. Bureau of Reclamation). September 1910 to September 1916, nonrecording gage, Apr. 23, 1923, to Sept. 30, 1928, water-stage recorder at site 3 mi downstream at different datum. Oct. 1, 1928, to Sept. 30, 1952, water-stage recorder at site 1.5 mi downstream at different datum.

REMARKS.--Water-discharge records excellent . Flow regulated by Hungry Horse Reservoir since Sept. 21, 1951 (see preceding page). U.S. Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--74 years (water years, 1929-2002), 3,468 ft^3/s, 28.32 in/yr, 2,513,000 acre-ft/yr, adjusted for change in contents in Hungry Horse Reservoir since Oct. 1, 1951.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 46,200 ft^3/s, June 19, 1916, gage height, 16.6 ft, site and datum then in use, from rating curve extended above 20,000 ft^3/s; minimum observed, 7.3 ft^3/s, Sept. 24, 1951, gage height, 0.52 ft, dam closure, site and datum then in use; minimum daily, 7.3 ft^3/s, Sept. 24, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,100 ft^3/s, June 12-14, gage height, 10.33 ft; minimum daily, 463 ft^3/s, May 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2510	1990	1920	2780	2290	1240	1930	3380	688	8280	6040	4010
2	2460	1760	1920	2860	2240	1390	1800	5680	3700	6960	6050	4020
3	2480	1810	1910	2790	2250	1670	2030	6300	7300	5150	6050	4030
4	2490	1860	1930	2610	2320	1720	1990	6280	8060	4020	5950	4040
5	2480	1880	2020	2500	2370	1690	1980	6270	7830	4040	6060	4050
6	2520	1900	2070	2450	2400	1950	1970	6250	6510	4040	6050	4060
7	2540	1920	2090	2360	2410	2280	1980	6260	7540	4030	6040	4050
8	2520	1920	2140	1910	2400	2330	1960	6260	8960	4030	6110	4040
9	2560	1960	2130	1230	2400	2290	2130	6940	8950	4010	6060	4040
10	2560	1990	2150	961	2410	2150	1970	7250	8950	4100	6030	4020
11	2550	2150	2240	974	2480	2020	1940	7250	8950	4320	6030	4030
12	2470	2150	2230	972	2500	1790	1970	7260	9520	4420	6080	4070
13	2410	2150	2280	974	2660	1630	2050	7250	10000	4450	6110	4060
14	2430	2200	2180	1200	2680	1670	2070	7260	9320	4430	6090	4030
15	2450	2260	2140	1470	2680	1800	2350	7260	8460	4400	6000	4030
16	2500	2280	2210	1800	2660	1870	2040	7260	5650	5100	6060	4040
17	2520	2120	2190	1830	2660	2150	2010	7290	1780	5500	6040	4030
18	2480	1960	2150	1900	2590	2120	2030	7280	987	5360	6040	4020
19	2540	1860	2370	1970	2580	2250	2020	7290	1960	5440	5990	3990
20	2500	1460	2420	1860	2580	2550	2030	6360	4200	4100	6080	4010
21	2510	1600	2360	1850	2600	2610	2010	3180	4330	4050	6060	3450
22	2550	1620	2310	1910	2590	2470	2040	1310	4240	4060	6030	2870
23	2460	1630	2280	2000	2160	1960	2030	3410	4250	4040	6030	2190
24	2370	1630	2330	2070	1910	1980	2020	5100	4880	4040	6030	1890
25	2350	1660	2390	2010	1470	2060	2020	5090	6350	4020	6010	1900
26	2390	1820	2380	1950	1270	2020	2040	5090	7470	4030	5820	2090
27	2410	1860	2480	2080	1280	2020	2030	5090	7260	4040	5060	2260
28	2510	1880	2690	2120	1250	2020	2020	6490	8040	4040	4590	2170
29	2380	1890	2760	2370	---	2040	2010	6690	8810	4050	3900	2000
30	2310	1910	2700	2460	---	2070	2010	2040	8800	4870	4070	1990
31	2250	---	2750	2360	---	2070	---	463	---	6060	4030	---
TOTAL	76460	57080	70120	60581	64090	61880	60480	176583	193745	143480	178590	103480
MEAN	2466	1903	2262	1954	2289	1996	2016	5696	6458	4628	5761	3449
MAX	2560	2280	2760	2860	2680	2610	2350	7290	10000	8280	6110	4070
MIN	2250	1460	1910	961	1250	1240	1800	463	688	4010	3900	1890
MED	2480	1900	2230	1970	2410	2020	2020	6280	7390	4100	6040	4020
AC-FT	151700	113200	139100	120200	127100	122700	120000	350300	384300	284600	354200	205300
CFSM	1.48	1.14	1.36	1.18	1.38	1.20	1.21	3.43	3.88	2.78	3.46	2.07
IN.	1.71	1.28	1.57	1.36	1.43	1.38	1.35	3.95	4.33	3.21	3.99	2.31
MEAN †	1215	894	603	1028	830	955	3932	10820	16220	4596	1190	543
CFSM †	0.73	0.54	0.36	0.62	0.50	0.57	2.36	6.51	9.75	2.76	0.72	0.33
IN †	0.84	0.60	0.42	0.71	0.52	0.66	2.64	7.50	10.88	3.19	0.83	0.36
AC-FT†	74700	53200	37100	63200	46100	58700	234000	665300	965300	282600	73200	32300

OBSERVED

CAL YR 2001	TOTAL	735049	MEAN	2014	MAX	6080	MIN	482	AC-FT	1458000
WTR YR 2002	TOTAL	1246569	MEAN	3415	MAX	10000	MIN	463	AC-FT	2473000

ADJUSTED

CAL YR 2001	TOTAL	774938	MEAN	2123	CFSM	1.28	IN	17.33	AC-FT	1537000
WTR YR 2002	TOTAL	1303605	MEAN	3572	CFSM	2.15	IN	29.16	AC-FT	2586000

†--Adjusted for change in contents in Hungry Horse Reservoir.

12362500 SOUTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1964 to September 1968, March 1979 to current year.

INSTRUMENTATION.--Temperature recorder since Mar. 30, 1979.

REMARKS.-Prior to March 1979, thermograph records furnished by Montana Department of Fish, Wildlife, and Parks. Unpublished records of instantaneous water temperature and specific conductance are available in files of District office

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 19.0°C Aug. 9-11, 1966, Aug. 2-6, 1968; minimum (water years 1965-68, 1979-81, 1983-88), 2.0°C on many days during winter most years.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 18.0°C, July 22; minimum, 2.5°C, Oct. 18, 19, Apr. 2, 3.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

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

PEND OREILLE RIVER BASIN

12362500 SOUTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.0	4.0	4.0	3.5	4.0
2	4.0	4.0	4.0	4.0	3.5	4.0	4.5	2.5	4.0	4.0	3.5	4.0
3	4.0	3.5	4.0	4.0	3.5	4.0	4.0	2.5	3.5	4.0	3.5	4.0
4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.5	4.0	3.5	4.0
5	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	3.5	4.0	4.0	4.0
6	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	4.0	4.0
7	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	3.5
8	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	3.5	3.5	3.5	3.5
9	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.5	4.0	3.5	3.5	3.5
10	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.0	3.5	3.5	3.5	3.5
11	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.0	4.0	3.5	3.5	3.5
12	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	3.5	3.5	3.5	3.5
13	4.0	3.5	4.0	4.0	3.5	4.0	3.5	3.5	3.5	3.5	3.5	3.5
14	4.0	3.5	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5	3.5
15	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	3.5	3.5	3.5	3.5
16	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	3.5	3.5	3.5	3.5
17	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	3.5	3.5	3.5	3.5
18	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	4.0	3.5	3.5	3.5
19	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.0	3.5	3.5	3.5	3.5
20	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.0	4.0	3.5	3.5	3.5
21	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	3.5
22	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	3.5
23	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	3.5	3.5	3.5
24	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	3.5
25	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	3.5	3.5	3.5
26	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	3.5	3.5	3.5
27	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	3.5
28	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0
29	---	---	---	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0
30	---	---	---	4.0	3.5	4.0	4.0	3.5	4.0	5.0	3.5	4.0
31	---	---	---	4.0	3.5	4.0	---	---	---	5.5	3.5	4.5
MONTH	4.0	3.5	4.0	4.0	3.5	4.0	4.5	2.5	4.0	5.5	3.5	3.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	4.5	3.5	4.0	11.5	8.0	10.0	15.0	12.5	13.5	14.5	12.0	13.5
2	4.0	3.5	3.5	11.5	9.5	10.5	15.0	14.0	14.5	15.0	12.5	13.5
3	4.0	3.5	3.5	11.5	10.5	11.0	16.5	12.0	14.0	15.0	13.5	14.5
4	4.0	3.5	3.5	11.5	8.5	10.0	16.0	13.0	15.0	15.0	13.5	14.5
5	4.0	3.5	3.5	11.0	8.0	10.0	14.0	12.0	13.0	15.0	9.5	11.5
6	4.0	3.5	3.5	11.5	10.5	11.0	15.0	13.0	14.0	14.0	9.5	11.5
7	4.0	3.5	3.5	12.0	10.5	11.0	15.0	13.5	14.0	14.0	12.5	13.5
8	4.0	3.5	3.5	14.0	11.0	12.5	15.5	14.0	14.5	14.5	13.5	14.0
9	4.0	3.5	3.5	13.0	11.0	12.0	14.5	13.0	14.0	14.5	13.5	14.0
10	4.0	3.5	3.5	13.0	11.5	12.5	15.5	13.5	14.5	14.5	13.0	13.5
11	4.0	3.5	3.5	13.0	11.5	12.0	15.0	10.5	13.0	13.5	12.5	13.0
12	4.0	3.5	3.5	13.0	12.0	12.5	14.5	13.0	13.5	13.5	13.0	13.5
13	4.5	3.5	4.0	13.5	12.5	13.0	14.0	12.0	13.0	14.0	13.0	13.5
14	4.5	4.0	4.5	15.0	12.5	14.0	15.0	9.5	13.0	14.0	13.5	14.0
15	4.5	4.0	4.0	15.0	13.0	14.0	16.0	11.5	14.0	14.0	13.5	14.0
16	4.5	4.0	4.0	14.5	13.0	13.5	15.0	10.5	13.5	14.5	13.0	13.5
17	4.5	4.0	4.0	14.5	12.5	13.5	15.0	12.0	13.5	14.0	12.0	13.0
18	4.5	4.0	4.0	15.0	13.5	14.5	15.0	12.5	13.5	12.5	11.0	11.5
19	4.5	4.0	4.0	15.0	14.0	14.5	15.5	14.0	14.5	13.5	11.0	12.0
20	4.5	4.0	4.0	16.0	14.0	14.5	15.5	13.0	14.0	11.5	8.5	10.0
21	4.5	4.0	4.0	16.5	14.0	15.0	16.0	13.0	14.0	11.5	8.5	10.5
22	4.5	4.0	4.0	18.0	15.5	16.5	16.0	14.0	15.0	13.0	11.5	12.5
23	4.5	4.0	4.0	16.5	15.0	16.0	15.0	13.0	14.0	13.0	11.5	12.5
24	4.5	4.0	4.0	17.0	15.0	16.0	14.5	13.5	14.0	13.0	11.0	12.5
25	4.5	4.0	4.0	17.0	14.5	15.5	15.0	14.0	14.5	12.5	11.0	12.0
26	4.5	4.0	4.5	16.5	14.0	15.0	15.5	12.0	14.0	12.5	12.0	12.5
27	9.0	4.0	6.0	16.0	13.0	14.5	15.5	11.5	13.5	12.5	11.5	12.5
28	12.5	8.5	10.5	16.0	14.0	15.0	15.0	13.5	14.0	13.0	12.5	12.5
29	12.5	9.0	11.0	15.5	13.0	14.5	15.0	13.5	14.5	13.0	12.0	12.5
30	11.5	9.0	10.5	15.5	13.0	14.0	15.0	13.5	14.0	12.5	11.5	12.5
31	---	---	---	14.5	10.0	12.0	15.0	14.0	14.5	---	---	---
MONTH	12.5	3.5	4.5	18.0	8.0	13.0	16.5	9.5	14.0	15.0	8.5	13.0

PEND OREILLE RIVER BASIN

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT

LOCATION.--Lat 48°21'43", long 114°11'02" (NAD 27), in NW$^1/_4$NW$^1/_4$SE$^1/_4$ sec.17, T.30 N., R.20 W., Flathead County, Hydrologic Unit 17010208, on right bank 200 ft downstream from county road bridge at Columbia Falls, 5.7 mi downstream from South Fork, and at river mile 143.0.

DRAINAGE AREA.--4,464 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1922 to September 1923 (fragmentary), June 1928 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1092: 1923. WSP 1216: Drainage area. WSP 1636: 1958 (adjusted runoff).

GAGE.--Water-stage recorder. Datum of gage is 2,977.67 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to Nov. 12, 1928, nonrecording gage on bridge 200 ft upstream at datum 0.19 ft higher.

REMARKS.--Water-discharge records excellent. South Fork Flathead River, which contributes about one-third of flow, is completely regulated by Hungry Horse Reservoir 10.9 mi upstream since Sept. 21, 1951 (see station number 12362000). Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--74 years, 9,638 ft^3/s, 29.32 in/yr, 6,983,000 acre-ft/yr, adjusted for change in contents in Hungry Horse Reservoir since Oct. 1, 1951.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 176,000 ft^3/s, June 9, 1964, gage height, 25.58 ft, from floodmarks, from rating curve extended above 95,000 ft^3/s on basis of slope-area measurement of peak flow; minimum, 798 ft^3/s, Dec. 8, 1929, gage height, -0.08 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a stage of 22.7 ft, from floodmarks, discharge, 142,000 ft^3/s, from rating curve extended above 95,000 ft^3/s on basis of slope-area measurement of peak flow in 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 45,400 ft^3/s, May 31, gage height, 13.17 ft; minimum daily, 3,410 ft^3/s, Nov. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3510	3720	3460	3440	3790	3730	4070	10800	43800	34700	11400	6340
2	3480	3580	3470	3460	3730	3640	3910	14100	41700	29000	11000	6270
3	3450	3480	3450	3550	3680	3720	4010	16700	41600	24800	10600	6250
4	3460	3470	3430	3600	3710	3820	3960	17600	40400	22100	10300	6200
5	3460	3480	3440	3540	3700	3810	4000	17000	40700	21300	10100	6190
6	3450	3470	3470	3540	3720	3670	4160	16100	42700	20100	10100	6250
7	3480	3480	3470	3520	3720	3800	4680	15300	41400	19300	9980	6340
8	3460	3460	3480	3950	3740	3840	5450	14500	38100	20400	9830	6450
9	3470	3450	3480	4980	3720	3880	5840	14400	36900	22500	9680	6430
10	3480	3410	3450	4620	3680	4040	5880	14300	36600	21200	9480	6350
11	3520	3490	3460	4220	3700	3990	6780	14000	36100	20200	9340	6230
12	3510	3500	3460	3930	3680	4000	7530	14000	33300	19700	9260	6170
13	3480	3480	3470	3760	3650	3910	9690	15000	33700	19500	9180	6130
14	3440	3480	3510	3630	3710	3780	16300	18000	35700	18900	9080	6050
15	3450	3530	3480	3650	3740	3790	20600	20600	39100	18400	8960	5990
16	3480	3580	3450	3690	3720	3790	16900	20400	41300	17900	8870	5950
17	3500	3610	3510	3790	3750	3840	13900	20100	41900	17500	8880	5940
18	3500	3670	3510	3670	3760	3960	12200	20300	41500	16600	8780	5950
19	3490	3810	3470	3750	3740	3820	11200	21500	38800	15900	8640	5910
20	3490	3560	3570	3740	3710	3850	10700	30400	36100	14500	8570	5870
21	3470	3430	3570	3730	3690	3940	10700	41000	33000	13400	8560	5620
22	3540	3460	3510	3690	3880	4100	10900	41400	33500	12700	8490	5110
23	3590	3500	3480	3690	4600	4000	11000	35400	37400	12100	8440	4510
24	3560	3510	3470	3710	4810	3850	10600	30200	41100	11600	8360	3980
25	3470	3440	3480	3770	4270	3970	9830	26100	41300	11300	8300	3720
26	3470	3470	3470	3710	3790	3930	9330	24400	40800	11000	8260	3730
27	3430	3480	3420	3700	3740	3950	8950	25600	40400	10900	7750	3840
28	3530	3430	3430	3690	3790	3950	8630	32400	41300	10800	7200	3880
29	3560	3460	3560	3700	---	3920	8430	39800	41400	10400	6510	3830
30	3520	3460	3460	3790	---	3920	8870	43400	39900	10300	6460	3760
31	3570	---	3490	3740	---	3960	---	44800	---	11600	6420	---
TOTAL	108270	105350	107830	116950	106920	120170	269000	729600	1171500	540600	276780	165240
MEAN	3493	3512	3478	3773	3819	3876	8967	23540	39050	17440	8928	5508
MAX	3590	3810	3570	4980	4810	4100	20600	44800	43800	34700	11400	6450
MIN	3430	3410	3420	3440	3650	3640	3910	10800	33000	10300	6420	3720
AC-FT	214800	209000	213900	232000	212100	238400	533600	1447000	2324000	1072000	549000	327800
CFSM	0.78	0.79	0.78	0.85	0.86	0.87	2.01	5.27	8.75	3.91	2.00	1.23
IN.	0.90	0.88	0.90	0.97	0.89	1.00	2.24	6.08	9.76	4.50	2.31	1.38
MEAN †	2241	2504	1820	2846	2361	2836	10880	28660	48820	17400	4359	2601
CFSM †	0.50	0.56	0.41	0.64	0.53	0.64	2.44	6.42	10.94	3.90	0.98	0.58
IN. †	0.58	0.63	0.47	0.74	0.55	0.73	2.72	7.40	12.20	4.49	1.13	0.65
AC-FT†	137800	149000	111900	175000	131100	174400	674600	1762000	2905000	1070000	268000	154800

OBSERVED

CAL YR 2001	TOTAL	1920150	MEAN	5261	MAX	24300	MIN	3410	AC-FT	3809000
WTR YR 2002	TOTAL	3818210	MEAN	10460	MAX	44800	MIN	3410	AC-FT	7573000

ADJUSTED

CAL YR 2001	TOTAL	1959969	MEAN	5370	CFSM	1.20	IN	16.33	AC-FT	3888000
WTR YR 2002	TOTAL	3875271	MEAN	10620	CFSM	2.38	IN	32.28	AC-FT	7686000

†--Adjusted for change in contents in Hungry Horse Reservoir.

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949-50, 1963-67, 1970, 1979 to September 1994. March 2002 to July 2002. Water years 1968-69 published as Flathead River near Kalispell (station 12363500) 15 mi downstream. No appreciable inflow or outflow occurs between the two points.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1964 to September 1967, March 1979 to September 1981.
WATER TEMPERATURE: January 1949 to September 1950, August 1963 to September 1969, March 1979 to current year.
SUSPENDED-SEDIMENT DISCHARGE: July 1965 to September 1969.

INSTRUMENTATION.--Temperature recorder since Mar. 27, 1979.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1965-67, 1979-81): Maximum daily, 290 microsiemens per centimeter (µS/cm) at 25.0°C, April 6, 1980; minimum daily, 121 µS/cm at 25.0°C, May 28, 1979.
WATER TEMPERATURE: Maximum, 21.0°C, Aug. 23, 1963, Aug. 8, 1968; minimum, 0.0°C on several days during winter periods most years.
SEDIMENT CONCENTRATION (water years 1965-69): Maximum daily, 980 mg/L, May 21, 1967; Minimum daily, 1 mg/L on several days most years.
SEDIMENT LOAD (water years 1965-69): Maximum daily, 140,000 tons, May 23, 1967; minimum daily, 4 tons, Mar. 4-6, 1967.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 16.5°C, several days in July and August; minimum, 0.0°C, several days in February and March.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)
MAR 2002								
27...	1000	3930	8.2	171	4.5	3.5	<.015	E.05
APR								
17...	1200	13900	8.0	151	12.0	6.0	<.015	.11
MAY								
17...	0945	20100	7.9	187	6.0	5.5	<.015	E.08
JUN								
13...	1000	33600	8.1	140	14.0	7.0	<.015	E.10
JUL								
18...	1230	16500	8.3	142	25.0	15.5	<.015	<.10

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAR 2002							
27...	.079	<.002	<.007	E.003	90	2	21.2
APR							
17...	.130	<.002	<.007	.023	68	32	1200
MAY							
17...	.083	<.002	<.007	.014	55	24	1300
JUN							
13...	.077	<.002	<.007	.034	76	53	4810
JUL							
18...	.038	<.002	<.007	.004	66	10	446

E--Estimated.

PEND OREILLE RIVER BASIN

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	14.5	12.0	13.0	5.5	5.0	5.0	3.5	3.0	3.0	2.5	2.0	2.5
2	13.5	11.5	12.5	5.0	5.0	5.0	3.5	3.0	3.0	3.0	2.5	2.5
3	13.5	10.5	12.0	6.5	4.5	5.5	3.5	2.5	3.0	3.0	2.5	3.0
4	13.0	11.0	11.5	6.0	4.5	5.0	3.0	2.5	3.0	3.0	2.5	2.5
5	12.5	10.0	11.5	5.0	4.0	4.5	3.0	2.5	2.5	3.0	2.5	2.5
6	12.5	10.0	11.0	4.0	3.5	4.0	3.0	2.5	2.5	3.0	2.5	2.5
7	12.5	10.5	11.5	5.0	3.5	4.0	3.5	2.5	3.0	3.0	2.5	3.0
8	11.0	10.5	10.5	4.5	3.0	3.5	3.5	3.0	3.0	3.0	2.0	2.5
9	10.5	10.5	10.5	4.5	3.0	3.5	4.0	3.0	3.0	2.5	1.5	2.0
10	11.5	10.0	10.5	4.0	3.0	3.5	3.0	2.5	3.0	2.0	1.5	2.0
11	11.0	10.0	10.5	4.0	3.0	3.5	3.0	2.5	2.5	2.5	2.0	2.0
12	10.0	9.0	9.5	4.5	3.0	3.5	2.5	2.0	2.5	2.5	2.0	2.5
13	10.0	9.0	9.5	4.0	3.0	3.5	3.0	2.5	2.5	2.5	2.0	2.5
14	10.0	7.5	9.0	5.0	4.0	4.5	3.5	2.5	3.0	2.5	1.5	2.0
15	10.5	7.5	9.0	5.5	4.5	5.0	3.5	2.5	2.5	1.5	1.0	1.5
16	10.5	8.5	9.5	5.0	4.5	5.0	3.5	2.5	3.0	2.0	1.5	1.5
17	9.5	5.0	8.0	5.5	5.0	5.0	3.5	3.0	3.5	2.0	1.0	1.5
18	5.0	4.0	4.5	5.5	4.5	5.0	3.0	2.5	2.5	1.5	1.0	1.5
19	5.0	4.0	4.5	4.5	3.5	4.0	3.0	2.5	2.5	2.0	1.5	1.5
20	6.5	4.5	5.0	4.5	4.0	4.0	2.5	2.0	2.5	2.0	1.5	1.5
21	5.0	4.0	4.5	4.5	4.0	4.5	3.0	2.5	2.5	2.5	1.5	2.0
22	5.5	4.5	5.0	4.5	4.0	4.5	3.0	2.5	3.0	2.0	1.5	2.0
23	5.0	4.5	4.5	4.5	4.0	4.5	3.0	2.5	3.0	2.0	1.5	2.0
24	4.5	4.0	4.5	5.0	3.5	4.0	3.0	2.5	2.5	2.5	1.5	2.0
25	4.5	4.0	4.0	3.5	3.0	3.5	2.5	2.5	2.5	3.0	2.5	2.5
26	5.5	4.0	4.5	3.5	2.5	3.0	2.5	2.5	2.5	2.5	2.0	2.5
27	5.5	4.0	5.0	3.5	3.0	3.0	2.5	2.0	2.5	2.5	1.5	2.0
28	6.0	4.5	5.0	3.0	2.5	3.0	2.5	2.0	2.5	2.5	1.5	2.0
29	5.5	4.5	5.0	3.0	2.0	2.5	3.0	2.0	2.5	2.0	1.5	1.5
30	5.5	5.0	5.0	3.0	2.5	3.0	3.0	2.0	2.5	2.0	1.5	1.5
31	6.0	5.0	5.5	---	---	---	3.0	2.0	2.5	2.5	1.5	2.0
MONTH	14.5	4.0	8.0	6.5	2.0	4.0	4.0	2.0	2.5	3.0	1.0	2.0

		FEBRUARY			MARCH			APRIL			MAY	
1	3.0	2.0	2.5	2.5	0.5	1.0	4.5	2.5	3.5	6.5	5.0	6.0
2	2.5	2.0	2.5	2.5	0.5	1.5	4.5	1.0	2.5	6.5	5.5	6.0
3	3.0	1.5	2.0	2.0	0.5	1.5	5.0	1.5	3.0	6.0	5.0	5.5
4	3.5	2.0	2.5	2.0	1.0	1.5	6.0	2.5	4.0	5.0	4.5	4.5
5	3.5	2.0	2.5	2.0	0.0	1.0	6.5	3.0	4.5	4.5	4.0	4.0
6	3.5	2.5	3.0	0.5	0.0	0.0	6.0	4.5	5.0	5.5	4.0	4.5
7	3.5	3.0	3.0	1.0	0.0	0.5	5.5	4.5	5.0	5.0	3.5	4.0
8	3.0	2.5	2.5	1.5	0.0	1.0	5.5	4.0	4.5	4.5	3.0	4.0
9	4.0	2.5	3.0	2.5	1.0	1.5	4.5	4.0	4.5	6.0	4.0	5.0
10	4.0	2.5	3.0	3.0	1.5	2.0	5.0	4.0	4.5	6.0	4.5	5.0
11	3.5	2.5	3.0	2.5	2.0	2.0	5.0	4.0	4.5	6.5	5.0	5.5
12	3.5	2.0	2.5	3.5	1.5	2.0	5.0	4.5	4.5	7.0	5.0	6.0
13	3.0	1.5	2.0	3.0	1.5	2.0	4.5	4.0	4.5	7.5	6.0	6.5
14	4.0	2.0	2.5	3.5	2.0	2.5	4.5	3.0	3.5	7.0	6.0	6.5
15	4.0	2.0	2.5	3.5	2.0	3.0	3.0	2.5	3.0	6.0	5.0	5.5
16	3.5	1.5	2.5	2.5	0.5	1.5	4.0	2.5	3.5	6.0	5.0	5.5
17	4.0	2.0	3.0	3.0	0.5	1.5	4.5	3.0	4.0	6.0	5.5	5.5
18	3.5	2.5	3.0	2.0	1.0	1.5	5.5	3.5	4.5	6.0	5.0	5.5
19	3.5	2.5	3.0	1.5	0.0	1.0	6.0	4.5	5.0	8.0	5.5	6.5
20	4.0	3.0	3.5	1.5	0.0	1.0	6.0	4.5	5.0	8.0	6.5	7.0
21	3.5	2.5	3.0	3.5	0.5	2.0	5.5	4.5	5.0	7.0	5.0	5.5
22	4.0	3.0	3.5	4.5	1.5	2.5	5.0	4.5	5.0	5.0	3.0	4.0
23	3.5	0.0	1.5	4.0	1.5	2.5	4.5	3.5	4.0	5.0	3.0	4.0
24	1.5	0.0	0.5	4.5	1.5	2.5	4.5	2.5	3.5	5.5	4.5	5.0
25	1.5	0.0	0.5	4.0	2.0	3.0	5.5	4.0	5.0	6.0	5.5	5.5
26	1.0	0.0	0.5	4.5	2.5	3.5	6.5	5.0	5.5	6.5	5.5	6.0
27	1.0	0.0	0.5	4.0	3.0	3.5	5.5	4.0	5.0	7.5	6.0	6.5
28	1.5	0.5	1.0	5.0	3.0	3.5	5.0	4.5	5.0	7.5	6.0	6.5
29	---	---	---	5.0	2.5	4.0	7.0	4.5	5.5	7.0	6.0	6.5
30	---	---	---	5.5	3.0	4.0	7.0	5.5	6.0	8.0	6.0	7.0
31	---	---	---	6.0	3.5	4.5	---	---	---	8.0	6.5	7.0
MONTH	4.0	0.0	2.3	6.0	0.0	2.0	7.0	1.0	4.5	8.0	3.0	5.5

PEND OREILLE RIVER BASIN

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.5	6.0	6.5	9.5	8.5	9.0	14.0	12.0	13.0	15.0	13.0	14.5
2	6.5	6.0	6.5	10.5	8.5	9.5	15.0	13.5	14.0	15.0	12.5	13.5
3	7.0	6.0	6.5	10.5	9.5	10.0	14.0	13.0	13.5	15.0	13.5	14.0
4	7.5	6.5	7.0	11.0	10.5	10.5	15.0	13.5	14.0	15.0	13.5	14.5
5	7.5	6.5	7.0	11.0	9.5	10.5	13.5	12.5	13.0	14.5	12.0	13.5
6	7.0	6.5	6.5	12.0	10.5	11.5	14.5	13.0	13.5	12.5	11.0	11.5
7	7.0	6.0	6.5	13.0	11.5	12.0	14.0	12.5	13.5	13.5	12.5	13.0
8	6.5	5.0	6.0	13.0	11.0	12.0	15.0	13.0	14.0	14.0	12.5	13.0
9	5.5	4.5	5.0	12.5	10.5	11.0	15.0	13.0	14.0	14.5	12.5	13.0
10	5.5	5.0	5.5	13.5	12.0	12.5	16.0	14.0	14.5	14.5	12.5	13.5
11	6.5	5.0	5.5	14.0	13.0	13.5	14.5	13.5	14.0	14.5	12.5	13.5
12	8.0	6.0	7.0	15.0	13.5	14.0	15.5	13.5	14.5	15.0	12.5	13.5
13	8.5	7.0	8.0	15.0	13.5	14.0	15.0	13.0	14.0	15.0	12.5	13.5
14	9.0	7.5	8.5	15.5	14.0	15.0	15.0	12.5	14.0	15.0	13.0	14.0
15	9.0	8.0	8.5	15.0	13.5	14.5	15.5	12.5	14.5	15.0	13.0	13.5
16	9.0	8.0	8.5	15.0	14.0	14.0	15.0	12.5	14.0	14.0	13.0	13.5
17	9.0	8.0	8.5	15.0	14.0	14.5	15.5	12.0	13.5	13.5	12.0	12.5
18	8.5	7.0	7.5	15.5	15.0	15.0	15.0	13.5	14.0	12.5	11.5	12.0
19	7.0	6.5	6.5	15.5	14.5	15.0	15.0	14.0	14.5	13.5	11.0	12.0
20	9.0	7.0	7.5	15.5	14.0	15.0	14.5	13.0	14.0	12.5	10.5	11.5
21	9.5	8.0	8.5	16.0	14.0	15.0	15.0	13.0	14.0	12.5	9.0	10.5
22	9.5	8.5	9.0	16.5	14.5	15.5	16.5	13.5	15.0	13.0	10.0	11.5
23	10.0	9.0	9.5	16.0	15.5	15.5	15.0	13.5	14.5	13.5	10.0	11.5
24	9.5	8.5	9.0	16.5	15.0	16.0	15.5	14.0	14.5	13.5	10.5	12.0
25	10.0	8.5	9.0	16.5	15.5	16.0	16.0	14.0	14.5	12.5	10.0	11.0
26	10.5	9.0	9.5	16.0	15.0	15.5	15.0	13.0	14.0	12.0	10.5	11.0
27	11.0	9.5	10.0	16.0	14.5	15.5	14.0	12.5	13.0	12.5	10.5	11.5
28	11.0	10.0	10.5	15.5	14.5	15.0	15.5	13.5	14.5	13.0	10.0	11.0
29	10.5	9.5	10.0	15.0	14.0	14.5	16.0	14.0	14.5	11.5	11.0	11.0
30	9.5	8.5	9.0	15.0	13.5	14.5	15.5	14.0	14.5	11.0	10.0	10.5
31	---	---	---	13.5	12.5	13.0	16.5	14.0	15.0	---	---	---
MONTH	11.0	4.5	8.0	16.5	8.5	13.5	16.5	12.0	14.0	15.0	9.0	12.5

PEND OREILLE RIVER BASIN

12365000 STILLWATER RIVER NEAR WHITEFISH, MT

LOCATION.--Lat 48°19'08", long 114°23'11" (NAD 27), in NE$^1/_4$SW$^1/_4$ sec.34, T.30 N., R.22 W., Flathead County, Hydrologic Unit 17010210, on right bank 600 ft downstream from road bridge, 6.2 mi southwest of Whitefish, 14.8 mi upstream from Whitefish River, and at river mile 16.2.

DRAINAGE AREA.--524 mi^2.

PERIOD OF RECORD.--October and November 1930 (monthly discharge only, published in WSP 1316), December 1930 to September 1950, October 1972 to September 1985, April 1986 to September 1999 (seasonal records only), October 1999 to current year.

REVISED RECORDS.--WSP 1736: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,953.26 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter at station. Diversions for irrigation of about 200 acres upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR, OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	66	74	e61	e92	e82	e129	724	1660	752	222	144
2	41	76	74	e66	e91	e82	e121	764	1650	724	217	140
3	40	76	75	e70	e91	e85	e127	823	1610	687	214	137
4	40	74	76	e72	e94	e87	e129	903	1550	649	207	136
5	39	74	e73	e74	e93	e87	134	966	1480	613	206	133
6	38	72	72	76	e94	e87	136	998	1400	568	209	132
7	37	70	e72	78	e94	e81	157	988	1320	537	208	130
8	37	70	e70	81	e94	e81	184	943	1270	514	207	131
9	37	67	e70	87	e93	e85	216	874	1220	501	205	131
10	37	66	e70	94	e91	e96	256	805	1180	490	200	127
11	38	65	e67	e94	e90	e107	302	745	1120	478	192	125
12	42	63	65	e96	e90	e118	373	696	1060	460	186	122
13	44	62	71	e94	90	e121	478	664	1010	439	181	120
14	46	63	87	e87	e91	e121	665	663	955	423	176	119
15	46	63	84	e81	e91	e121	943	707	908	404	174	115
16	46	62	77	e84	e91	e113	1170	770	880	381	170	114
17	47	62	e75	e85	e93	e103	1320	819	877	362	166	114
18	47	62	e68	e86	e95	e100	1370	854	898	344	161	115
19	47	62	e64	e88	e95	e94	e1300	873	939	329	159	114
20	47	61	e66	e89	e97	e88	e1110	891	968	317	159	111
21	46	62	e65	e91	e95	e91	e1010	988	976	303	155	108
22	47	63	e64	e91	e95	e95	e920	1180	961	290	153	103
23	50	66	e64	e87	e94	e86	e876	1480	928	279	146	102
24	55	70	e63	e81	e90	e89	873	1740	917	268	142	100
25	59	72	e61	e81	e87	e102	859	1910	902	263	138	98
26	58	72	e58	e81	e85	e105	824	1990	882	255	137	97
27	56	71	e56	e87	e81	e108	785	1950	851	247	141	96
28	56	69	e54	e89	e80	e107	752	1850	817	242	140	95
29	56	e70	e57	e91	---	e107	723	1740	786	239	138	94
30	58	e72	e58	e94	---	e110	710	1680	770	232	138	96
31	61	---	e59	e96	---	e115	---	1670	---	226	142	---
TOTAL	1441	2023	2109	2612	2557	3054	18952	34648	32745	12816	5389	3499
MEAN	46.48	67.43	68.03	84.26	91.32	98.52	631.7	1118	1092	413.4	173.8	116.6
MAX	61	76	87	96	97	121	1370	1990	1660	752	222	144
MIN	37	61	54	61	80	81	121	663	770	226	137	94
AC-FT	2860	4010	4180	5180	5070	6060	37590	68720	64950	25420	10690	6940
CFSM	0.09	0.13	0.13	0.16	0.17	0.19	1.21	2.13	2.08	0.79	0.33	0.22
IN.	0.10	0.14	0.15	0.19	0.18	0.22	1.35	2.46	2.32	0.91	0.38	0.25

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2002, BY WATER YEAR (WY)*

MEAN	113.5	127.8	120.9	113.8	115.4	161.4	663.3	1190	869.7	379.5	178.0	125.3
MAX	271	300	582	495	588	548	1857	3125	1916	952	505	315
(WY)	1948	1990	1996	1934	1996	1996	1996	1997	1974	1993	1993	1993
MIN	46.5	53.9	50.7	59.2	60.1	76.7	138	265	235	94.5	55.5	43.1
(WY)	2002	1945	1945	1940	1993	1977	1945	1944	1977	1977	1941	2001

12365000 STILLWATER RIVER NEAR WHITEFISH, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1931 - 2002*	
ANNUAL TOTAL	47887		121845			
ANNUAL MEAN	131		334		342	
HIGHEST ANNUAL MEAN					747	1996
LOWEST ANNUAL MEAN					124	1944
HIGHEST DAILY MEAN	727	May 2	1990	May 26	4560	May 18 1997
LOWEST DAILY MEAN	37	Oct 7	a37	Oct 7	17	Aug 17 1992
ANNUAL SEVEN-DAY MINIMUM	38	Oct 5	38	Oct 5	37	Sep 6 1988
MAXIMUM PEAK FLOW			2010	May 26	4570	May 18 1997
MAXIMUM PEAK STAGE			12.72	May 26	b20.90	May 26 1948
INSTANTANEOUS LOW FLOW			37	Oct 6	c2.9	Aug 18 1992
ANNUAL RUNOFF (AC-FT)	94980		241700		248000	
ANNUAL RUNOFF (CFSM)	0.25		0.64		0.65	
ANNUAL RUNOFF (INCHES)	3.40		8.65		8.87	
10 PERCENT EXCEEDS	343		957		966	
50 PERCENT EXCEEDS	70		107		140	
90 PERCENT EXCEEDS	44		60		70	

*--During periods of operation; October and November 1930 (monthly discharge only, published in WSP 1316), December 1930 to September 1950, October 1972 to September 1985, April 1986 to September 1999 (seasonal records only), October 1999 to current year.
a--Also occured Oct. 8-10.
b--From floodmark.
c--Result of upstream mudslide.
e--Estimated.

PEND OREILLE RIVER BASIN

12366000 WHITEFISH RIVER NEAR KALISPELL, MT

LOCATION.--Lat 48°19'13", long 114°16'39" (NAD 27), in SW$^1/_4$SE$^1/_4$NW$^1/_4$ sec.34, T.30 N., R.21 W., Flathead County, Hydrologic Unit 17010210, on right bank 160 ft upstream from road bridge, 8.0 mi north of Kalispell, and at river mile 12.8.

DRAINAGE AREA.--170 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July to November 1928, April 1929 to September 1950, annual maximum 1964, October 1972 to September 1985, April 1986 to September 1995, October 1995 to September 1999 (seasonal record only), October 1999 to current year. Prior to 1964, published as Whitefish Creek near Kalispell.

GAGE.--Water-stage recorder. Datum of gage is 2,969.83 ft (NGVD 29). Prior to Oct. 16, 1930, nonrecording gage at site 200 ft downstream at datum 10.00 ft lower. Oct. 16, 1930, to Sept. 30, 1950, water-stage recorder on left bank at same datum.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Some regulation by Whitefish Lake. Diversion for irrigation of about 650 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	46	53	e44	e46	e46	100	240	712	634	156	86
2	28	46	51	e44	e45	e48	88	247	748	608	152	84
3	28	46	51	e43	e44	e50	85	256	766	582	148	83
4	26	46	52	e44	e43	e54	85	264	776	558	143	83
5	25	46	50	e44	e42	e50	89	288	788	531	142	84
6	25	45	51	e47	e41	e49	98	295	798	506	140	82
7	25	45	52	e48	e41	e50	104	295	803	482	138	87
8	24	45	51	e54	e41	e52	106	289	809	466	135	88
9	24	44	50	e56	e40	e54	108	280	804	459	129	83
10	24	44	49	e55	e39	e56	112	271	785	435	126	82
11	29	43	49	55	e38	e59	122	266	761	412	124	80
12	30	43	51	55	e40	e61	133	264	737	390	120	78
13	31	43	51	54	e43	e65	148	265	715	370	118	75
14	32	43	52	53	e47	e67	188	272	698	350	114	73
15	33	43	52	e52	e49	e69	212	281	691	332	111	72
16	33	43	51	e50	e50	e66	212	286	698	313	109	70
17	31	43	52	e49	e49	e62	211	292	711	297	105	72
18	31	45	52	e48	e48	e59	208	298	724	285	102	73
19	31	45	52	e47	e48	e64	211	301	737	269	99	71
20	32	44	e52	e46	e50	e66	213	331	747	257	96	70
21	33	43	52	e44	e47	e72	219	403	739	245	94	67
22	33	45	51	e41	e46	e65	227	499	730	230	92	64
23	35	48	e46	e40	e45	e67	233	561	731	219	91	63
24	36	52	e44	e42	e44	e68	231	587	744	209	89	62
25	36	50	e42	e42	e43	e70	229	591	735	200	88	61
26	37	49	e39	e46	e41	e73	229	591	721	193	88	60
27	38	49	e38	e48	e45	e77	228	591	703	188	89	60
28	37	48	e43	e45	e48	80	229	600	687	184	87	57
29	37	49	e44	e47	---	81	229	623	677	177	86	56
30	38	50	e45	e48	---	81	232	648	659	169	86	57
31	42	---	e43	e47	---	88	---	680	---	164	88	---
TOTAL	973	1371	1511	1478	1243	1969	5119	11955	22134	10714	3485	2183
MEAN	31.39	45.70	48.74	47.68	44.39	63.52	170.6	385.6	737.8	345.6	112.4	72.77
MAX	42	52	53	56	50	88	233	680	809	634	156	88
MIN	24	43	38	40	38	46	85	240	659	164	86	56
AC-FT	1930	2720	3000	2930	2470	3910	10150	23710	43900	21250	6910	4330
CFSM	0.18	0.27	0.29	0.28	0.26	0.37	1.00	2.27	4.34	2.03	0.66	0.43
IN.	0.21	0.30	0.33	0.32	0.27	0.43	1.12	2.62	4.84	2.34	0.76	0.48

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2002, BY WATER YEAR (WY)*

MEAN	68.68	71.52	71.66	67.44	65.46	95.55	226.2	534.6	609.9	276.6	111.4	81.11
MAX	150	177	231	209	157	212	549	895	1194	695	238	149
(WY)	1948	1934	1934	1934	1934	1936	1934	1997	1974	1974	1993	1947
MIN	9.98	20.1	23.0	13.9	15.5	48.2	83.4	214	211	88.5	29.5	23.9
(WY)	1931	1937	1936	1938	1938	2001	2001	1944	1977	1941	1931	1931

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1930 - 2002*	
ANNUAL TOTAL	32037		64135			
ANNUAL MEAN	87.77		175.7		187.1	
HIGHEST ANNUAL MEAN					320	1974
LOWEST ANNUAL MEAN					88.9	2001
HIGHEST DAILY MEAN	358	May 30	809	Jun 8	1580	Jun 23 1974
LOWEST DAILY MEAN	24	Oct 8	a24	Oct 8	5.0	Oct 17 1934
ANNUAL SEVEN-DAY MINIMUM	25	Oct 4	25	Oct 4	5.3	Oct 15 1934
MAXIMUM PEAK FLOW			814	Jun 8	1580	Jun 24 1974
MAXIMUM PEAK STAGE			3.74	Jun 8	4.91	Jun 24 1974
INSTANTANEOUS LOW FLOW			23	Oct 10	4.5	Oct 18 1934
ANNUAL RUNOFF (AC-FT)	63550		127200		135600	
ANNUAL RUNOFF (CFSM)	0.52		1.03		1.10	
ANNUAL RUNOFF (INCHES)	7.01		14.03		14.96	
10 PERCENT EXCEEDS	230		595		512	
50 PERCENT EXCEEDS	50		68		92	
90 PERCENT EXCEEDS	35		40		42	

*--During periods of operation (July to November 1928, April 1929 to September 1950, annual maximum 1964, October 1972 to September 1985, April 1986 to September 1995, October 1995 to September 1999 (seasonal record only), October 1999 to current year).
a--Also occured October 9, 10.
e--Estimated.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1999 to current year.

REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of District office.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001									
31...	1015	42	7.6	207	9.0	9.0	.18	.202	.004
APR 2002									
17...	1330	213	8.1	186	12.0	5.0	.27	.079	.003
JUN									
13...	0745	717	8.5	163	13.0	11.5	.20	E.010	<.002
JUL									
18...	0830	289	8.1	169	19.5	22.5	.11	.019	.004

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001					
31...	<.007	.013	91	5	.57
APR 2002					
17...	<.007	.013	92	5	2.9
JUN					
13...	<.007	.026	84	26	50.3
JUL					
18...	<.007	.010	97	6	4.7

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT 2001											
31...	1015	97	27.5	6.91	.69	.1	2.55	106	2.03	<.1	5.16
JUN 2002											
13...	0745	81	22.9	5.69	.33	.1	1.27	89	.49	<.1	7.00

E--Estimated.

PEND OREILLE RIVER BASIN

12366000 WHITEFISH RIVER NEAR KALISPELL, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DATE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
OCT 2001											
31...	2.2	.15	12.6	112	E1	<.1	<.8	.7	<1	1	1
JUN 2002											
13...	1.6	.13	179	93	<2	<.1	<.8	1.4	<1	<1	3

E--Estimated.

PEND OREILLE RIVER BASIN

12370000 SWAN RIVER NEAR BIGFORK, MT

LOCATION.--Lat 48°01'28", long 113°58'44" (NAD 27), near center of $S^1/_2SW^1/_4$ sec.11, T.26 N., R.19 W., Lake County, Hydrologic Unit 17010211, on left bank 0.2 mi downstream from Johnson Creek, 0.4 mi downstream from Swan Lake, 5.1 mi southeast of Bigfork, and at river mile 14.0.
DRAINAGE AREA.--671 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1910 to May 1911 (gage heights only), April 1922 to current year. Monthly discharge only for some periods, published in WSP 1316.
REVISED RECORDS.--WSP 1216: Drainage area. WSP 1246: 1923-24(M), 1930. WSP 1316: 1923.
GAGE.--Water-stage recorder. Datum of gage is 3,062.6 ft (NGVD 29) (from river-profile survey). Oct. 10, 1910, to May 22, 1911, nonrecording gage at site 10 mi upstream at different datum. Apr. 28, 1922, to Oct. 14, 1930, nonrecording gage at site 800 ft upstream at datum 1.9 ft higher.
REMARKS.-Water-discharge records good. Diversions for irrigation of about 360 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	271	458	433	298	377	389	481	1150	4210	4250	842	498
2	265	490	419	301	375	386	521	1160	4400	3960	812	494
3	265	509	409	295	373	384	535	1180	4410	3440	775	488
4	266	510	407	303	360	376	548	1240	4340	3000	748	476
5	262	494	398	309	361	375	564	1300	4190	2700	743	460
6	255	473	392	313	350	377	591	1330	4110	2490	754	479
7	250	469	383	321	351	367	657	1300	4160	2330	756	500
8	253	461	386	336	363	360	777	1290	4150	2260	740	505
9	261	445	372	361	370	357	928	1240	4020	2300	724	501
10	268	431	367	387	371	364	1050	1160	3660	2320	706	490
11	285	418	372	391	354	374	1160	1110	3290	2230	672	478
12	298	407	372	400	352	395	1300	1040	2940	2120	662	470
13	300	398	372	399	343	404	1480	1020	2650	2030	644	459
14	313	395	381	404	331	408	1790	1020	2480	1940	619	451
15	322	396	378	395	331	409	2410	1130	2500	1890	609	437
16	314	389	381	392	320	406	2920	1270	2760	1840	578	423
17	305	380	369	386	316	394	2840	1370	3160	1770	575	418
18	302	379	378	383	324	389	2530	1420	3630	1660	557	426
19	307	383	358	384	330	381	2240	1520	3960	1570	556	428
20	306	374	355	381	327	399	1980	1770	3990	1500	540	413
21	310	378	343	380	336	372	1790	2440	3740	1420	552	408
22	315	392	344	377	342	359	1640	3380	3430	1330	560	409
23	331	433	345	375	356	362	1560	3980	3290	1260	551	402
24	346	468	328	374	378	370	1510	3890	3420	1190	546	390
25	358	476	327	372	377	375	1440	3430	3650	1130	541	388
26	368	454	326	396	371	381	1360	2950	3770	1080	531	383
27	358	451	323	400	369	385	1290	2650	3830	1030	524	375
28	363	453	300	392	378	394	1240	2580	3890	999	521	376
29	371	439	290	380	---	403	1190	2820	4000	956	514	377
30	394	429	293	378	---	412	1170	3260	4160	922	507	391
31	426	---	293	384	---	433	---	3800	---	868	504	---
TOTAL	9608	13032	11194	11347	9886	11940	41492	60200	110190	59785	19463	13193
MEAN	309.9	434.4	361.1	366.0	353.1	385.2	1383	1942	3673	1929	627.8	439.8
MAX	426	510	433	404	378	433	2920	3980	4410	4250	842	505
MIN	250	374	290	295	316	357	481	1020	2480	868	504	375
AC-FT	19060	25850	22200	22510	19610	23680	82300	119400	218600	118600	38600	26170
CFSM	0.46	0.65	0.54	0.55	0.53	0.57	2.06	2.89	5.47	2.87	0.94	0.66
IN.	0.53	0.72	0.62	0.63	0.55	0.66	2.30	3.34	6.11	3.31	1.08	0.73

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 2002, BY WATER YEAR (WY)

MEAN	551.2	594.7	569.4	498.0	499.1	625.9	1518	2837	3300	1640	698.1	536.1
MAX	1682	1514	1796	1298	1627	1813	3228	5469	5803	3310	1225	1096
(WY)	1960	1928	1934	1934	1971	1986	1925	1928	1974	1950	1950	1965
MIN	308	290	307	271	236	244	675	1670	1433	609	322	285
(WY)	1938	1937	1937	1930	1930	1930	1937	1941	1941	1941	1941	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1922 - 2002	
ANNUAL TOTAL	267587		371330			
ANNUAL MEAN	733.1		1017		1157	
HIGHEST ANNUAL MEAN					1860	1928
LOWEST ANNUAL MEAN					607	1941
HIGHEST DAILY MEAN	3840	May 29	4410	Jun 3	8800	Jun 21 1974
LOWEST DAILY MEAN	250	Oct 7	250	Oct 7	193	Jan 26 1930
ANNUAL SEVEN-DAY MINIMUM	259	Oct 3	259	Oct 3	195	Jan 26 1930
MAXIMUM PEAK FLOW			4480	Jun 3	8890	Jun 20 1974
MAXIMUM PEAK STAGE			5.27	Jun 3	7.34	Jun 20 1974
INSTANTANEOUS LOW FLOW			238	Oct 7	a193	Jan 26 1930
ANNUAL RUNOFF (AC-FT)	530800		736500		838000	
ANNUAL RUNOFF (CFSM)	1.09		1.52		1.72	
ANNUAL RUNOFF (INCHES)	14.83		20.59		23.42	
10 PERCENT EXCEEDS	1840		2940		2870	
50 PERCENT EXCEEDS	392		437		632	
90 PERCENT EXCEEDS	298		324		365	

a--Jan. 26-29, 1930, site and datum then in use.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1999 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1999 to current year.
INSTRUMENTATION.--Temperature recorder since Aug. 20, 1999.
REMARKS--Unpublished records of instantaneous specific conductance and temperature data are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 22.5°C, Aug. 1, 7-9, 2000; minimum, 0.0°C, many days during winter months.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 22.0°C, July 21, 22; minimum, 0.0°C, Dec. 28, Jan. 26, Feb. 3.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001									
31...	1215	424	7.6	174	11.0	10.0	E.07	<.013	<.002
APR 2002									
17...	0930	2870	8.1	178	8.0	4.5	E.07	.035	<.002
JUN									
13...	1215	2610	8.2	144	16.5	11.5	E.10	.050	<.002
JUL									
18...	1015	1680	8.3	139	21.5	20.0	E.07	<.013	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001					
31...	<.007	E.002	84	2	2.3
APR 2002					
17...	<.007	E.003	86	1	7.7
JUN					
13...	<.007	.005	86	2	14.1
JUL					
18...	<.007	E.002	91	1	4.5

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L AS CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT 2001											
31...	1215	85	24.4	5.95	.48	.0	1.03	93	.34	<.1	5.44
JUN 2002											
13...	1215	71	20.5	4.89	.37	.0	.82	78	E.26	<.1	5.82

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT 2001											
31...	1.3	.13	109	95	<2	<.1	<.8	<.6	<1	<1	1
JUN 2002											
13...	1.4	E.11	E367	E81	<4	<.1	<.8	14.8	<1	<1	6

E--Estimated.

PEND OREILLE RIVER BASIN

12370000 SWAN RIVER NEAR BIGFORK, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	17.0	13.0	14.5	9.0	8.0	8.5	4.0	3.5	3.5	1.5	0.5	1.0
2	16.5	13.0	14.5	9.5	8.5	8.5	4.5	3.5	4.0	1.5	1.0	1.0
3	16.5	12.5	14.0	10.0	8.0	8.5	4.5	3.5	4.0	2.0	1.0	1.5
4	15.0	11.5	12.5	9.0	7.5	8.0	3.5	3.0	3.5	1.5	1.0	1.5
5	14.0	10.0	11.5	8.0	7.0	7.5	3.5	3.0	3.0	1.5	1.0	1.0
6	14.0	10.0	11.5	7.5	7.0	7.5	3.5	2.5	3.0	2.0	1.0	1.5
7	14.0	11.0	12.0	8.5	6.5	7.5	4.0	3.5	3.5	1.5	1.5	1.5
8	12.5	11.5	12.0	7.5	6.0	6.5	4.0	3.5	3.5	2.0	1.5	1.5
9	12.0	11.0	11.5	8.0	6.0	7.0	4.5	3.5	3.5	2.5	1.0	1.5
10	13.5	11.0	11.5	7.5	6.0	6.5	4.0	3.0	3.5	2.0	1.0	1.5
11	12.0	10.0	11.5	7.5	6.0	6.5	3.5	2.5	3.0	2.0	1.0	1.5
12	10.5	10.0	10.5	7.5	6.0	6.5	3.0	2.5	3.0	2.0	1.5	1.5
13	12.0	10.0	11.0	7.0	6.0	6.5	3.0	2.5	3.0	2.0	1.5	1.5
14	12.0	10.0	11.0	7.5	6.5	7.0	3.5	2.5	3.0	1.5	1.0	1.0
15	11.5	9.5	10.0	8.0	6.5	7.0	3.0	2.5	2.5	1.5	0.5	1.0
16	12.0	9.0	10.5	7.5	6.5	7.0	3.0	2.0	2.5	1.5	1.0	1.5
17	11.0	9.5	10.0	7.5	7.0	7.0	3.5	2.5	3.0	1.5	1.0	1.0
18	9.5	9.0	9.5	8.0	6.0	7.0	2.5	1.5	2.0	1.5	1.0	1.0
19	10.0	9.0	9.5	6.5	5.5	6.0	2.5	1.5	2.0	1.5	1.0	1.0
20	11.0	9.0	9.5	7.0	5.5	6.5	2.0	1.5	2.0	1.5	1.0	1.0
21	9.5	8.5	9.0	7.0	6.0	6.5	2.5	1.5	2.0	1.5	1.0	1.0
22	10.0	8.5	9.0	6.5	6.0	6.0	3.0	2.0	2.5	1.5	1.0	1.0
23	9.0	8.5	9.0	6.0	6.0	6.0	2.5	2.0	2.0	1.5	1.0	1.0
24	9.0	8.0	8.5	6.5	5.5	6.0	2.0	2.0	2.0	1.5	1.0	1.0
25	8.5	7.5	8.0	5.5	4.5	4.5	2.0	2.0	2.0	1.5	1.0	1.5
26	9.0	7.5	8.0	5.0	4.5	5.0	2.0	1.0	1.5	1.5	0.0	1.0
27	10.0	7.5	8.5	5.5	4.5	5.0	1.0	0.5	0.5	1.5	0.5	1.0
28	9.5	8.5	9.0	4.5	3.0	3.5	0.5	0.0	0.5	1.0	0.5	0.5
29	10.0	8.5	9.0	4.0	3.0	3.5	1.0	0.5	1.0	1.0	0.5	1.0
30	9.5	9.0	9.0	4.5	3.5	4.0	1.5	1.0	1.5	1.0	0.5	0.5
31	9.5	8.5	9.0	---	---	---	2.0	0.5	1.5	1.0	0.5	1.0
MONTH	17.0	7.5	10.5	10.0	3.0	6.5	4.5	0.0	2.5	2.5	0.0	1.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.5	1.0	1.0	3.0	0.5	1.5	3.0	1.0	2.5	8.0	5.0	6.5
2	2.0	0.5	1.0	3.0	0.5	1.5	3.5	0.5	2.0	8.0	5.0	6.5
3	2.0	0.0	1.0	1.5	1.0	1.0	4.5	1.5	2.5	7.0	5.5	6.0
4	2.5	1.0	1.5	2.0	1.0	1.5	5.5	2.0	3.5	6.0	5.5	6.0
5	2.0	0.5	1.0	2.0	0.5	1.5	6.0	2.0	4.0	6.0	5.5	6.0
6	1.5	1.0	1.5	1.0	0.5	0.5	4.0	3.0	3.5	8.0	5.5	6.5
7	2.0	1.0	1.5	1.5	0.5	1.0	4.0	3.0	3.5	6.5	6.0	6.0
8	1.5	1.0	1.0	2.5	0.5	1.0	5.5	2.5	3.5	8.0	5.5	6.5
9	3.0	1.0	1.5	3.5	1.0	1.5	4.0	3.0	3.5	8.0	5.0	6.5
10	2.0	0.5	1.0	4.0	1.5	2.0	4.5	3.0	3.5	8.5	5.5	7.0
11	2.0	0.5	1.0	2.0	2.0	2.0	4.0	3.0	3.5	9.0	6.0	7.5
12	2.5	0.5	1.0	3.5	1.5	2.0	4.5	3.0	3.5	9.5	6.5	8.0
13	2.0	0.5	1.0	3.0	1.5	2.0	4.0	3.0	3.5	10.0	7.0	8.5
14	3.0	0.5	1.5	3.0	1.5	2.0	4.0	3.0	3.5	10.5	8.0	8.5
15	2.5	0.5	1.5	3.5	1.5	2.0	3.5	3.0	3.0	10.0	7.0	8.5
16	3.0	0.5	1.5	2.5	1.0	1.5	4.0	3.0	3.5	10.0	8.0	8.5
17	3.5	1.5	2.0	3.0	0.5	1.5	4.5	3.0	3.5	9.5	7.5	8.5
18	2.5	1.5	2.0	2.0	1.0	1.5	4.5	3.0	4.0	9.5	7.5	8.5
19	2.5	1.5	2.0	2.5	1.0	1.5	5.0	3.0	4.0	11.0	8.0	9.0
20	3.5	1.0	2.0	1.5	0.5	1.0	5.0	3.5	4.0	10.5	9.5	9.5
21	2.0	1.0	1.5	3.0	0.5	1.5	5.0	4.0	4.5	9.5	9.0	9.0
22	2.5	1.5	2.0	4.0	1.0	2.0	5.5	4.0	4.5	9.0	8.0	8.5
23	2.0	0.5	1.5	4.0	1.5	2.0	4.5	4.0	4.0	8.5	8.0	8.5
24	1.5	0.5	1.0	4.5	1.5	2.5	6.0	3.5	4.5	9.0	8.5	8.5
25	2.5	0.5	1.0	3.0	2.0	2.5	6.0	4.0	5.0	9.5	8.5	9.0
26	2.0	0.5	1.0	4.5	2.0	2.5	6.0	4.5	5.0	9.5	8.5	9.0
27	2.5	1.0	1.5	3.0	2.0	2.0	6.0	4.5	5.5	10.5	9.0	9.5
28	3.0	1.0	1.5	4.0	2.0	2.5	6.0	5.0	5.5	10.5	9.5	10.0
29	---	---	---	4.0	2.0	2.5	7.0	5.0	6.0	10.5	10.0	10.0
30	---	---	---	4.5	2.5	3.0	6.5	5.0	6.0	11.0	10.0	10.5
31	---	---	---	5.5	2.5	3.5	---	---	---	12.0	10.0	11.0
MONTH	3.5	0.0	1.5	5.5	0.5	2.0	7.0	0.5	4.0	12.0	5.0	8.0

PEND OREILLE RIVER BASIN

12370000 SWAN RIVER NEAR BIGFORK, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	11.5	11.0	11.0	15.0	13.5	14.5	20.5	17.5	19.0	17.5	16.5	17.0
2	11.0	10.0	10.5	15.0	13.5	14.5	20.0	17.5	18.5	19.5	16.0	17.5
3	11.0	10.0	10.5	15.5	14.0	14.5	20.0	16.5	18.5	20.0	16.5	18.0
4	11.0	10.0	10.5	15.5	14.0	14.5	19.5	17.0	18.0	20.0	17.0	18.0
5	11.5	10.5	11.0	16.0	14.0	15.0	19.5	17.5	18.5	19.5	17.0	18.0
6	12.5	11.0	11.5	16.5	14.5	15.5	19.5	17.0	18.0	18.0	16.5	17.0
7	12.0	11.0	11.5	17.0	14.5	16.0	18.0	16.5	17.5	17.5	15.5	16.5
8	11.5	9.0	10.0	16.5	15.5	16.0	19.0	16.5	17.5	18.0	15.0	16.0
9	9.5	9.0	9.0	17.5	15.0	16.0	19.5	16.0	18.0	18.0	15.0	16.0
10	9.5	8.5	9.0	17.5	15.5	16.5	19.0	16.5	18.0	18.5	15.0	16.5
11	9.5	8.5	9.0	18.0	15.5	17.0	19.5	16.5	18.0	18.5	15.0	16.5
12	11.0	9.0	10.0	19.0	16.5	17.5	20.0	16.5	18.0	18.5	15.0	16.5
13	11.5	9.5	10.5	19.5	17.0	18.5	20.0	16.5	18.0	18.5	15.0	16.5
14	11.5	10.0	11.0	20.0	17.5	18.5	20.5	17.0	18.5	18.5	15.0	16.5
15	12.5	10.5	11.5	20.5	18.0	19.0	20.0	16.0	18.0	18.5	15.5	16.5
16	13.5	12.0	12.5	20.5	19.5	20.0	19.5	16.5	17.5	18.0	15.5	16.5
17	14.0	12.5	13.5	21.0	19.0	20.0	19.5	16.0	17.5	16.5	15.5	15.5
18	13.0	12.5	13.0	21.0	19.0	20.0	20.0	16.5	18.0	17.5	15.0	15.5
19	13.0	12.5	13.0	21.0	19.0	20.0	19.0	16.0	17.5	17.5	14.5	15.5
20	13.5	12.0	12.5	21.5	19.5	20.5	19.0	16.5	17.5	17.5	14.5	15.5
21	13.0	11.5	12.0	22.0	19.5	20.5	19.5	16.5	17.5	17.0	14.0	15.0
22	13.5	12.0	12.5	22.0	19.5	21.0	19.5	16.0	17.5	16.5	13.0	14.5
23	14.5	12.5	13.5	21.5	19.5	20.5	19.5	16.0	17.5	16.5	13.0	14.5
24	15.0	13.5	14.0	21.5	19.5	20.5	19.0	16.5	18.0	17.0	13.5	15.0
25	15.0	14.0	14.5	21.5	19.5	20.5	19.5	16.5	17.5	16.5	13.0	14.5
26	15.5	13.5	14.5	21.5	19.5	20.5	20.0	16.5	17.5	15.0	13.0	14.0
27	16.0	14.5	15.0	21.5	19.5	20.5	19.0	16.5	17.5	15.0	13.0	13.5
28	16.5	15.0	15.5	21.0	19.5	20.5	20.0	16.5	18.0	15.0	12.0	13.5
29	16.0	15.0	15.5	21.5	19.0	20.0	20.0	17.0	18.0	13.5	12.0	13.0
30	15.5	15.0	15.5	21.0	19.0	20.0	20.0	17.0	18.0	13.0	11.5	12.0
31	---	---	---	20.5	18.5	19.5	19.5	16.5	17.5	---	---	---
MONTH	16.5	8.5	12.0	22.0	13.5	18.5	20.5	16.0	18.0	20.0	11.5	15.5

PEND OREILLE RIVER BASIN

12371550 FLATHEAD LAKE AT POLSON, MT

LOCATION.--Lat 47°41'50", long 114°09'37" (NAD 27), in SW$^1/_4$SE$^1/_4$NE$^1/_4$ sec.4, T.22 N., R.20 W., Lake County, Hydrologic Unit 17010208, at Polson.

DRAINAGE AREA.--7,086 mi^2.

PERIOD OF RECORD.--October 1, 1998 to current year. April to August 1900, daily lake elevations only, at site near Holt, 6 mi east of Somers (datum unknown). August 1908 to November 1909 (fragmentary), January 1910 to Sept.30, 1998 published as "at Somers". Monthend contents only for some periods, published in WSP 1316. Prior to April 1923, published as "at Polson." Oct. 1, 1941 to Sept. 30, 1998, unpublished daily lake elevations at Polson are available in files of Helena district office.

GAGE.--Water-stage recorder. Datum of gage is 2,878 ft (NGVD 29). July 1 to Dec. 12, 1923, nonrecording gage at Somers site.

REMARKS--Natural storage in Flathead Lake increased by construction of Kerr Dam 4 mi downstream from natural lake outlet; storage began Apr. 11, 1938. Usable capacity, 1,791,000 acre-ft at controlled spillway elevation 2,893.00 ft. Dead storage unknown below 2,878 ft, elevation of natural outlet. Minimum operating level, 572,300 acre-ft, elevation 2,883.00 ft for on-site power generation. All elevations are referenced to the National Geodetic Vertical Datum of 1929. Water is used for power production, flood control, recreation, and irrigation. Figures given herein represent usable contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,208,000 acre-ft, June 19, 1933, elevation, 2,896.26 ft; minimum, 347,000 acre-ft, Dec. 5, 1936, elevation, 2,881.07 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,782,000 acre-ft, July 11, elevation, 2,892.93 ft; minimum, 665,000 acre-ft, Apr. 10, elevation, 2,883.78 ft.

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

Elevation	Contents
2,883	572,300
2,886	930,300
2,888	1,172,000
2,890	1,417,000
2,892	1,665,000
2,894	1,917,000

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2890.92	2890.74	2890.98	2890.08	2887.95	2886.03	2884.17	2885.00	2891.40	2892.86	2892.84	2892.83
2	2890.91	2890.75	2891.02	2889.99	2887.88	2885.99	2884.07	2884.95	2891.55	2892.86	2892.83	2892.84
3	2890.89	2890.78	2891.02	2889.91	2887.78	2885.95	2884.01	2885.00	2891.64	2892.85	2892.88	2892.86
4	2890.87	2890.80	2891.02	2889.84	2887.68	2885.92	2883.95	2885.18	2891.69	2892.80	2892.92	2892.87
5	2890.77	2890.78	2891.05	2889.78	2887.58	2885.92	2883.90	2885.31	2891.70	2892.79	2892.88	2892.91
6	2890.72	2890.82	2891.05	2889.71	2887.47	2885.95	2883.81	2885.41	2891.71	2892.80	2892.87	2892.86
7	2890.66	2890.81	2891.06	2889.62	2887.35	2885.91	2883.79	2885.62	2891.80	2892.80	2892.88	2892.84
8	2890.64	2890.82	2891.08	2889.54	2887.27	2885.83	2883.79	2885.62	2891.88	2892.80	2892.85	2892.80
9	2890.62	2890.83	2891.06	2889.53	2887.21	2885.80	2883.81	2885.68	2891.92	2892.86	2892.85	2892.82
10	2890.62	2890.84	2891.09	2889.50	2887.10	2885.75	2883.78	2885.73	2891.82	2892.90	2892.85	2892.83
11	2890.62	2890.84	2891.09	2889.45	2886.95	2885.69	2883.80	2885.77	2891.77	2892.93	2892.89	2892.82
12	2890.59	2890.85	2891.10	2889.35	2886.91	2885.67	2883.80	2885.82	2891.72	2892.93	2892.89	2892.80
13	2890.62	2890.85	2891.08	2889.30	2886.81	2885.62	2883.82	2885.87	2891.64	2892.93	2892.88	2892.78
14	2890.65	2890.83	2891.03	2889.28	2886.72	2885.55	2883.86	2885.87	2891.56	2892.92	2892.87	2892.79
15	2890.66	2890.87	2891.06	2889.21	2886.62	2885.46	2884.19	2886.06	2891.55	2892.90	2892.89	2892.78
16	2890.65	2890.88	2891.01	2889.11	2886.52	2885.44	2884.45	2886.23	2891.61	2892.89	2892.90	2892.76
17	2890.57	2890.91	2890.97	2889.08	2886.42	2885.28	2884.65	2886.38	2891.67	2892.85	2892.87	2892.77
18	2890.59	2890.93	2891.00	2888.99	2886.31	2885.08	2884.78	2886.53	2891.78	2892.84	2892.87	2892.75
19	2890.57	2890.92	2890.92	2888.90	2886.22	2885.05	2884.83	2886.70	2891.93	2892.85	2892.86	2892.71
20	2890.61	2890.93	2890.90	2888.79	2886.13	2885.14	2884.89	2886.88	2892.14	2892.87	2892.85	2892.74
21	2890.63	2890.92	2890.83	2888.77	2886.10	2884.93	2884.90	2887.28	2892.25	2892.92	2892.83	2892.73
22	2890.61	2890.96	2890.76	2888.70	2886.02	2884.85	2884.91	2887.95	2892.32	2892.91	2892.82	2892.69
23	2890.57	2890.94	2890.68	2888.61	2886.24	2884.77	2884.96	2888.44	2892.46	2892.87	2892.83	2892.69
24	2890.60	2891.03	2890.60	2888.50	2886.21	2884.68	2885.04	2888.84	2892.59	2892.84	2892.83	2892.70
25	2890.65	2891.05	2890.52	2888.47	2886.11	2884.59	2885.08	2889.19	2892.71	2892.83	2892.83	2892.66
26	2890.67	2891.02	2890.45	2888.47	2886.09	2884.48	2885.11	2889.45	2892.77	2892.77	2892.88	2892.62
27	2890.67	2891.00	2890.38	2888.42	2886.06	2884.33	2885.08	2889.72	2892.80	2892.81	2892.91	2892.64
28	2890.70	2891.03	2890.35	2888.36	2886.06	2884.30	2885.01	2889.99	2892.80	2892.75	2892.91	2892.60
29	2890.71	2891.03	2890.27	2888.24	---	2884.23	2885.02	2890.36	2892.82	2892.71	2892.90	2892.57
30	2890.72	2891.01	2890.22	2888.16	---	2884.17	2885.06	2890.80	2892.86	2892.75	2892.91	2892.52
31	2890.69	---	2890.16	2888.07	---	2884.09	---	2891.16	---	2892.75	2892.93	---
MAX	2890.92	2891.05	2891.10	2890.08	2887.95	2886.03	2885.11	2891.16	2892.86	2892.93	2892.93	2892.91
MIN	2890.57	2890.74	2890.16	2888.07	2886.02	2884.09	2883.78	2884.95	2891.40	2892.71	2892.82	2892.52

CONTENTS, IN THOUSANDS OF ACRE-FEET, AT END OF MONTH

1503	1542	1437	1181	937.5	701.4	817.3	1561	1773	1760	1782	1731

CHANGE IN CONTENTS, IN ACRE-FEET

-29000	+39000	-105000	-256000	-243000	-236100	+115900	+743700	+212000	-13000	+22000	-51000

CAL YR 2001..... +447600
WTR YR 2002..... +199000

PEND OREILLE RIVER BASIN

12372000 FLATHEAD RIVER NEAR POLSON, MT

LOCATION.--Lat 47°40'49", long 114°14'45" (NAD 27), in SW$^1/_4$NE$^1/_4$SE$^1/_4$ sec. 11, T.22 N., R.21 W., Lake County, Hydrologic Unit 17010212, on left bank 0.5 mi downstream from Kerr Dam, 4.0 mi west of Polson, 5.0 mi downstream from Flathead Lake, and at river mile 71.5.

DRAINAGE AREA.--7,096 mi^2.

PERIOD OF RECORD.--July 1907 to current year.

REVISED RECORDS.--WSP 652: 1926. WSP 752: 1932. WSP 1182: 1948. WSP 1216: Drainage area. WSP 1246: 1928(M). WSP 1636: 1958 (adjusted runoff).

GAGE.--Water-stage recorder. Datum of gage is 2,692.70 ft (NGVD 29) (levels by The Montana Power Co.). Prior to Oct. 1, 1941, nonrecording gages or water-stage recorder at several sites near highway bridge at old site of Michell's ferry 6 mi downstream from present site, all at datum 2,629.20 ft (from river-profile survey).

REMARKS.--Records excellent. Flow regulated by Flathead Lake (Kerr Dam) since April 1938 (station number 12371500) and Hungry Horse Reservoir (station number 12362000) since September 1951. Diversions upstream from station for irrigation of about 10,000 acres. Flathead project pumps can divert up to 12,000 acre-ft per month when required for irrigation of lands downstream from station. U.S.Geological Survey satellite telemeter at station. Two observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--95 years, 11,540 ft^3/s, 22.09 in/yr, 8,361,000 acre-ft/yr, adjusted for change in contents in Hungry Horse Reservoir and Flathead Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,800 ft^3/s, May 29, 1928, gage height, 17.2 ft, site and datum then in use; minimum probably less than 5.0 ft^3/s, Apr. 13, 1938; minimum daily, 32 ft^3/s, Apr. 12, 1938.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a stage of about 21 ft, present datum; discharge, about 110,000 ft^3/s, from lake elevation-discharge study.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 51,300 ft^3/s, June 2, gage height, 15.83 ft; minimum daily, 3,290 ft^3/s, Nov. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4090	3290	3380	8090	10300	6090	8030	11600	40000	42500	9440	7560
2	4600	3300	3380	8170	10300	6090	8300	11500	43300	37300	9990	7270
3	5100	3340	3380	8260	10300	6120	8110	10900	45300	31600	9990	7040
4	5690	3350	3420	8200	10300	6120	7680	11500	45500	28300	10000	7050
5	5570	3340	3450	8190	10300	6050	7560	12300	45500	24700	10200	7060
6	4760	3340	3460	8150	10200	6050	7180	12700	45500	23400	10600	7110
7	4270	3350	3460	8190	10200	6080	7050	12700	45800	22600	10600	7170
8	3780	3380	3460	8280	10200	6220	7170	12600	47100	22000	10300	7110
9	3430	3400	3450	8260	10200	6710	7270	12800	47700	22100	9930	7080
10	3340	3380	3450	8270	10200	7090	7170	12900	47000	22100	9540	7010
11	3360	3370	3450	8270	10200	7150	7090	13000	45600	22000	9150	6980
12	3340	3380	3450	8280	10200	7630	7140	13000	44400	21800	9160	6960
13	3350	3370	3710	8260	10200	8640	7220	12800	44100	20900	9170	6720
14	3340	3370	4240	8250	10200	9630	7250	12800	42300	21800	9090	6460
15	3360	3370	4730	8270	10300	10400	7790	12600	40300	21600	9130	6450
16	3360	3360	5250	8280	10200	11000	8990	12600	40200	21400	9170	6430
17	3360	3360	6030	8270	10200	11100	10100	12800	39800	19700	9130	6470
18	3360	3360	7070	8280	9740	11100	10800	12800	37200	17200	9020	6510
19	3340	3360	7790	8380	8740	11100	10600	12800	34200	15100	8990	6500
20	3330	3320	8060	8260	7650	9450	10300	12800	33300	14100	9020	6450
21	3340	3320	8020	8210	6710	7370	10300	12900	33500	14000	9040	6250
22	3350	3340	8090	8220	5770	8430	10700	13000	33100	14000	9090	5830
23	3350	3340	8080	8230	5290	9380	11300	13700	33200	13700	9090	5350
24	3350	3340	8100	8220	5330	10400	11500	14300	35000	12900	8630	4850
25	3360	3340	8130	8230	5280	10200	11500	14300	40800	12200	7590	4620
26	3360	3350	8110	8240	5820	9640	11900	14300	43600	11700	6940	4260
27	3360	3390	8100	8230	6110	9180	11900	14300	44600	11300	6960	4000
28	3360	3430	8110	8790	6100	8360	11500	14400	45100	11100	6970	4010
29	3360	3400	8100	9770	---	8460	11500	15900	45100	10500	6940	3860
30	3360	3370	8100	10300	---	8110	11800	20000	45100	9880	6970	3570
31	3340	---	8090	10300	---	7940	---	30900	---	9170	7340	---
TOTAL	115020	100710	177100	261600	246540	257290	276700	427500	1253200	602650	277180	183990
MEAN	3710	3357	5713	8439	8805	8300	9223	13790	41770	19440	8941	6133
MAX	5690	3430	8130	10300	10300	11100	11900	30900	47700	42500	10600	7560
MIN	3330	3290	3380	8090	5280	6050	7050	10900	33100	9170	6940	3570
AC-FT	228100	199800	351300	518900	489000	510300	548800	847900	2486000	1195000	549800	364900
CFSM	0.52	0.47	0.81	1.19	1.24	1.17	1.30	1.94	5.89	2.74	1.26	0.86
IN.	0.60	0.53	0.93	1.37	1.29	1.35	1.45	2.24	6.57	3.16	1.45	0.96
†	-106000	-21000	-207000	-313000	-324500	-300100	+229900	+1058700	+793000	-15000	-259000	-224000
MEAN††	1986	3005	2347	3349	2962	3419	13090	31010	55100	19190	4729	2368
CFSM††	0.28	0.42	0.33	0.47	0.42	0.48	1.84	4.37	7.76	2.70	0.67	0.33
IN.††	0.32	0.47	0.38	0.54	0.43	0.56	2.06	5.04	8.66	3.12	0.77	0.37
AC-FT††	122100	178800	144300	205900	164500	210200	778700	1906600	3279000	1180000	290800	140900

OBSERVED

CAL YR 2001	TOTAL	2004610	MEAN	5492	MAX	12800	MIN	3290	AC-FT	3976000	† +526600
WTR YR 2002	TOTAL	4179480	MEAN	11450	MAX	47700	MIN	3290	AC-FT	8290000	† +312000

ADJUSTED

CAL YR 2001	TOTAL	2270077	MEAN	6219	CFSM	0.88	IN	11.90	AC-FT	4502600
WTR YR 2002	TOTAL	4336678	MEAN	11880	CFSM	1.67	IN	22.73	AC-FT	8602000

† Change in contents in acre-feet, in Hungry Horse Reservoir and Flathead Lake.
†† Adjusted for change in contents.

12374250 MILL CREEK ABOVE BASSOO CREEK, NEAR NIARADA, MT

LOCATION.--Lat 47°49'47", long 114°41'48" (NAD 27), in SE$^1/_4$NW$^1/_4$NE$^1/_4$ sec.20, T.24 N., R.24 W., Sanders County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank 0.3 mi upstream from Bassoo Creek, and 4.1 mi northwest of Niarada.
DRAINAGE AREA.--19.6 mi^2.
PERIOD OF RECORD.--October 1982 to current year.
GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,000 ft (NGVD 29)
. Prior to Sept. 23, 1987, at site 305 ft downstream at different datum. Prior to July 23, 1991, at site 275 ft downstream at different datum.
REMARKS.--Records good except those for estimated daily discharges, which are poor. No known regulation or diversion upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	3.2	e2.2	e2.1	e2.5	e2.2	4.9	19	53	12	3.2	2.5
2	1.5	2.4	e2.3	2.3	2.6	e1.9	5.4	20	50	12	3.1	2.3
3	1.4	2.3	2.4	2.3	2.4	e2.0	5.4	25	44	10	2.8	2.3
4	1.4	2.2	2.5	2.3	2.3	e2.0	3.8	27	41	9.6	2.8	2.3
5	1.4	2.2	e2.4	2.3	2.3	e2.0	3.9	27	39	8.8	2.9	2.3
6	1.5	2.2	e2.3	2.3	2.4	e1.9	5.4	24	37	7.4	2.9	2.3
7	1.5	2.2	e2.2	e2.3	e2.3	e1.8	7.6	22	35	7.1	3.1	2.5
8	1.5	2.2	e2.3	e2.4	e2.2	e1.9	8.5	20	34	6.8	2.9	2.5
9	1.6	2.2	2.4	e2.5	e2.2	e2.2	8.3	18	33	6.5	3.1	2.3
10	1.6	2.3	e2.3	e2.6	e2.1	e2.4	8.2	17	30	5.7	2.8	2.2
11	1.7	2.6	e2.3	2.6	2.0	e2.9	9.3	16	27	5.4	2.8	2.2
12	1.8	3.1	e2.2	2.5	e2.0	e4.4	12	15	25	5.2	2.8	2.2
13	2.1	2.2	e2.3	2.5	e2.0	e4.7	19	14	23	4.9	2.7	2.0
14	1.9	2.2	e2.3	2.5	e2.0	e4.4	49	20	21	5.9	2.6	2.0
15	1.9	2.2	e2.3	e2.5	e1.9	e4.0	49	26	21	5.7	2.6	2.0
16	1.8	2.2	e2.3	e2.5	e1.9	e3.6	32	26	21	5.7	2.6	2.0
17	1.8	2.2	e2.3	e2.5	e1.9	e3.5	25	25	22	5.7	2.6	2.0
18	1.8	2.2	e2.3	2.5	e1.9	3.3	20	25	24	5.7	2.6	2.2
19	1.8	2.2	e2.3	e2.4	e1.9	3.4	17	24	24	5.4	2.6	2.3
20	1.8	2.2	e2.3	e2.5	e1.9	3.1	17	32	22	5.4	2.5	2.2
21	1.8	2.2	e2.3	2.5	e1.9	3.1	16	57	20	5.2	2.7	2.1
22	1.8	2.2	2.3	2.4	e2.6	2.9	17	115	19	5.2	2.8	2.2
23	2.6	2.2	2.3	2.3	e3.5	2.9	20	118	19	5.2	2.6	2.2
24	2.3	2.3	2.3	2.3	e2.8	2.9	20	82	18	4.5	2.5	2.2
25	2.0	2.3	2.3	e2.1	e2.3	2.9	18	61	17	4.1	2.5	2.2
26	2.0	2.3	2.2	e2.1	e2.4	3.1	17	50	17	4.1	2.5	2.2
27	2.0	2.2	2.2	e1.8	e2.5	3.6	17	45	16	4.1	2.6	2.4
28	2.2	e2.1	e2.3	e2.1	e2.6	3.7	16	46	14	4.1	2.6	2.7
29	2.3	e2.0	e2.1	e2.2	---	3.2	16	51	14	3.9	2.6	2.5
30	2.3	e2.1	e2.1	e2.3	---	3.6	17	54	13	3.7	2.7	2.6
31	2.7	---	e2.1	e2.4	---	3.9	---	56	---	3.6	2.5	---
TOTAL	57.4	68.6	70.7	72.9	63.3	93.4	484.7	1177	793	188.6	84.6	67.9
MEAN	1.852	2.287	2.281	2.352	2.261	3.013	16.16	37.97	26.43	6.084	2.729	2.263
MAX	2.7	3.2	2.5	2.6	3.5	4.7	49	118	53	12	3.2	2.7
MIN	1.4	2.0	2.1	1.8	1.9	1.8	3.8	14	13	3.6	2.5	2.0
AC-FT	114	136	140	145	126	185	961	2330	1570	374	168	135
CFSM	0.09	0.12	0.12	0.12	0.12	0.15	0.82	1.94	1.35	0.31	0.14	0.12
IN.	0.11	0.13	0.13	0.14	0.12	0.18	0.92	2.23	1.51	0.36	0.16	0.13

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2002, BY WATER YEAR (WY)

MEAN	2.649	3.470	3.614	3.301	3.917	7.505	20.56	25.70	15.73	5.828	3.107	2.500
MAX	5.05	8.60	16.9	9.83	13.6	35.1	49.7	86.8	37.7	13.0	5.61	3.39
(WY)	1986	1986	1996	1990	1996	1986	1996	1997	1997	1991	1997	1996
MIN	1.85	2.00	2.12	1.94	1.71	2.28	5.03	11.4	4.89	2.50	1.88	1.53
(WY)	2002	1988	1988	1985	1994	2002	1984	1992	1987	1994	2001	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1983 - 2002	
ANNUAL TOTAL	1380.0		3222.1			
ANNUAL MEAN	3.78		8.83		8.16	
HIGHEST ANNUAL MEAN					18.8	1997
LOWEST ANNUAL MEAN					3.86	2001
HIGHEST DAILY MEAN	19	May 16	118	May 23	155	Apr 28 1997
LOWEST DAILY MEAN	1.3	Sep 23	a1.4	Oct 3	1.2	Feb 4 1989
ANNUAL SEVEN-DAY MINIMUM	1.3	Sep 21	1.5	Oct 2	1.3	Sep 21 2001
MAXIMUM PEAK FLOW			145	May 22	b173	Apr 28 1997
MAXIMUM PEAK STAGE			2.70	May 22	c6.83	May 20 1991
INSTANTANEOUS LOW FLOW					d0.85	Jan 6 1988
ANNUAL RUNOFF (AC-FT)	2740		6390		5910	
ANNUAL RUNOFF (CFSM)	0.19		0.45		0.42	
ANNUAL RUNOFF (INCHES)	2.62		6.12		5.66	
10 PERCENT EXCEEDS	10		24		20	
50 PERCENT EXCEEDS	2.3		2.6		3.3	
90 PERCENT EXCEEDS	1.7		2.0		2.0	

a--Also occurred on October 4-5, but may have been less during estimated periods.
b--Gage height, 2.60 ft.
c--Site and datum then in use.
d--Gage height, 5.00 ft, site and datum then in use.
e--Estimated.

PEND OREILLE RIVER BASIN

12375900 SOUTH CROW CREEK NEAR RONAN, MT

LOCATION.--Lat 47°29'30", long 114°01'33" (NAD 27), in NW$^1/_4$NE$^1/_4$SW$^1/_4$ sec.16, T.20 N., R.19 W., Lake County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank 200 ft upstream from Pablo Feeder Canal, 2.2 mi northeast of Kicking Horse Reservoir, 4.5 mi southeast of Ronan, and at river mile 2.6.

DRAINAGE AREA.--7.57 mi^2.

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,320 ft (NGVD 29).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. No known regulation or diversion upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	7.1	6.3	e5.0	e6.0	e4.5	5.0	8.4	96	80	15	8.5
2	6.1	7.2	6.3	e5.0	e6.2	e4.5	5.3	9.5	95	70	15	8.5
3	6.1	6.9	6.3	e5.2	e6.0	e4.3	5.1	13	92	62	14	8.3
4	5.8	6.6	6.3	e5.2	e5.9	5.1	5.1	13	90	59	14	8.5
5	5.7	6.6	6.3	e5.2	e5.9	5.1	5.1	10	90	56	14	8.1
6	5.6	6.3	6.3	5.8	e5.8	e5.0	5.8	9.7	90	53	14	8.1
7	5.8	6.3	6.3	5.8	e5.8	e4.8	6.6	9.6	92	50	14	8.3
8	5.8	6.1	6.3	6.4	e5.6	e4.5	6.9	9.0	89	54	14	8.6
9	5.8	6.1	6.3	6.9	e5.6	e4.6	6.7	8.5	75	62	13	8.0
10	5.8	6.1	6.3	6.9	e5.6	4.9	7.1	8.4	72	54	12	7.8
11	6.6	6.1	6.3	6.8	5.4	4.9	7.5	8.1	67	49	12	7.8
12	6.1	6.1	6.3	6.5	5.1	5.1	7.8	8.6	63	46	12	7.7
13	5.8	6.1	6.3	6.3	5.1	5.0	8.9	11	60	44	11	7.4
14	5.9	6.1	6.3	6.3	5.1	4.9	23	19	62	44	10	7.2
15	6.1	6.1	6.3	6.1	4.9	4.9	22	16	72	41	10	7.2
16	6.1	6.1	6.1	6.1	4.9	4.9	16	15	86	38	10	7.2
17	6.1	6.1	6.1	6.0	4.9	4.9	12	15	89	35	9.9	7.4
18	6.1	6.1	6.1	5.8	4.9	4.8	11	17	93	32	9.7	7.7
19	5.8	6.1	6.1	5.8	4.9	4.7	9.8	34	93	29	9.6	7.5
20	5.8	6.1	6.1	5.8	4.9	e4.7	9.2	53	92	27	9.6	7.4
21	5.8	6.2	6.1	5.8	4.9	e4.9	9.1	56	80	25	9.7	7.3
22	5.8	6.3	6.1	5.8	4.9	e4.7	9.2	69	76	24	9.9	7.2
23	6.1	7.0	6.1	5.8	5.0	e4.5	9.0	61	83	23	9.6	7.1
24	6.1	6.8	6.1	5.8	e4.7	e4.8	8.9	53	88	22	9.2	6.9
25	6.1	6.1	e5.6	5.8	e4.5	5.1	8.4	49	89	20	9.4	6.9
26	6.1	6.3	e5.0	5.9	e4.0	5.1	8.0	49	85	19	9.0	6.9
27	6.2	6.3	e4.8	e5.6	e4.5	5.1	7.9	61	85	18	8.8	6.9
28	6.6	6.3	e4.8	e5.2	e4.5	5.1	8.0	72	92	18	8.7	6.9
29	6.6	6.3	e4.9	e5.4	---	5.2	7.3	87	115	17	8.6	7.0
30	6.7	6.3	e4.9	e5.6	---	5.1	7.8	94	104	16	8.6	7.3
31	6.9	---	e5.0	e5.8	---	5.1	---	96	---	16	9.3	---
TOTAL	188.0	190.2	184.4	181.4	145.5	150.8	269.5	1042.8	2555	1203	343.6	227.6
MEAN	6.065	6.340	5.948	5.852	5.196	4.865	8.983	33.64	85.17	38.81	11.08	7.587
MAX	6.9	7.2	6.3	6.9	6.2	5.2	23	96	115	80	15	8.6
MIN	5.6	6.1	4.8	5.0	4.0	4.3	5.0	8.1	60	16	8.6	6.9
AC-FT	373	377	366	360	289	299	535	2070	5070	2390	682	451
CFSM	0.80	0.84	0.79	0.77	0.69	0.64	1.19	4.44	11.3	5.13	1.46	1.00
IN.	0.92	0.93	0.91	0.89	0.72	0.74	1.32	5.12	12.56	5.91	1.69	1.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 2002, BY WATER YEAR (WY)

MEAN	9.195	9.610	7.939	7.165	6.717	7.880	15.99	45.10	68.23	36.74	13.57	9.595
MAX	13.9	19.2	15.2	11.0	9.97	12.9	25.2	68.6	104	73.6	21.6	19.6
(WY)	1983	1990	1990	1984	1986	1986	1990	1993	1984	1983	1983	1985
MIN	6.06	6.34	5.76	5.45	5.03	4.86	8.80	25.3	35.9	15.5	7.87	6.88
(WY)	2002	2002	1995	2000	1993	2002	1995	1999	1987	1988	1988	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1982 - 2002	
ANNUAL TOTAL	5951.8		6681.8			
ANNUAL MEAN	16.31		18.31		19.84	
HIGHEST ANNUAL MEAN					27.2	1983
LOWEST ANNUAL MEAN					13.7	1992
HIGHEST DAILY MEAN	85	May 28	115	Jun 29	276	Jun 30 1983
LOWEST DAILY MEAN	4.5	Feb 10	4.0	Feb 26	4.0	Feb 26 2002
ANNUAL SEVEN-DAY MINIMUM	5.0	Dec 25	4.4	Feb 25	4.4	Feb 25 2002
MAXIMUM PEAK FLOW			a145	Jun 29	c312	Jun 30 1991
MAXIMUM PEAK STAGE			b3.09	Feb 26	3.67	Jun 30 1991
ANNUAL RUNOFF (AC-FT)	11810		13250		14380	
ANNUAL RUNOFF (CFSM)	2.15		2.42		2.62	
ANNUAL RUNOFF (INCHES)	29.25		32.84		35.61	
10 PERCENT EXCEEDS	51		62		53	
50 PERCENT EXCEEDS	8.1		6.8		9.6	
90 PERCENT EXCEEDS	5.8		5.0		6.2	

a--Gage height, 2.93 ft.
b--Backwater from ice.
c--From rating curve extended above 185 ft^3/s, on basis of step-backwater study.
e--Estimated.

12377150 MISSION CREEK ABOVE RESERVOIR, NEAR ST. IGNATIUS, MT

LOCATION.--Lat 47°19'23", long 113°58'43" (NAD 27), in NW$^1/_4$SW$^1/_4$NE$^1/_4$ sec.14, T.18 N., R.19 W., Lake County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank, 0.2 mi southwest of upper BIA campground, 0.5 mi upstream from Mission Reservoir, and 5.3 mi east of St. Ignatius.

DRAINAGE AREA.--12.4 mi^2.

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,460 ft (NGVD 29).

REMARKS.--Records good except those for estimated discharges, which are poor. No known regulation or diversions upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	20	12	9.2	9.2	e6.6	7.8	10	195	155	52	27
2	14	18	12	9.2	9.2	e6.6	e7.3	11	200	126	49	25
3	14	17	11	9.2	8.7	e6.4	7.1	13	201	122	46	25
4	14	16	11	9.2	8.6	7.0	7.2	15	180	129	46	26
5	13	15	11	9.2	8.3	7.0	7.5	15	184	130	46	25
6	13	15	11	9.2	8.3	e6.8	8.4	15	204	118	46	25
7	13	14	11	10	8.1	e6.6	9.2	15	182	121	43	27
8	13	14	11	11	8.0	e6.4	9.3	14	157	146	41	26
9	14	13	11	11	8.0	e6.7	9.2	12	134	151	39	24
10	14	13	10	10	8.0	7.5	9.7	12	125	126	38	22
11	16	13	10	9.5	8.0	7.5	11	11	112	120	39	21
12	15	13	10	9.2	7.7	7.7	11	11	109	126	38	21
13	14	12	10	9.2	7.5	7.6	11	13	116	129	36	20
14	15	12	11	8.7	7.5	7.5	15	21	128	138	35	20
15	15	12	11	8.6	7.2	7.5	18	26	169	134	35	19
16	14	12	11	8.6	7.0	7.5	17	26	220	117	34	19
17	14	12	11	8.4	7.0	e7.4	15	25	244	107	33	21
18	14	12	9.7	8.1	7.1	6.8	13	29	226	103	32	25
19	14	12	9.5	8.4	7.2	7.0	12	61	191	98	31	24
20	14	12	9.7	8.6	7.2	e6.9	11	147	153	92	30	22
21	14	14	10	8.8	7.2	e7.1	11	186	140	86	31	21
22	13	14	11	8.9	7.6	e7.0	11	186	161	80	30	19
23	13	16	10	8.9	8.0	e7.6	11	118	214	78	29	18
24	13	17	9.9	8.9	e7.0	7.8	9.9	94	254	77	28	18
25	13	15	9.6	8.9	e6.9	7.8	9.5	84	259	73	27	18
26	13	14	9.3	9.2	e6.2	7.8	9.5	82	246	70	27	18
27	13	13	e8.0	9.5	e6.6	7.8	9.8	94	248	68	27	18
28	14	12	8.4	e9.0	e6.6	7.7	9.8	127	342	65	27	18
29	14	12	9.1	8.9	---	7.5	9.5	173	361	61	27	18
30	16	12	9.2	8.9	---	7.5	9.9	215	256	59	27	20
31	19	---	9.2	9.1	---	7.6	---	212	---	56	28	---
TOTAL	436	416	317.6	283.5	213.9	224.2	317.6	2073	5911	3261	1097	650
MEAN	14.06	13.87	10.25	9.145	7.639	7.232	10.59	66.87	197.0	105.2	35.39	21.67
MAX	19	20	12	11	9.2	7.8	18	215	361	155	52	27
MIN	13	12	8.0	8.1	6.2	6.4	7.1	10	109	56	27	18
AC-FT	865	825	630	562	424	445	630	4110	11720	6470	2180	1290
CFSM	1.13	1.12	0.83	0.74	0.62	0.58	0.85	5.39	15.9	8.48	2.85	1.75
IN.	1.31	1.25	0.95	0.85	0.64	0.67	0.95	6.22	17.73	9.78	3.29	1.95

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 2002, BY WATER YEAR (WY)

MEAN	25.36	19.30	13.28	10.52	9.001	10.53	25.51	100.7	172.9	116.1	49.12	30.20
MAX	36.8	28.5	21.3	14.9	12.6	15.4	43.9	168	222	181	74.9	67.4
(WY)	1983	1990	1990	1984	1986	1986	1990	1993	1997	1983	1997	1985
MIN	14.1	12.0	10.2	8.20	6.71	7.23	10.6	54.0	104	53.4	25.2	15.8
(WY)	2002	1988	2002	2000	1985	2002	2002	1984	1987	1988	1988	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1982 - 2002	
ANNUAL TOTAL	16569.1		15200.8			
ANNUAL MEAN	45.39		41.65		48.69	
HIGHEST ANNUAL MEAN					61.0	1997
LOWEST ANNUAL MEAN					35.6	1988
HIGHEST DAILY MEAN	347	May 28	361	Jun 29	472	Jul 4 1995
LOWEST DAILY MEAN	5.5	Feb 28	6.2	Feb 26	5.5	Feb 28 2001
ANNUAL SEVEN-DAY MINIMUM	6.6	Feb 27	6.6	Feb 25	6.3	Feb 15 1985
MAXIMUM PEAK FLOW			409	Jun 29	a892	Jun 30 1991
MAXIMUM PEAK STAGE			4.19	Jun 29	b5.16	Jun 30 1991
INSTANTANEOUS LOW FLOW			4.4	Dec 28	4.4	Dec 28 2001
ANNUAL RUNOFF (AC-FT)	32860		30150		35270	
ANNUAL RUNOFF (CFSM)	3.66		3.36		3.93	
ANNUAL RUNOFF (INCHES)	49.71		45.60		53.35	
10 PERCENT EXCEEDS	139		132		137	
50 PERCENT EXCEEDS	14		14		22	
90 PERCENT EXCEEDS	8.6		7.5		9.0	

a--Gage height, 4.72 ft.
b--Backwater from debris dam.
e--Estimated.

PEND OREILLE RIVER BASIN

12381400 SOUTH FORK JOCKO RIVER NEAR ARLEE, MT

LOCATION.--Lat 47°11'44", long 113°50'59" (NAD 27), in NE$^1/_4$NW$^1/_4$NE$^1/_4$ sec.35, T.17 N., R.18 W., Lake County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank 600 ft upstream from confluence with Jocko River and Twin Campground and 12 mi northeast of Arlee, MT.

DRAINAGE AREA.--56.0 mi^2.

PERIOD OF RECORD.--October 1982 to current year. Records published as "near Jocko" 1912-16 and in WSP 1246, 1316 are not equivalent.

GAGE.--Water-stage recorder. Elevation of gage is 3,970 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year. No known regulation or diversion upstream from station. U.S. Geological Survey telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	24	e13	e6.0	e11	e7.0	12	36	415	209	63	35
2	16	21	14	e7.0	e11	e6.5	e9.5	44	452	192	62	34
3	16	20	14	e9.0	e9.0	e6.0	e9.0	58	437	179	60	34
4	16	18	e13	e10	e10	e9.0	e11	58	398	170	63	34
5	17	18	e12	e9.5	e10	e8.5	13	56	392	161	64	33
6	18	17	e12	e10	e11	e7.0	15	52	404	153	62	36
7	16	17	e13	e12	e12	e5.0	16	49	372	146	60	40
8	16	16	13	e17	e11	e4.5	15	44	337	146	58	36
9	18	16	13	e14	e11	e7.0	15	41	306	141	56	34
10	17	15	13	e13	11	e10	17	38	302	132	55	33
11	20	15	e12	12	11	11	18	37	282	125	53	32
12	19	15	e10	12	7.8	13	21	39	273	119	51	31
13	18	15	e11	12	e8.0	11	29	50	273	113	50	30
14	21	15	e12	e11	e8.0	11	49	75	280	109	48	29
15	20	15	e12	e10	e7.5	10	57	85	306	105	47	29
16	18	15	e12	e10	e7.5	10	48	80	338	102	46	28
17	19	15	e10	e10	e7.5	e7.0	41	82	344	99	46	28
18	18	15	e8.0	e9.5	e8.0	e5.0	35	95	332	96	45	31
19	20	14	e10	e10	e9.0	e5.5	31	134	309	93	44	29
20	21	14	e11	e11	e9.5	e6.0	29	201	279	90	43	28
21	19	16	e12	e10	10	e5.0	28	252	268	86	44	28
22	18	16	e8.0	e10	12	e7.0	28	298	270	83	46	28
23	21	16	e6.0	e10	13	e9.0	31	251	318	81	43	27
24	20	15	e5.0	e11	9.1	e11	29	215	290	79	42	26
25	19	15	e3.5	e12	e3.0	11	29	199	271	76	41	26
26	18	14	e2.5	e10	e4.0	11	29	200	256	76	40	26
27	18	14	e2.0	e7.0	e6.0	12	29	239	244	75	40	28
28	23	e11	e6.5	e4.0	e7.5	11	29	295	242	72	39	28
29	21	e12	e8.0	e6.0	---	11	29	371	251	69	38	27
30	24	e13	e7.5	e8.0	---	11	33	438	237	67	37	29
31	26	---	e9.0	e10	---	11	---	424	---	65	36	---
TOTAL	588	472	308.0	313.0	255.4	270.0	784.5	4536	9478	3509	1522	917
MEAN	18.97	15.73	9.935	10.10	9.121	8.710	26.15	146.3	315.9	113.2	49.10	30.57
MAX	26	24	14	17	13	13	57	438	452	209	64	40
MIN	16	11	2.0	4.0	3.0	4.5	9.0	36	237	65	36	26
AC-FT	1170	936	611	621	507	536	1560	9000	18800	6960	3020	1820
CFSM	0.34	0.28	0.18	0.18	0.16	0.16	0.47	2.61	5.64	2.02	0.88	0.55
IN.	0.39	0.31	0.20	0.21	0.17	0.18	0.52	3.01	6.30	2.33	1.01	0.61

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2002, BY WATER YEAR (WY)

MEAN	21.84	18.13	14.51	11.80	10.42	15.12	55.83	197.2	192.4	77.12	37.76	25.96
MAX	42.2	26.3	37.4	22.2	22.8	56.0	113	459	446	140	53.5	44.5
(WY)	1986	1986	1996	1986	1986	1986	1990	1997	1997	1997	1997	1985
MIN	13.0	11.1	9.33	3.66	4.45	7.68	24.8	119	70.2	37.0	21.6	15.8
(WY)	1988	1988	1988	1985	1985	1985	1995	1995	1992	1992	1992	1987

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1983 - 2002	
ANNUAL TOTAL	16926.9		22952.9			
ANNUAL MEAN	46.38		62.88		56.67	
HIGHEST ANNUAL MEAN					108	1997
LOWEST ANNUAL MEAN					35.0	1992
HIGHEST DAILY MEAN	314	May 26	452	Jun 2	1060	May 17 1997
LOWEST DAILY MEAN	2.0	Dec 27	2.0	Dec 27	2.0	Feb 4 1989
ANNUAL SEVEN-DAY MINIMUM	4.8	Dec 22	4.8	Dec 22	2.6	Feb 1 1989
MAXIMUM PEAK FLOW			484	Jun 3	a1220	May 17 1997
MAXIMUM PEAK STAGE			3.25	Jun 3	b4.98	Feb 15 1989
ANNUAL RUNOFF (AC-FT)	33570		45530		41060	
ANNUAL RUNOFF (CFSM)	0.83		1.12		1.01	
ANNUAL RUNOFF (INCHES)	11.24		15.25		13.75	
10 PERCENT EXCEEDS	158		240		155	
50 PERCENT EXCEEDS	18		20		23	
90 PERCENT EXCEEDS	8.0		8.0		9.5	

a--Gage height, 4.31 ft.
b--Backwater due to ice.
e--Estimated.

12383500 BIG KNIFE CREEK NEAR ARLEE, MT

LOCATION.--Lat 47°08'51", long 113°58'24" (NAD 27), in NW$^1/_4$SW$^1/_4$NW/4 sec.14, T.16 N., R.19 W., Lake County, Hydrologic Unit 17010212, Flathead Indian Reservation, on left bank, 150 ft upstream from S Canal, 1 mi upstream from mouth, and 5.5 mi east of Arlee.

DRAINAGE AREA.--6.88 mi^2.

PERIOD OF RECORD.--August 1910 to September 1916 (no winter records), October 1982 to current year. Monthly discharge only for some periods, published in WSP 1316. Published as "near Jocko" 1910-16 and in WSP 916, and as "above Big Knife Canal, near Jocko" in WSP 1246, 1316.

REVISED RECORDS.--WSP 1246: 1916. WSP 1316: 1910-12, 1915-16.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,720 ft (NGVD 29). Prior to July 28, 1998, at site 38 ft upstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. No known regulation or diversion upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.7	6.8	5.5	4.3	e4.2	3.7	3.7	4.3	28	37	18	13
2	7.3	6.4	5.5	4.3	e4.3	3.6	3.6	3.9	29	33	18	13
3	7.5	6.3	5.5	4.3	e4.3	3.5	3.6	4.0	30	30	18	13
4	7.4	6.3	5.1	4.3	e4.3	3.5	3.9	4.2	27	29	18	13
5	7.2	6.3	5.0	4.3	e4.3	3.5	4.0	4.4	27	28	18	13
6	7.2	6.3	5.0	4.3	e4.3	3.5	3.9	4.7	34	27	18	13
7	7.2	6.3	5.0	4.7	e4.2	3.6	4.0	5.1	30	26	18	13
8	7.2	6.1	5.0	5.0	e4.2	3.5	4.1	4.8	27	26	18	12
9	7.2	6.0	5.0	4.7	e4.1	3.7	3.9	4.5	24	25	18	12
10	7.2	6.0	5.0	4.6	e4.1	3.7	4.3	4.3	26	25	18	12
11	7.1	6.0	5.0	4.7	e4.1	3.8	4.3	4.3	22	24	17	12
12	7.1	5.8	5.0	4.5	4.1	4.1	4.3	4.3	21	23	16	12
13	7.0	5.7	5.0	4.5	4.1	3.7	4.5	4.3	23	22	16	12
14	7.6	5.7	5.1	4.3	4.0	3.7	5.3	4.8	26	22	16	11
15	7.0	5.7	5.0	4.3	3.9	3.7	5.2	5.2	32	21	16	11
16	6.9	5.7	5.0	4.3	3.8	3.5	5.2	5.6	40	21	15	11
17	6.9	5.7	5.0	4.3	3.7	3.5	5.1	5.7	42	21	15	11
18	6.9	5.7	5.0	4.3	3.7	3.5	4.7	5.9	43	21	15	13
19	7.1	5.7	5.0	4.3	3.7	3.5	4.7	7.8	39	21	15	12
20	7.0	5.7	4.7	4.3	3.7	3.6	4.7	14	34	20	15	12
21	6.7	6.5	4.7	4.3	3.7	3.5	4.7	19	31	20	15	11
22	6.6	6.0	4.7	4.3	4.3	3.5	4.4	26	32	20	15	11
23	6.7	5.7	4.7	4.3	4.1	3.5	4.3	19	41	20	15	11
24	6.6	5.7	4.7	4.3	4.0	3.4	4.3	17	44	20	14	11
25	6.6	5.5	4.7	4.3	3.7	3.4	4.3	15	43	20	14	11
26	6.6	5.5	4.5	4.3	3.7	3.6	4.4	15	40	19	14	11
27	6.6	5.5	4.4	4.3	3.8	3.7	4.2	17	40	20	14	11
28	7.3	5.5	4.4	4.2	3.7	3.5	4.1	21	42	20	14	11
29	6.9	5.5	4.5	4.1	---	3.5	4.1	26	47	19	13	11
30	6.9	5.5	4.4	4.1	---	3.6	4.2	29	45	19	13	11
31	6.9	---	4.3	e4.1	---	3.8	---	29	---	18	13	---
TOTAL	218.1	177.1	151.4	135.2	112.1	111.4	130.0	339.1	1009	717	490	354
MEAN	7.035	5.903	4.884	4.361	4.004	3.594	4.333	10.94	33.63	23.13	15.81	11.80
MAX	7.7	6.8	5.5	5.0	4.3	4.1	5.3	29	47	37	18	13
MIN	6.6	5.5	4.3	4.1	3.7	3.4	3.6	3.9	21	18	13	11
AC-FT	433	351	300	268	222	221	258	673	2000	1420	972	702
CFSM	1.02	0.86	0.71	0.63	0.58	0.52	0.63	1.59	4.89	3.36	2.30	1.72
IN.	1.18	0.96	0.82	0.73	0.61	0.60	0.70	1.83	5.46	3.88	2.65	1.91

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2002, BY WATER YEAR (WY)

MEAN	8.045	6.882	5.802	5.112	4.530	4.543	6.230	15.52	25.45	18.52	12.97	9.894
MAX	10.3	8.95	7.38	6.33	6.49	7.07	8.93	28.0	48.4	29.2	16.9	12.0
(WY)	1983	1986	1985	1985	1986	1986	1986	1997	1997	1984	1983	1984
MIN	5.27	4.47	4.05	3.65	2.96	2.96	3.92	9.23	8.49	9.60	8.06	6.55
(WY)	1993	1993	1993	1989	1989	1989	1991	1995	1992	1992	1992	1992

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1983 - 2002		
ANNUAL TOTAL	3371.3		3944.4				
ANNUAL MEAN	9.236		10.81		10.32		
HIGHEST ANNUAL MEAN					14.6		1997
LOWEST ANNUAL MEAN					6.60		1992
HIGHEST DAILY MEAN	40	May 28	47	Jun 29	65	May 30	1986
LOWEST DAILY MEAN	3.4	Feb 25	3.4	Mar 24	1.7	Feb 4	1989
ANNUAL SEVEN-DAY MINIMUM	3.4	Feb 22	3.5	Mar 19	2.0	Feb 1	1989
MAXIMUM PEAK FLOW			58	Jun 29	a78	Jun 30	1916
MAXIMUM PEAK STAGE			5.91	Jun 29	5.91	Jun 29	2002
INSTANTANEOUS LOW FLOW					b1.3	Feb 4	1989
INSTANTANEOUS LOW STAGE					b0.89	Feb 4	1989
ANNUAL RUNOFF (AC-FT)	6690		7820		7470		
ANNUAL RUNOFF (CFSM)	1.34		1.57		1.50		
ANNUAL RUNOFF (INCHES)	18.23		21.33		20.37		
10 PERCENT EXCEEDS	19		26		20		
50 PERCENT EXCEEDS	6.7		5.7		7.6		
90 PERCENT EXCEEDS	3.9		3.7		4.1		

a--Gage height, 3.65 ft, site and datum then in use.
b--Result of freezeup.
e--Estimated.

PEND OREILLE RIVER BASIN

12387450 VALLEY CREEK NEAR ARLEE, MT

LOCATION.--Lat 47°10'13", long 114°13'47" (NAD 27), in NE$^1/_4$SE$^1/_4$SE$^1/_4$ sec.3, T.16 N., R.21 W., Sanders County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank, 1.4 mi upstream from East Fork, 6.7 mi west of Arlee, and 7.4 mi southwest of Ravalli.

DRAINAGE AREA.--15.3 mi^2.

PERIOD OF RECORD.--October 1982 to current season (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 3,450 ft (NGVD 29).

REMARKS.--Seasonal records good except those for estimated daily discharges, which are poor. No known regulation or diversion upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2002
DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				e5.5	e8.0	80	e38	16	11	e9.4		
2				e5.3	e9.0	77	e36	16	11	e9.4		
3				e5.0	e11	74	e35	15	11	e9.8		
4				e5.4	e12	72	e33	15	11	e9.8		
5				e5.6	e13	73	e31	15	11	e9.8		
6				e5.6	e14	73	e28	15	11	e9.8		
7				e5.4	e13	68	e26	15	e12	e9.6		
8				e6.0	e13	63	e28	15	e11	e9.2		
9				e5.8	e12	59	e25	15	e11	e9.2		
10				e5.8	e12	60	e23	14	e11	e9.0		
11				e5.8	e12	60	e22	14	e11	e9.0		
12				e6.2	e12	56	e22	14	11	e9.0		
13				e7.4	e17	57	e21	14	11	e9.0		
14				e9.0	e23	63	e21	13	10	e8.8		
15				e8.2	21	73	e20	13	10	e8.8		
16				e7.0	21	76	e20	13	10	e8.8		
17				e6.6	22	77	e19	13	10	e8.8		
18				e6.6	22	71	e19	13	11	e8.8		
19				e6.6	31	e64	e18	13	10	e8.8		
20				e6.6	48	e56	e18	13	10	e8.8		
21				e6.6	68	e52	e17	13	10	e8.8		
22				e6.6	71	e55	e17	13	10	8.8		
23				e6.4	69	e60	e17	13	10	8.8		
24				e6.4	57	e58	17	13	10	8.8		
25				e6.2	50	e50	17	12	10	8.8		
26				e6.0	49	45	17	13	10	8.8		
27				e5.8	56	43	17	12	e10	8.8		
28				e6.0	72	43	16	12	e9.6	e8.8		
29				e5.8	81	42	16	12	e9.8	e8.6		
30				e7.0	82	e40	16	12	e10	e8.4		
31				---	79	---	16	12	---	e8.0		
TOTAL				188.2	1080.0	1840	686	421	314.4	279.0		
MEAN				6.27	34.8	61.3	22.1	13.6	10.5	9.00		
MAX				9.0	82	80	38	16	12	9.8		
MIN				5.0	8.0	40	16	12	9.6	8.0		
AC-FT				373	2140	3650	1360	835	624	553		
CFSM				0.41	2.28	4.01	1.45	0.89	0.68	0.59		
IN.				0.46	2.63	4.47	1.67	1.02	0.76	0.68		

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2002, BY WATER YEAR (WY)

MEAN	14.5	32.4	28.7	14.7	10.6	9.10	8.56	8.22
MAX	30.3	75.5	66.7	31.8	19.6	14.0	12.2	11.5
(WY)	1996	1997	1997	1997	1997	1997	1998	1998
MIN	6.27	21.5	11.6	8.47	6.72	6.21	5.97	5.85
(WY)	2002	1988	1987	2001	2001	2001	1989	2002

SUMMARY STATISTICS	FOR 2002 SEASON		WATER YEARS 1983 - 2002	
HIGHEST DAILY MEAN	82	May 30	110	May 17 1997
LOWEST DAILY MEAN	5.0	Apr 03	5.0	Nov 22 1994
MAXIMUM PEAK FLOW	87	May 22	116	May 16 1997
MAXIMUM PEAK STAGE	2.66	May 22	3.04	May 16 1997

e--Estimated.

PEND OREILLE RIVER BASIN

12388200 JOCKO RIVER AT DIXON, MT

LOCATION.--Lat 47°18'43", long 114°17'48" (NAD 27), in NW$^1/_4$NW$^1/_4$NE$^1/_4$ sec. 20, T.18 N., R.21 W., Sanders County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank 38 ft downstream from State Highway 212 bridge, 0.8 mi east of Dixon, and at river mile 0.8.

DRAINAGE AREA.--380 mi^2.

PERIOD OF RECORD.--April 1990 to current year. Miscellaneous measurements made at this site 1977 and 1987 water years.

GAGE.--Water-stage recorder. Datum of gage is 2,521.87 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Some regulation and diversion upstream from gage for irrigation. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	154	e193	e151	119	112	100	153	163	947	884	e180	193
2	151	e186	151	118	114	101	152	167	976	787	e180	192
3	151	e179	150	121	112	104	147	173	979	728	e180	190
4	152	e179	148	121	116	e120	146	185	899	678	e175	189
5	153	e175	148	123	116	e113	147	189	851	623	e180	188
6	154	e175	148	124	117	113	154	187	906	541	e180	194
7	153	e171	148	133	120	112	162	189	874	507	e175	203
8	152	e171	148	139	127	111	165	192	804	508	e170	202
9	153	e164	148	138	121	105	161	178	779	467	e170	197
10	155	e164	145	132	118	111	170	164	956	404	e170	194
11	157	e164	145	130	118	119	179	156	965	378	e170	193
12	158	e164	142	128	115	143	180	151	894	351	e170	192
13	157	e161	145	128	112	142	192	148	844	330	e175	189
14	163	e158	148	127	113	132	230	141	857	331	e180	186
15	168	e158	143	126	110	131	292	148	946	316	e175	184
16	e159	e158	139	125	109	128	284	159	1030	317	e170	180
17	e158	e158	144	125	111	127	239	151	1060	297	e170	181
18	e158	e158	136	123	112	123	209	142	1040	278	171	206
19	e158	e158	134	122	110	127	211	162	967	264	171	204
20	e164	e158	136	124	110	129	189	313	813	253	174	199
21	e160	e161	139	126	109	124	181	568	721	241	179	203
22	e158	e164	138	124	112	118	177	750	834	231	185	203
23	e164	e164	137	122	119	126	167	722	1010	227	183	200
24	e160	e161	132	124	111	129	163	597	1130	222	180	200
25	e160	e161	125	127	101	136	158	522	1140	214	181	201
26	e154	e158	122	133	99	144	157	492	1100	206	185	202
27	e154	e154	117	125	115	153	150	510	1060	207	182	204
28	e158	e148	112	113	96	152	143	581	1110	205	184	206
29	e164	e151	111	104	---	150	136	738	1140	195	183	203
30	e164	e153	114	104	---	146	148	899	1100	190	186	207
31	e182	---	119	111	---	147	---	971	---	e185	198	---
TOTAL	4906	4927	4263	3839	3155	3916	5342	10808	28732	11565	5512	5885
MEAN	158.3	164.2	137.5	123.8	112.7	126.3	178.1	348.6	957.7	373.1	177.8	196.2
MAX	182	193	151	139	127	153	292	971	1140	884	198	207
MIN	151	148	111	104	96	100	136	141	721	185	170	180
AC-FT	9730	9770	8460	7610	6260	7770	10600	21440	56990	22940	10930	11670

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2002, BY WATER YEAR (WY)

MEAN	184.2	175.0	158.4	133.5	131.4	149.3	214.8	423.3	545.2	270.0	169.4	179.5
MAX	227	227	265	188	208	246	390	1303	1537	512	222	225
(WY)	1998	1996	1996	1996	1996	1997	1997	1997	1997	1997	1997	1997
MIN	145	138	123	102	108	118	130	203	149	140	131	137
(WY)	1995	1995	1993	1995	1993	1994	1995	1992	1992	1994	1994	1994

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1991 - 2002	
ANNUAL TOTAL	65414		92850			
ANNUAL MEAN	179.2		254.4		228.0	
HIGHEST ANNUAL MEAN					445	1997
LOWEST ANNUAL MEAN					157	1992
HIGHEST DAILY MEAN	460	May 26	1140	Jun 25	2540	May 18 1997
LOWEST DAILY MEAN	106	Feb 28	96	Feb 28	74	Feb 2 1996
ANNUAL SEVEN-DAY MINIMUM	108	Feb 27	102	Feb 25	82	Jan 3 1995
MAXIMUM PEAK FLOW			1230	Jun 29	2710	May 17 1997
MAXIMUM PEAK STAGE			3.21	Jun 29	4.68	May 17 1997
ANNUAL RUNOFF (AC-FT)	129700		184200		165200	
10 PERCENT EXCEEDS	302		724		368	
50 PERCENT EXCEEDS	154		162		170	
90 PERCENT EXCEEDS	121		116		121	

e--Estimated.

PEND OREILLE RIVER BASIN

12388400 REVAIS CREEK BELOW WEST FORK, NEAR DIXON, MT

LOCATION.--Lat 47°15'59", long 114°24'21" (NAD 27), in SE$^1/_4$NE$^1/_4$NW$^1/_4$ sec.4, T.17 N., R.22 W., Sanders County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank, 0.3 mi downstream from West Fork, 7.3 mi southwest of Dixon, and at river mile 5.2.

DRAINAGE AREA.--23.4 mi^2.

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,420 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. No known regulation or diversion upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	6.0	4.0	e3.5	e3.4	e3.5	6.1	16	169	58	12	6.3
2	3.6	5.1	4.0	e3.5	e3.4	e3.6	5.7	19	163	50	11	6.3
3	3.5	5.1	4.0	e3.6	e3.4	4.4	e5.3	25	158	45	11	6.2
4	3.4	4.9	4.0	e3.7	e3.4	4.2	5.1	26	127	40	11	6.3
5	3.4	4.9	4.0	e3.6	e3.4	4.2	5.7	24	134	36	11	6.2
6	3.4	4.9	4.0	e3.7	3.4	4.1	7.8	23	139	33	11	6.4
7	3.4	4.6	4.0	e3.8	3.7	4.0	9.0	21	109	30	11	6.8
8	3.4	4.6	4.0	e3.7	3.8	e3.6	8.5	20	98	30	9.9	6.5
9	3.6	4.6	4.0	e3.7	3.8	3.6	8.8	18	83	28	9.6	6.1
10	3.4	4.5	4.0	e3.6	3.7	3.7	9.5	17	102	26	9.1	5.9
11	4.5	4.4	4.0	e3.6	3.6	4.2	11	16	102	24	8.9	5.8
12	3.8	4.4	e3.8	e3.5	3.6	7.0	14	17	102	23	8.6	5.7
13	4.0	4.4	e3.8	e3.6	3.9	4.9	21	20	111	21	8.3	5.5
14	4.3	4.4	e3.8	e3.5	3.7	4.6	45	32	132	20	8.0	5.5
15	4.2	4.3	4.0	e3.5	3.6	4.4	42	37	171	19	8.0	5.4
16	4.0	4.2	4.0	e3.5	3.8	4.4	31	36	189	19	7.7	5.3
17	4.0	4.2	e3.8	e3.5	3.9	4.3	23	35	181	17	7.6	5.5
18	4.0	4.2	e3.8	e3.5	3.8	4.0	19	37	129	16	7.4	5.9
19	4.0	4.2	e3.8	e3.5	3.8	4.0	16	53	104	16	7.3	5.3
20	4.0	4.2	e3.8	e3.5	3.8	4.0	14	123	91	15	7.2	5.1
21	4.0	4.3	4.0	e3.5	3.6	4.0	14	221	87	14	7.2	5.0
22	4.0	4.4	4.0	e3.6	e3.5	4.0	14	191	96	14	7.1	5.0
23	5.5	4.4	3.8	e3.5	e3.4	4.1	15	135	113	14	6.9	5.0
24	4.3	4.4	e3.7	e3.7	e3.4	4.2	14	101	110	13	6.7	4.9
25	4.0	4.4	e3.5	e3.6	e3.2	4.2	14	73	100	13	6.6	4.9
26	4.0	4.4	e3.5	e3.5	e3.4	4.3	14	74	92	13	7.8	4.8
27	4.0	4.1	e3.5	e3.5	e3.4	4.9	14	112	85	13	7.4	5.5
28	4.2	4.0	e3.4	e3.5	e3.4	4.7	13	154	79	12	6.8	5.2
29	4.2	4.0	e3.4	e3.3	---	4.7	13	196	75	12	6.7	5.1
30	4.7	4.0	e3.5	e3.3	---	5.0	14	244	68	12	6.6	5.3
31	6.4	---	e3.5	e3.3	---	5.6	---	192	---	12	6.6	---
TOTAL	124.8	134.5	118.4	109.9	100.2	134.4	446.5	2308	3499	708	262.0	168.7
MEAN	4.026	4.483	3.819	3.545	3.579	4.335	14.88	74.45	116.6	22.84	8.452	5.623
MAX	6.4	6.0	4.0	3.8	3.9	7.0	45	244	189	58	12	6.8
MIN	3.4	4.0	3.4	3.3	3.2	3.5	5.1	16	68	12	6.6	4.8
AC-FT	248	267	235	218	199	267	886	4580	6940	1400	520	335
CFSM	0.17	0.19	0.16	0.15	0.15	0.19	0.64	3.18	4.98	0.98	0.36	0.24
IN.	0.20	0.21	0.19	0.17	0.16	0.21	0.71	3.67	5.56	1.13	0.42	0.27

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2002, BY WATER YEAR (WY)

MEAN	6.429	6.866	6.677	5.423	5.693	8.042	23.16	67.28	56.52	16.68	8.072	6.384
MAX	12.5	14.8	27.9	12.3	19.9	23.7	56.4	165	134	25.9	11.0	10.9
(WY)	1986	1986	1996	1996	1996	1986	1996	1997	1997	1991	1997	1985
MIN	4.03	4.31	3.82	3.55	3.49	3.97	9.07	44.9	18.6	10.2	5.47	4.19
(WY)	2002	1988	2002	2002	1993	2001	2001	1992	1987	1986	1988	1988

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1983 - 2002	
ANNUAL TOTAL	4312.8		8114.4			
ANNUAL MEAN	11.82		22.23		18.14	
HIGHEST ANNUAL MEAN					35.2	1997
LOWEST ANNUAL MEAN					11.6	1992
HIGHEST DAILY MEAN	90	May 25	244	May 30	316	Jun 1 1997
LOWEST DAILY MEAN	3.3	Mar 12	3.2	Feb 25	2.5	Feb 4 1989
ANNUAL SEVEN-DAY MINIMUM	3.4	Mar 11	3.4	Jan 29	2.7	Feb 2 1989
MAXIMUM PEAK FLOW			263	May 21	a382	Jun 1 1997
MAXIMUM PEAK STAGE			4.31	May 21	b6.93	Dec 5 1984
ANNUAL RUNOFF (AC-FT)	8550		16090		13140	
ANNUAL RUNOFF (CFSM)	0.50		0.95		0.78	
ANNUAL RUNOFF (INCHES)	6.86		12.90		10.53	
10 PERCENT EXCEEDS	40		84		48	
50 PERCENT EXCEEDS	4.4		5.1		7.4	
90 PERCENT EXCEEDS	3.6		3.5		4.1	

a--Gage height, 4.36 ft.
b--Backwater from ice.
e--Estimated.

PEND OREILLE RIVER BASIN

12388700 FLATHEAD RIVER AT PERMA, MT

LOCATION.--Lat 47°22'03", long 114°35'03" (NAD 27), in SE$^1/_4$NE$^1/_4$NE$^1/_4$ sec.36, T.19 N., R.24 W., Sanders County, Hydrologic Unit 17010212, Flathead Indian Reservation, on right bank 0.3 mi north of Perma, 0.4 mi downstream from Camas Creek, and at river mile 10.9.

DRAINAGE AREA.--8,795 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,469.31 ft (NGVD 29).

REMARKS.--Water-discharge records excellent. Flow affected by regulation from Hungry Horse Reservoir (station no. 12362000) and by Flathead Lake (station no. 12371500). Diversions for irrigation of about 160,500 acres upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4050	4070	4050	8560	10800	6650	8610	12200	38100	44100	9440	8050
2	4530	4000	4040	8590	10900	6520	8660	12100	43000	40300	10200	8030
3	5010	4020	4050	8710	10900	6510	8990	11900	45900	35000	10400	7650
4	5490	4060	4020	8720	11000	6610	8530	11700	46400	30300	10400	7590
5	6110	4050	4060	8700	10900	6660	8230	12400	46200	27600	10600	7570
6	5740	4040	4090	8680	10900	6550	8200	13100	45900	24300	11100	7610
7	5080	4030	4130	8630	10900	6580	7750	13400	45800	24000	11200	7730
8	4650	4030	4090	8860	11000	6810	7800	13200	46000	22900	11300	7740
9	4260	4050	4100	8880	10800	6710	7860	13200	47200	22800	10700	7640
10	3990	4060	4080	8840	10800	7440	7970	13300	47200	22600	10500	7610
11	3980	4030	4070	8850	11000	7650	7820	13500	46700	22600	9820	7510
12	3920	4040	4060	8890	10900	7910	7820	13400	44600	22400	9710	7480
13	4000	4060	4080	8910	10900	8620	7980	13400	43800	21900	9720	7500
14	3960	4070	4420	8780	10900	9690	8280	13300	43300	21700	9660	7100
15	3960	4070	4900	8800	11100	10600	8390	13300	41200	22100	9530	6950
16	3960	4070	5390	8790	10900	11300	9230	13100	40800	22000	9570	6950
17	4040	4080	5910	8800	10900	11500	10400	13300	41000	21500	9630	6950
18	4010	4070	6740	8850	11000	11800	11400	13400	40300	19200	9550	7050
19	4050	4040	7780	8860	10200	11700	11900	13500	37300	16800	9480	7020
20	4060	4040	8410	8970	9160	11900	11100	14000	34800	14900	9480	6970
21	4000	4040	8540	8820	7980	8900	11000	14800	34400	14400	9540	6900
22	4020	4060	8580	8790	7160	8000	10900	16000	34200	14400	9560	6660
23	4150	4090	8620	8790	6210	9350	11800	16400	34300	14400	9580	6230
24	4040	4060	8610	8800	5980	10300	12000	16700	34600	13900	9530	5790
25	4000	4020	8610	8820	5860	11300	12100	16300	38100	13100	8840	5320
26	4010	4040	8630	8880	5790	10600	12100	16000	42100	12700	7820	5160
27	4010	4050	8600	8830	6660	10600	12500	16100	43700	12200	7460	4770
28	4060	4050	8600	8820	6660	9710	12400	16500	44300	11900	7440	4620
29	4050	4090	8580	9650	---	8960	12000	17100	44800	11600	7450	4630
30	4060	4070	8550	10700	---	9290	12200	20300	44800	10900	7500	4460
31	4110	---	8560	10900	---	8570	---	27000	---	10100	7540	---
TOTAL	133360	121550	190950	277470	268160	275290	295920	453900	1260800	638600	294250	203240
MEAN	4302	4052	6160	8951	9577	8880	9864	14640	42030	20600	9492	6775
MAX	6110	4090	8630	10900	11100	11900	12500	27000	47200	44100	11300	8050
MIN	3920	4000	4020	8560	5790	6510	7750	11700	34200	10100	7440	4460
AC-FT	264500	241100	378700	550400	531900	546000	587000	900300	2501000	1267000	583600	403100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2002, BY WATER YEAR (WY)

MEAN	8901	10720	11090	10730	9942	9451	10390	15480	23060	13290	8156	8158
MAX	12070	13150	17260	15200	18340	23420	23370	36930	45490	22780	12690	13090
(WY)	1992	2000	1996	1996	1996	1996	1996	1997	1997	1991	1996	1989
MIN	4302	4052	6160	6103	4234	4121	4397	5877	9092	6279	4164	4011
(WY)	2002	2002	2002	1988	2001	2001	2001	1995	1987	1994	1994	1994

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1984 - 2002	
ANNUAL TOTAL	2220400		4413490			
ANNUAL MEAN	6083		12090		11610	
HIGHEST ANNUAL MEAN					18030	1996
LOWEST ANNUAL MEAN					7040	2001
HIGHEST DAILY MEAN	13900	Jun 29	a47200	Jun 9	53400	Jun 6 1997
LOWEST DAILY MEAN	3600	Feb 13	3920	Oct 12	2670	May 29 1984
ANNUAL SEVEN-DAY MINIMUM	3700	Feb 12	3970	Oct 10	3110	May 25 1984
MAXIMUM PEAK FLOW			47400	Jun 9	54700	Jun 7 1997
MAXIMUM PEAK STAGE			20.04	Jun 9	21.65	Jun 7 1997
ANNUAL RUNOFF (AC-FT)	4404000		8754000		8412000	
10 PERCENT EXCEEDS	10800		25400		17400	
50 PERCENT EXCEEDS	4340		8830		10400	
90 PERCENT EXCEEDS	3990		4050		5650	

a--Also occurred June 10.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971-73, 1984-92, 1997 to current year.
RPERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Seasonal records, April 2001 to current year.
INSTRUMENTATION.--Temperature probe installed Aug. 30, 2000.
REMARKS.--Unpublished records of instantaneous water temperature and specific conductance are available in files of the District office.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE (seasonal records): maximum, 27.5°C, Aug. 12, 2001; minimum, 2.5°C, Apr. 2, 2002.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum, 25.0°C, July 21, 24, 25; minimum, 2.5°C, Apr. 2.

WATER QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
OCT 2001									
23...	0930	4230	7.5	184	1.5	8.0	.10	.036	<.002
APR 2002									
24...	1215	12100	8.2	171	7.0	7.5	.11	.085	E.002
JUN									
18...	0845	40400	8.3	170	14.0	13.5	.15	.036	<.002
SEP									
11...	0830	7500	8.2	170	11.5	17.0	E.10	E.011	<.002

DATE	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT 2001					
23...	<.007	E.003	80	5	57.1
APR 2002					
24...	.010	.007	85	7	229
JUN					
18...	<.007	.010	81	12	1310
SEP					
11...	<.007	.005	96	18	364

DATE	TIME	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT.DIS FET LAB (MG/L CACO3) (29801)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
OCT 2001											
23...	0930	91	25.2	6.82	.49	.1	2.03	94	.72	E.1	4.92
JUN 2002											
18...	0845	88	25.2	6.20	.66	.1	1.24	88	.66	<.1	4.77

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
OCT 2001											
23...	3.2	.14	1140	100	<2	<.1	<.8	2.1	<1	<1	3
JUN 2002											
18...	2.7	.13	10300	94	E1	<.1	<.8	2.4	<1	<1	2

E--Estimated.

PEND OREILLE RIVER BASIN

12388700 FLATHEAD RIVER AT PERMA, MT--Continued

WATER TEMPERATURE, DEGREES CELSIUS, APRIL 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		APRIL			MAY			JUNE			JULY	
1	7.0	4.0	5.5	12.0	7.5	9.5	13.0	11.5	12.0	16.0	15.0	15.5
2	7.0	2.5	4.5	12.5	8.5	10.5	12.0	11.0	11.5	15.5	13.0	14.5
3	8.5	3.5	5.5	12.5	9.0	10.5	12.0	10.0	11.0	16.0	14.0	15.0
4	9.0	4.0	6.5	10.5	8.5	9.5	11.5	9.5	10.5	17.0	15.0	16.0
5	10.0	5.0	7.5	9.5	8.0	8.5	11.5	10.5	11.0	17.5	14.5	16.0
6	9.0	6.5	7.5	9.0	6.5	7.5	12.0	10.0	11.0	18.0	16.0	17.0
7	10.0	6.5	8.0	8.0	6.0	7.0	12.0	11.0	11.5	18.0	16.5	17.5
8	11.0	6.0	8.5	9.5	5.5	7.5	11.5	10.5	11.0	18.0	17.0	17.5
9	10.0	7.0	8.5	9.5	6.5	8.0	10.5	10.0	10.5	19.5	17.0	18.0
10	10.5	7.5	9.0	10.5	6.5	8.5	10.0	9.5	10.0	20.0	17.5	18.5
11	11.0	8.0	9.5	10.5	7.5	9.0	11.5	10.0	10.5	21.0	18.5	20.0
12	11.0	8.5	9.5	12.5	8.0	10.0	12.5	10.5	11.5	21.5	19.5	20.5
13	12.0	9.0	10.5	13.0	9.5	11.0	13.0	10.5	12.0	22.5	20.5	21.0
14	11.5	8.5	10.5	12.0	10.0	11.0	14.0	11.5	12.5	23.0	21.5	22.0
15	9.0	6.0	8.0	12.5	9.5	11.0	14.5	12.0	13.0	23.5	21.5	22.5
16	10.0	6.5	8.5	13.0	10.0	11.5	14.5	12.5	13.5	23.0	21.5	22.5
17	9.5	7.0	8.0	11.5	9.5	10.5	14.5	13.5	14.0	24.0	21.5	22.5
18	11.0	6.5	8.5	12.5	9.5	11.0	14.5	13.0	13.5	24.5	22.5	23.5
19	11.0	7.0	8.5	14.0	10.5	12.0	14.0	12.5	13.0	24.0	23.0	23.5
20	12.5	7.0	9.5	14.0	11.5	12.5	14.5	12.0	13.0	24.5	22.5	23.5
21	10.5	8.5	9.5	12.5	10.5	11.5	14.0	12.5	13.5	25.0	22.5	24.0
22	11.5	7.5	9.0	11.5	10.0	10.5	14.5	12.5	13.5	24.5	22.0	23.5
23	10.0	7.5	8.5	10.0	9.0	9.5	14.0	12.0	13.0	24.5	22.5	23.5
24	10.0	5.5	7.5	11.5	9.0	10.0	15.5	13.0	14.0	25.0	22.5	24.0
25	10.5	6.5	8.5	11.0	9.5	10.5	16.5	14.5	15.5	25.0	23.0	24.0
26	10.5	7.0	8.5	11.5	10.0	10.5	16.5	14.0	15.5	24.5	23.0	23.5
27	9.5	7.5	8.5	13.5	11.0	12.0	18.0	15.5	16.5	24.5	22.5	23.0
28	11.0	7.0	9.0	13.5	12.0	12.5	18.5	17.0	18.0	24.0	22.0	23.0
29	11.5	7.5	9.5	14.0	12.0	13.0	18.0	16.0	16.5	22.5	21.5	22.0
30	10.0	8.0	9.0	13.5	12.5	13.0	17.5	15.5	16.5	23.5	20.5	22.0
31	---	---	---	13.5	12.0	13.0	---	---	---	22.5	20.0	21.5
MONTH	12.5	2.5	8.5	14.0	5.5	10.5	18.5	9.5	13.0	25.0	13.0	20.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN
		AUGUST			SEPTEMBER	
1	23.0	19.0	21.0	20.5	18.5	19.5
2	22.0	19.5	20.5	22.0	18.0	20.0
3	21.5	18.0	20.0	22.0	19.0	20.5
4	21.0	18.5	19.5	22.0	19.0	20.5
5	20.5	18.0	19.0	22.5	19.0	20.5
6	20.5	18.0	19.5	21.0	19.0	19.5
7	19.5	18.0	18.5	20.0	18.0	19.0
8	19.5	17.5	18.5	19.5	17.5	18.5
9	21.0	17.5	19.0	20.0	16.5	18.0
10	21.5	18.5	20.0	20.5	17.0	18.5
11	20.5	18.5	19.5	21.0	17.5	19.0
12	22.0	18.0	20.0	21.0	17.5	19.0
13	22.0	19.0	20.5	20.5	17.5	19.0
14	22.0	19.5	20.5	20.5	17.5	19.0
15	22.0	19.0	20.5	20.5	17.5	19.0
16	21.5	19.0	20.0	19.0	17.5	18.5
17	21.5	18.0	20.0	18.5	17.0	18.0
18	22.0	18.5	20.5	18.5	16.5	17.5
19	22.0	18.5	20.5	19.5	16.0	17.5
20	21.5	19.0	20.0	18.5	16.0	17.5
21	21.0	18.0	19.5	18.5	15.0	16.5
22	21.0	18.0	19.5	18.0	14.0	16.0
23	22.0	18.5	20.0	18.5	15.0	16.5
24	21.0	19.0	20.0	19.0	15.5	16.5
25	22.0	18.5	20.5	18.5	15.0	16.5
26	22.0	19.0	20.5	16.5	15.0	16.0
27	21.5	19.0	20.0	16.0	14.5	15.0
28	22.5	19.0	20.5	18.0	13.5	15.5
29	22.5	19.5	21.0	15.0	14.0	14.5
30	21.5	19.0	20.5	14.0	12.5	13.5
31	22.5	19.0	20.5	---	---	---
MONTH	23.0	17.5	20.0	22.5	12.5	18.0

PEND OREILLE RIVER BASIN

12389000 CLARK FORK NEAR PLAINS, MT

LOCATION.--Lat 47°25'47", long 114°51'18" (NAD 27), in E1/2SW$^1/_4$ sec.1, T.19 N., R.26 W., Sanders County, Hydrologic Unit 17010213, on right bank 2.4 mi southeast of Plains, 6.0 mi downstream from Flathead River, and at river mile 239.0.

DRAINAGE AREA.--19,958 mi^2.

PERIOD OF RECORD.--October 1910 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1246: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,449.11 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to Nov. 28, 1911, nonrecording gage at site 50 ft upstream at same datum.

REMARKS.--Records good. Flow partly regulated by Hungry Horse Reservoir (station number 12362000) and by Flathead Lake (station number 12371500). Diversions for irrigation of about 335,000 acres upstream from station. U. S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5350	6700	6050	10100	12400	8730	11900	21000	75900	68900	13100	10300
2	5750	6710	6180	10300	12600	8720	12100	21400	82100	62400	13300	10300
3	6220	6760	6170	10300	12700	8570	12500	22200	85100	54200	13600	10100
4	6660	6650	6130	10300	12800	8580	12500	23000	85400	46900	13500	9970
5	7190	6580	6160	10400	12800	8550	11900	24100	82600	42800	13500	9950
6	7100	6530	6180	10500	12800	8730	11800	24600	80100	38000	14100	9850
7	6520	6470	6150	10500	12800	8770	11900	24300	79400	36400	14600	10000
8	6120	6420	6140	10700	12800	8770	12300	23600	78000	34600	14500	10100
9	5750	6370	6170	11200	12900	8760	13000	22800	76700	34400	14100	10100
10	5460	6350	6130	11600	12900	9150	13500	22300	75200	33700	13800	10200
11	5440	6260	6080	11700	12900	9620	13700	21800	73900	32900	13300	10100
12	5470	6220	6010	11600	12700	10100	14000	21500	70400	32000	12900	10100
13	5500	6210	5980	11400	12800	11000	15400	21300	67900	31000	12800	9890
14	5620	6190	6200	11300	12700	12400	18600	21700	67100	30000	12600	9570
15	5690	6230	6790	11200	12600	13400	24400	23200	66100	30000	12400	9240
16	5750	6210	7310	11100	12700	13900	26900	24200	67800	29500	12300	9150
17	5780	6200	7680	11000	12600	14400	26300	24800	70300	28900	12200	9110
18	5760	6200	8450	11000	12600	14300	24800	25300	71000	26300	12100	9190
19	5750	6190	9490	10900	12300	14200	23700	26500	67400	23500	12000	9170
20	5740	6170	10100	11000	11100	14200	22000	31400	62900	21400	11900	9090
21	5820	6190	10300	10900	9960	12100	20700	39600	59400	20600	12000	9040
22	5850	6270	10400	10800	9180	10100	20200	47400	57500	20200	12000	8790
23	5950	6300	10600	10800	8800	11100	20600	50700	58200	19800	12100	8390
24	6020	6350	10500	10800	8540	12100	20900	46000	60600	19100	12100	7950
25	6020	6310	10300	10800	8490	13400	21000	41000	64000	17900	11600	7500
26	6060	6270	10100	11000	7920	13300	20900	38000	68200	17200	10600	7280
27	6000	6220	9830	11000	8370	13300	21100	37900	69600	16400	10100	7010
28	6040	6210	9830	10900	8540	12900	20900	40700	70000	16000	9990	6740
29	6080	6230	9820	11000	---	12300	20500	45400	70400	15600	9940	6740
30	6150	6140	9800	11500	---	12300	20600	51800	70600	14800	9930	6650
31	6370	---	9940	12100	---	11900	---	61600	---	13800	10000	---
TOTAL	184980	190110	246970	339700	322300	349650	540600	971100	2133800	929200	382960	271570
MEAN	5967	6337	7967	10960	11510	11280	18020	31330	71130	29970	12350	9052
MAX	7190	6760	10600	12100	12900	14400	26900	61600	85400	68900	14600	10300
MIN	5350	6140	5980	10100	7920	8550	11800	21000	57500	13800	9930	6650
AC-FT	366900	377100	489900	673800	639300	693500	1072000	1926000	4232000	1843000	759600	538700
CFSM	0.30	0.32	0.40	0.55	0.58	0.57	0.90	1.57	3.56	1.50	0.62	0.45
IN.	0.34	0.35	0.46	0.63	0.60	0.65	1.01	1.81	3.98	1.73	0.71	0.51

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 2002, BY WATER YEAR (WY)

MEAN	10580	11480	12020	12040	11850	11910	19370	44490	54940	25870	11040	9658
MAX	23550	21170	27630	22320	30070	31390	47830	89760	101600	76930	24840	16920
(WY)	1960	1928	1996	1934	1996	1996	1934	1928	1948	1916	1916	1985
MIN	4760	4588	4075	3344	3940	4636	6112	13010	13560	7843	5656	4768
(WY)	1932	1937	1937	1937	1937	1937	1937	1941	1977	1940	1988	1931

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1911 - 2002	
ANNUAL TOTAL	3587150		6862940			
ANNUAL MEAN	9828		18800		19620	
HIGHEST ANNUAL MEAN					29420	1996
LOWEST ANNUAL MEAN					8845	1941
HIGHEST DAILY MEAN	28500	May 16	85400	Jun 4	133000	May 31 1948
LOWEST DAILY MEAN	5100	Feb 16	5350	Oct 1	a3200	Feb 8 1936
ANNUAL SEVEN-DAY MINIMUM	5220	Sep 24	5560	Oct 9	3250	Jan 11 1937
MAXIMUM PEAK FLOW			86200	Jun 4	134000	Jun 5 1948
MAXIMUM PEAK STAGE			14.62	Jun 4	19.17	Jun 5 1948
INSTANTANEOUS LOW FLOW			5150	Oct 1	b3200	Dec 10 1940
INSTANTANEOUS LOW STAGE			3.39	Oct 1	c2.70	Sep 2 1948
ANNUAL RUNOFF (AC-FT)	7115000		13610000		14210000	
ANNUAL RUNOFF (CFSM)	0.49		0.94		0.98	
ANNUAL RUNOFF (INCHES)	6.69		12.79		13.36	
10 PERCENT EXCEEDS	20900		48700		44700	
50 PERCENT EXCEEDS	7000		11700		13200	
90 PERCENT EXCEEDS	5700		6170		6520	

a--Estimated during period of ice-affected gage-height record.
b--Gage height, 2.85 ft.
c--From partially estimated gage-height record.

PEND OREILLE RIVER BASIN

12389500 THOMPSON RIVER NEAR THOMPSON FALLS, MT

LOCATION.--Lat 47°35'31", long 115°13'43" (NAD 27), in NW$^1/_4$NE$^1/_4$SE$^1/_4$ sec.7, T.21 N., R.28 W., Sanders County, Hydrologic Unit 17010213, Lolo National Forest, on right bank 1.2 mi upstream from mouth and 5.5 mi east of Thompson Falls.

DRAINAGE AREA.--642 mi^2.

PERIOD OF RECORD.--March to September 1911, October 1911 to September 1916 (occasional gage heights, discharges, and discharge measurements), April 1956 to current year. Records for January and February 1911, published in WSP 916, have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 1246: 1911. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 2,429.97 ft (NGVD 29) (Bureau of Public Roads bench mark). October 1911 to September 1916, nonrecording gage at site 0.2 mi upstream at different datum.

REMARKS.--Records good. Minor diversions upstream from station for irrigation, acreage unknown. Diversion from headwaters of Alder Creek in SW$^1/_4$ sec.16, T.23 N., R.25 W., to supplement water supply for storage in Upper Dry Fork Reservoir in Little Bitterroot River basin. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May to June 1948 reached a discharge of 6,190 ft^3/s, by slope-area measurement of peak flow at site 0.2 mi downstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	144	122	114	135	228	370	1040	2710	998	306	223
2	107	133	124	112	132	196	369	1130	2500	914	302	221
3	105	127	125	113	124	197	349	1300	2350	850	298	218
4	104	124	124	112	129	203	344	1360	2220	798	294	216
5	104	123	121	111	123	195	367	1290	2160	745	291	214
6	104	121	121	111	128	181	449	1180	2140	704	295	215
7	104	118	121	129	129	154	561	1060	1980	668	291	223
8	106	115	119	202	132	158	660	967	1820	660	287	219
9	110	114	119	229	127	174	679	888	1760	649	283	214
10	107	113	117	194	125	174	672	832	1710	609	276	213
11	117	113	117	174	127	193	757	783	1630	576	272	213
12	113	113	109	170	120	274	881	761	1590	554	267	211
13	115	113	117	164	113	269	1170	818	1620	533	262	209
14	113	114	127	153	120	250	2070	1100	1700	514	259	208
15	111	115	123	140	115	234	2590	1290	1820	495	255	207
16	109	113	118	138	118	223	2090	1260	1900	473	253	205
17	110	115	128	140	128	208	1630	1240	1890	458	251	207
18	108	115	111	130	127	205	1350	1270	1810	443	249	207
19	109	114	118	137	126	208	1150	1420	1720	426	246	205
20	110	114	120	138	127	201	1050	2120	1560	416	244	203
21	109	116	121	137	126	170	1010	2710	1430	401	256	199
22	112	119	119	132	239	192	1010	3950	1410	384	249	199
23	126	121	117	133	480	205	1020	4120	1460	376	245	197
24	125	118	116	136	383	203	986	3070	1440	367	241	195
25	118	117	114	149	271	217	950	2400	1360	356	237	194
26	115	118	108	157	235	235	920	2120	1300	345	236	194
27	114	120	100	136	238	268	900	2150	1270	338	237	197
28	128	117	105	116	245	279	866	2440	1230	331	233	195
29	125	117	110	119	---	281	851	2820	1200	324	228	196
30	127	121	116	133	---	283	917	2970	1110	319	231	197
31	145	---	116	136	---	312	---	2860	---	312	227	---
TOTAL	3518	3555	3643	4395	4722	6770	28988	54719	51800	16336	8101	6214
MEAN	113.5	118.5	117.5	141.8	168.6	218.4	966.3	1765	1727	527.0	261.3	207.1
MAX	145	144	128	229	480	312	2590	4120	2710	998	306	223
MIN	104	113	100	111	113	154	344	761	1110	312	227	194
AC-FT	6980	7050	7230	8720	9370	13430	57500	108500	102700	32400	16070	12330
CFSM	0.18	0.18	0.18	0.22	0.26	0.34	1.51	2.75	2.69	0.82	0.41	0.32
IN.	0.20	0.21	0.21	0.25	0.27	0.39	1.68	3.17	3.00	0.95	0.47	0.36

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2002, BY WATER YEAR (WY)

MEAN	182.7	199.7	208.7	207.9	254.4	354.7	767.9	1317	1030	408.8	239.4	194.0
MAX	343	501	880	719	1226	1344	1674	3154	2369	724	382	288
(WY)	1960	1996	1996	1974	1996	1972	1996	1997	1974	1974	1997	1997
MIN	112	115	101	112	103	120	238	374	244	140	113	105
(WY)	1995	1988	1993	1988	1994	1964	1977	1977	1977	1977	1977	1994

12389500 THOMPSON RIVER NEAR THOMPSON FALLS, MT--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1957 - 2002	
ANNUAL TOTAL	77860		192761			
ANNUAL MEAN	213.3		528.1		447.5	
HIGHEST ANNUAL MEAN					804	1997
LOWEST ANNUAL MEAN					176	1977
HIGHEST DAILY MEAN	1020	May 14	4120	May 23	5360	Jun 9 1964
LOWEST DAILY MEAN	80	Feb 8	100	Dec 27	67	Nov 24 1993
ANNUAL SEVEN-DAY MINIMUM	105	Oct 2	105	Oct 2	73	Dec 31 1994
MAXIMUM PEAK FLOW			4570	May 23	6080	Jun 9 1964
MAXIMUM PEAK STAGE			7.65	May 23	8.53	Jun 9 1964
INSTANTANEOUS LOW FLOW			66	Mar 7	a48	Dec 4 1992
INSTANTANEOUS LOW STAGE			2.04	Mar 7	b1.01	Dec 17 1964
ANNUAL RUNOFF (AC-FT)	154400		382300		324200	
ANNUAL RUNOFF (CFSM)	0.33		0.82		0.70	
ANNUAL RUNOFF (INCHES)	4.51		11.17		9.47	
10 PERCENT EXCEEDS	522		1500		1090	
50 PERCENT EXCEEDS	127		214		238	
90 PERCENT EXCEEDS	109		113		134	

a--Gage height, 2.02 ft, result of freezeup.
b--Result of freezeup.

PEND OREILLE RIVER BASIN

12390700 PROSPECT CREEK AT THOMPSON FALLS, MT

LOCATION.--Lat 47°35'10", long 115°21'15" (NAD 27), in lot 12, SE$^1/_4$SE$^1/_4$SE$^1/_4$ sec.7, T.21 N., R.29 W., Sanders County, Hydrologic Unit 17010213, on right bank 500 ft downstream from Dry Creek, 0.5 mi upstream from mouth, and 0.7 mi south of Thompson Falls.

DRAINAGE AREA.--182 mi^2.

PERIOD OF RECORD.--April 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,382.40 ft (NGVD 29).

REMARKS.--Records good except those for flows over 1,500 ft^3/s, which are fair. No known regulation or diversions upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	32	33	52	94	205	239	603	1580	542	122	77
2	29	29	35	52	92	186	274	688	1390	476	119	76
3	29	28	36	51	91	174	290	815	1320	430	117	75
4	28	28	36	51	88	166	288	852	1300	396	115	74
5	28	27	36	51	86	159	300	791	1320	369	114	74
6	28	27	37	51	85	154	340	720	1320	341	116	74
7	28	27	38	57	86	144	415	634	1150	322	111	73
8	29	27	38	65	88	136	507	568	1000	322	108	72
9	29	27	39	82	83	131	555	517	917	312	105	71
10	28	27	40	126	82	128	534	476	853	289	103	70
11	30	27	40	178	81	137	593	443	777	272	102	68
12	28	27	41	178	79	188	681	434	752	258	99	67
13	29	27	43	171	78	208	903	502	806	244	97	66
14	29	28	49	154	76	212	1700	760	963	231	95	66
15	28	28	47	144	75	211	1700	865	1110	220	93	65
16	28	28	48	138	74	209	1250	805	1220	208	92	65
17	28	29	51	133	74	198	962	780	1190	198	90	65
18	27	28	51	128	73	187	794	796	1060	188	88	65
19	28	28	53	125	75	182	689	908	966	181	87	64
20	28	28	54	121	76	179	630	1420	859	173	86	63
21	27	30	55	116	77	162	598	1650	814	166	90	62
22	27	31	55	114	112	156	614	1650	832	160	87	62
23	30	31	54	108	201	152	636	1520	882	155	85	61
24	30	30	54	106	290	150	612	1270	865	150	85	61
25	28	30	54	115	265	147	582	1090	800	144	87	60
26	28	30	54	117	246	152	562	1060	759	140	84	60
27	27	30	54	106	239	167	543	1340	737	137	83	60
28	32	31	54	101	224	177	517	1630	700	133	81	59
29	29	32	54	98	---	183	500	1730	687	131	80	59
30	29	32	53	97	---	190	541	1860	619	128	79	58
31	34	---	53	95	---	209	---	1590	---	124	78	---
TOTAL	890	864	1439	3281	3290	5339	19349	30767	29548	7540	2978	1992
MEAN	28.71	28.80	46.42	105.8	117.5	172.2	645.0	992.5	984.9	243.2	96.06	66.40
MAX	34	32	55	178	290	212	1700	1860	1580	542	122	77
MIN	27	27	33	51	73	128	239	434	619	124	78	58
AC-FT	1770	1710	2850	6510	6530	10590	38380	61030	58610	14960	5910	3950
CFSM	0.16	0.16	0.26	0.58	0.65	0.95	3.54	5.45	5.41	1.34	0.53	0.36
IN.	0.18	0.18	0.29	0.67	0.67	1.09	3.95	6.29	6.04	1.54	0.61	0.41

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2002, BY WATER YEAR (WY)

MEAN	54.76	81.46	115.1	118.3	160.9	220.7	479.4	795.0	542.6	163.0	84.07	62.00
MAX	168	469	701	735	875	828	877	1425	1468	317	109	79.9
(WY)	1960	1996	1996	1974	1996	1972	1969	1997	1974	1997	1982	1959
MIN	28.7	28.8	29.9	29.1	26.4	31.8	84.5	297	142	73.7	48.5	35.8
(WY)	2002	2002	1988	2001	2001	2001	2001	1977	1987	1977	1977	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1957 - 2002	
ANNUAL TOTAL	31147		107277			
ANNUAL MEAN	85.33		293.9		239.8	
HIGHEST ANNUAL MEAN					441	1974
LOWEST ANNUAL MEAN					85.8	2001
HIGHEST DAILY MEAN	564	May 16	1860	May 30	4960	Jan 16 1974
LOWEST DAILY MEAN	25	Feb 19	a27	Oct 18	25	Feb 19 2001
ANNUAL SEVEN-DAY MINIMUM	25	Feb 27	27	Nov 5	25	Feb 27 2001
MAXIMUM PEAK FLOW			2160	Apr 14	5490	Jan 16 1974
MAXIMUM PEAK STAGE			6.23	Apr 14	9.86	Jan 16 1974
INSTANTANEOUS LOW FLOW			a27	Oct 15	22	Feb 8 2001
ANNUAL RUNOFF (AC-FT)	61780		212800		173700	
ANNUAL RUNOFF (CFSM)	0.47		1.61		1.32	
ANNUAL RUNOFF (INCHES)	6.37		21.93		17.90	
10 PERCENT EXCEEDS	262		861		657	
50 PERCENT EXCEEDS	40		108		102	
90 PERCENT EXCEEDS	27		29		43	

a--Also occurred many days October and November.

PEND OREILLE RIVER BASIN

12391400 CLARK FORK BELOW NOXON RAPIDS DAM, NEAR NOXON, MT

LOCATION.--Lat 47°57'40", long 115°43'58" (NAD 27), in SW$^1/_4$ sec.33, T.26 N., R. 32 W., Sanders County, Hydrologic Unit 17010213, at Noxon Rapids Dam, 1 mi upstream from Rock Creek, 3 mi southeast of Noxon, and at river mile 169.7.

DRAINAGE AREA.--21,833 mi^2.

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

GAGE.--Plant generator rating or discharge through powerplant. Water-stage recorder on reservoir determines head on taintor gates. Datum of gage is 2,320 ft (NGVD 29) (levels by The Washington Water Power Co.).

REMARKS.--Records good. Flow regulated by Hungry Horse Reservoir (station 12362000) and Flathead Lake (station 12371500). Diversions for irrigation of about 350,000 acres upstream from station. Some sub-surface flow indicated by comparison with records for adjacent gaging stations. Figures of discharge given herein are combined flows through turbines and spillway. Several observations of water temperature and specific conductance were made during the year.

COOPERATION.--Records collected by the Avista Corporation., under general supervision of the Geological Survey, in connection with a Federal Power Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6320	7710	6310	4660	16100	10200	16800	27700	80000	71100	15800	8940
2	5310	6890	5360	10900	12600	5850	18300	28100	86200	65300	13600	8060
3	6900	7170	6980	12300	8190	9710	14900	28400	87900	54500	6300	11200
4	7600	6660	6480	13400	15100	11200	13800	22400	88500	50100	13000	12900
5	7910	7720	7020	11700	14100	9770	15900	24500	87400	48300	15000	12900
6	6230	6990	6440	5850	15100	11800	9340	29300	84400	43800	14700	12200
7	7140	7200	7110	12400	15900	12800	11000	31800	83400	37800	18300	8080
8	6140	6950	6120	11800	13700	8940	16800	31200	82100	40300	19600	7070
9	5800	6460	6270	14800	9740	8130	17900	29500	80300	34200	19000	11700
10	6520	6860	7030	13900	10200	6520	17700	29200	78300	34900	8450	12100
11	6050	6580	6450	14600	13200	11200	20200	18400	77300	34600	12300	10700
12	5690	6590	5820	11400	16100	11200	21700	17200	74500	31500	15800	15600
13	5900	6510	6380	10400	16600	14300	14400	28500	71700	33600	16600	10800
14	5380	6750	7630	13200	13700	17400	24000	26800	71300	33700	15600	7250
15	6980	6820	6840	14800	13500	16100	34700	27200	71800	31000	15800	5630
16	6320	7280	7390	14200	8640	11800	34600	29100	72300	30900	15300	11400
17	5180	6170	7730	13000	9350	14300	31800	30600	75400	34400	6560	11900
18	5980	6270	12400	13500	15900	15300	32400	24600	75800	30300	9230	10800
19	7570	6880	12500	7790	14200	16700	32100	28300	72800	27600	13100	11700
20	6060	7010	12500	7540	12700	17600	26500	38600	65700	22600	14800	11100
21	5730	8110	11800	13300	11600	17000	23700	47800	63800	20100	12500	5150
22	5670	4360	6160	14300	8430	16400	27200	51700	62000	24300	16000	5980
23	6400	7140	9880	14200	11400	9480	27400	60600	61700	23300	16500	10800
24	6960	6760	11600	10700	9420	8470	26100	55000	63400	21900	9700	8000
25	6550	6590	9570	9450	12500	14800	25100	50500	66100	20400	8820	9450
26	6510	7220	13000	9410	12900	18200	26400	44700	69700	21600	15500	8140
27	6080	7300	15100	10200	10700	15700	21800	47100	73000	10700	12100	7560
28	6710	8170	14200	13500	9380	12000	15800	48600	73000	16200	14100	4870
29	7040	6310	12600	14000	---	15100	25300	50300	72900	16800	10700	5420
30	6340	5480	5610	11500	---	12000	25900	61000	73100	21000	5810	8770
31	7220	---	6510	14700	---	10200	---	68900	---	18700	10200	---
TOTAL	198190	204910	266790	367400	350950	390170	669540	1137600	2245800	1005500	410770	286170
MEAN	6393	6830	8606	11850	12530	12590	22320	36700	74860	32440	13250	9539
MAX	7910	8170	15100	14800	16600	18200	34700	68900	88500	71100	19600	15600
MIN	5180	4360	5360	4660	8190	5850	9340	17200	61700	10700	5810	4870
AC-FT	393100	406400	529200	728700	696100	773900	1328000	2256000	4455000	1994000	814800	567600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2002, BY WATER YEAR (WY)

MEAN	11760	13160	14170	14450	15130	16370	22640	40580	50770	23310	10630	10250
MAX	16160	19890	31480	22230	34640	33700	46450	88150	92590	40730	17720	16410
(WY)	1976	1996	1996	1974	1996	1996	1996	1997	1974	1982	1997	1985
MIN	6172	6830	8606	7625	6185	6925	4873	14460	13400	8330	5350	4838
(WY)	1961	2002	2002	1988	2001	2001	1977	1973	1977	1977	1988	1973

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1960 - 2002	
ANNUAL TOTAL	3841300		7533790			
ANNUAL MEAN	10520		20640		20270	
HIGHEST ANNUAL MEAN					31870	1996
LOWEST ANNUAL MEAN					11170	1977
HIGHEST DAILY MEAN	36100	May 17	88500	Jun 4	125000	Jun 12 1964
LOWEST DAILY MEAN	2120	Feb 24	4360	Nov 22	60	Jan 29 1989
ANNUAL SEVEN-DAY MINIMUM	5330	Sep 24	5920	Oct 12	2250	Aug 30 1963
ANNUAL RUNOFF (AC-FT)	7619000		14940000		14690000	
10 PERCENT EXCEEDS	22700		54700		41100	
50 PERCENT EXCEEDS	7410		13000		15100	
90 PERCENT EXCEEDS	5470		6320		7370	

COLUMBIA RIVER BASIN
PEND OREILLE RIVER BASIN

SMALLER RESERVOIRS IN PEND OREILLE RIVER BASIN IN MONTANA

All elevations listed for the following reservoirs are referenced to the National Geodetic Vertical Datum of 1929.

CAMAS RESERVOIRS.--A group of four reservoirs in the Little Bitterroot River basin operated for irrigation and recreation. Nonrecording gages are set to approximate sea level and are read on the last day of the month. Figures given herein represent usable contents. Records furnished by Bureau of Indian Affairs. May to July 1948 scattered daily contents for individual reservoirs, published in WSP 1080.

12372500 LITTLE BITTERROOT LAKE.--Lat 48°05'34", long 114°41'51" (NAD 27), in SE$^1/_4$SE$^1/_4$SW$^1/_4$ sec.16, T.27 N., R.24 W., Flathead County, Hydrologic Unit 17010212, at dam on Little Bitterroot River, 2 mi southwest of Marion and at river mile 70.3. DRAINAGE AREA, 31.8 mi^2. PERIOD OF RECORD, December 1939, April 1940, September 1940 to current year.

Reservoir is formed by earthfill dam; storage began in 1918. Usable capacity, 26,400 acre-ft between elevation 3,897.98 ft and 3,906.48 ft. No dead storage. Prior to 1960, usable capacity, 24,000 acre-ft.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 27,570 acre-ft, Apr. 30, 1997, elevation, 3,906.74 ft; no storage at times in 1939-46.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 11,600 acre-ft, June 30, elevation, 3,902.38 ft; minimum observed, 5,600 acre-ft, Nov. 30, elevation, 3,900.38 ft.

12373500 HUBBART RESERVOIR.--Lat 47°55'43", long 114°43'53" (NAD 27), in SE$^1/_4$NE$^1/_4$ sec.18, T.25 N., R.24 W., Flathead County, Hydrologic Unit 17010212, at dam on Little Bitterroot River, 9 mi northwest of Niarada and at river mile 55.8. DRAINAGE AREA: 114 mi^2. PERIOD OF RECORD, December 1939, April 1940, September 1940 to current year.

Reservoir is formed by concrete variable-radium dam; storage began in 1924. Usable capacity, 12,120 acre-ft between elevation 3,140.0 ft and 3,210.0 ft. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 13,050 acre-ft, May 31, 1959, elevation, 3,220.92 ft; no storage September to December 1959, Sept. 30, Oct. 1, 1973, October through November 1987.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 12,180 acre-ft, May 31, elevation, 3,219.12 ft; minimum observed, 972 acre-ft, Oct. 31, elevation, 3,176.70 ft.

12375000 UPPER DRY FORK RESERVOIR.--Lat 47°44'55", long 114°40'53" (NAD 27), in SE$^1/_4$SE$^1/_4$SW$^1/_4$ sec. 16, T.23 N., R.24 W., Sanders County, Hydrologic Unit 17010212, at dam on Dry Fork Creek, 4 mi northwest of Lonepine. DRAINAGE AREA, 8.53 mi^2. PERIOD OF RECORD. April 1940, September 1940 to current year.

Reservoir is formed by earthfill dam; storage began in 1940. Usable capacity, 2,810 acre-ft between elevation 2,900.0 ft and 2,928.5 ft. No dead storage. Prior to 1960, usable capacity, 2,700 acre-ft. Natural flow of Alder Creek in Thompson River basin is diverted in SW$^1/_4$ sec 16, T.23 N., R.25 W., and carried by inter-basin canal to upper Dry Fork Creek for storage in this reservoir.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 3,140 acre-ft, May 31, 1980, elevation, 2,929.5 ft; no storage at times in 1940, 1942, 1943.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 2,940 acre-ft, June 30, elevation, 2,928.90 ft; minimum, 864 acre-ft, Oct. 31, elevation, 2,919.40 ft.

12375500 DRY FORK RESERVOIR.--Lat 47°42'00", long 114°40'02" (NAD 27), in SW$^1/_4$NW$^1/_4$NW$^1/_4$ sec.3, T.22 N., R.24 W., Sanders County, Hydrologic Unit 17010212, at dam on Dry Fork Creek, 1 mi west of Lonepine. DRAINAGE AREA, 17.8 mi^2. PERIOD OF RECORD, December 1939, April 1940, September 1940 to current year. Records published in WSP 1316 were listed in error and should not be used.

Reservoir is formed by earthfill dam; storage began in 1921. Usable capacity, 3,890 acre-ft, between elevation 2,830.5 ft and 2,856.3 ft. Prior to 1960, usable capacity, 4,000 acre-ft. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 4,270 acre-ft, May 31, 1980, elevation, 2,857.4 ft; no storage Aug. 31, 1944, Aug. 31, Sept. 30, 1946, Oct. 31, 1951.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 3,970 acre-ft, June 30, elevation, 2,856.62 ft; minimum observed, 682 acre-ft, Oct. 31, elevation, 2,842.38 ft.

MISSION VALLEY RESERVOIRS.--A group of eight reservoirs, in an area east of and tributary to Flathead River and between Flathead Lake and Jocko River, Lake County, Hydrologic Unit 17010212, is operated for irrigation.

PERIOD OF RECORD, December 1939, September 1940 to current year. Nonrecording gages are set to approximate sea level, and are read on the last day of the month. Figures given herein represent usable contents. Records furnished by Bureau of Indian Affairs. April to July 1948 monthend contents and daily maximum for individual reservoirs, published in WSP 1080.

12371000 TURTLE LAKE.--Lat 47°40'19", long 114°04'32" (NAD 27), in SW$^1/_4$NW$^1/_4$NE$^1/_4$ sec.18, T.22 N., R.19 W., at outlet works 4 mi southeast of Polson, fed entirely by various canals; storage began in 1932. Prior to October 1968, published as "Twin Reservoir." Usable capacity, 899 acre-ft between elevation 3,061.0 ft and 3,090.5 ft. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 1,000 acre-ft, June 30, 1996, elevation, 3,092.02 ft; no storage at times in July 1941, August, September 1944, October 1957, July, August, September 1977, July through October 1992, March 1994, October through December 1994 and August 2001.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 822 acre-ft, June 30, elevation, 3,089.30 ft; 40 acre-ft, Sept. 30, elevation, 3064.30 ft.

12376700 LOWER CROW RESERVOIR.--Lat 47°30'09", long 114°13'35" (NAD 27), in SW$^1/_4$SE$^1/_4$SE$^1/_4$ sec.11, T.20 N., R.21 W., at outlet works on Crow Creek, 5.2 mi northwest of Charlo, at river mile 3.44; storage began in 1933. Usable capacity 10,350 acre-ft between elevation 2,800 ft and 2,877.0 ft. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 10,770 acre-ft, May 21, 22, 1948, elevation, 2,878.2 ft; no storage Sept. 30, 1963, Oct. 31, Nov. 30, 1981.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 10,060 acre-ft, June 30, elevation, 2,876.14 ft; minimum observed, 4,920 acre-ft, Oct. 31, elevation 2,856.50 ft.

12377200 MISSION RESERVOIR.--Lat 47°18'54", long 114°01'15" (NAD 27), in NW$^1/_4$SW$^1/_4$SE$^1/_4$ sec.15, T.18 N., R.19 W., at outlet works on Mission Creek, 4 mi east of St. Ignatius and at river mile 16.7; storage began in 1935. Usable capacity 8,130 acre-ft between elevation 3,340.7 ft and 3,406.0 ft. Prior to 1993, usable capacity, 7,250 acre-ft.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 8,400 acre-ft, June 30, 2002, elevation, 3,409.86 ft; no storage at times during September 1949, February, March, 1964.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 8,400 acre-ft, June 30, elevation, 3,409.86 ft; minimum observed, 937 acre-ft, Oct. 31, elevation, 3,378.47 ft.

12377300 ST. MARYS LAKE.--Lat 47°15'58", long 113°56'08" (NAD 27), in SW$^1/_4$NE$^1/_4$NE$^1/_4$ sec.6, T.17 N., R.18 W., at outlet works on Dry Creek, 8 mi southwest of St. Ignatius, fed by water diverted from Jocko River; storage began in 1919. Prior to October 1968, published as "Tabor Reservoir." Usable capacity, 23,500 acre-ft between elevation 3,911.5 ft and 4,025.0 ft, not including contents of natural lake. Prior to 1993, usable capacity, 23,300 acre-ft. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 23,510 acre-ft, June 30, 1976, June 30, 1978, elevation, 4,025.7 ft; no storage Sept. 30, 1969, Feb. 28, 1995.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 22,970 acre-ft, June 30, elevation, 4,023.80 ft; no storage December through March.

12377900 PABLO RESERVOIR.--Lat 47°38'25", long 114°08'33" (NAD 27), in SW$^1/_4$SW$^1/_4$NE$^1/_4$ sec.27, T.22 N., R.20 W., at outlet works 3 mi south of Polson, 3 mi northwest of Pablo, fed entirely by various canals, some water supplies by Flathead pumping plant; storage began in 1914. Usable capacity, 28,400 acre-ft between elevation 3,179 ft, gate sill, and 3,210.2 ft. Prior to 1994 water year, published as usable capacity, 27,100 acre-ft. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 28,760 acre-ft, June 30, 1998, elevation, 3,211.07 ft; no storage at times in several years.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 22,720 acre-ft, June 30, elevation, 3,208.00 ft; minimum observed, 7,050 acre-ft, Aug. 31, elevation, 3,196.40 ft.

12378200 McDONALD RESERVOIR.--Lat 47°25'31", long 113°59'27" (NAD 27), in SE$^1/_4$NE$^1/_4$NE$^1/_4$ sec.10, T.19 N., R.19 W., at outlet works on Post Creek, 9 mi east of Charlo, and at river mile 12.4; storage began in 1919. Usable capacity, 7,220 acre-ft between elevation 3,545.0 ft, and 3,598.0 ft, not including contents of natural lake. Prior to 1993, usable capacity, 8,220 acre-ft. No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 8,330 acre-ft, June 30, 1983, elevation, 3,598.5 ft; no storage Aug. 31, 1961, Aug. 30, 1966, Oct. 31, 1971, Apr. 30, 1972, October 1994 through April 1995, and August 1999 to Apr. 30, 2000.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 7,140 acre-ft, July 31, elevation, 3,592.57 ft; no storage December through February.

12378300 KICKING HORSE RESERVOIR.--Lat 47°27'25", long 114°04'35" (NAD 27), in SE$^1/_4$NE$^1/_4$NE$^1/_4$ sec.36, T.20 N., R.20 W., at outlet works 4 mi northeast of Charlo, fed entirely by various canals; storage began in 1930. Usable capacity, 9,200 acre-ft between elevation 3,042.00 ft and 3,061.94 ft. Prior to 1993, usable capacity, 8,350 acre-ft. Dead storage, 70 acre-ft below elevation 3,042.0 ft. Formerly published as 12379700 Kicking Horse Reservoir prior to 1988 water year.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 10,320 acre-ft, June 30, 1976, May 31, 1980, elevation, 3,064.4 ft; no storage Aug. 31, 1961.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 9,360 acre-ft, June 30, elevation, 3,063.20 ft; minimum observed, 1,100 acre-ft, Sept. 30, elevation, 3,048.56 ft.

12378400 NINEPIPE RESERVOIR.--Lat 47°27'20", long 114°08'08" (NAD 27), in NE$^1/_4$NW$^1/_4$NW$^1/_4$ sec.34, T.20 N., R.20 W., at outlet works 2 mi northeast of Charlo, fed entirely by various canals; storage began in 1911. Usable capacity 15,000 acre-ft between elevation 2,895.4 ft and 3,010.0 ft. Prior to 1993, usable capacity, 14,870 acre-ft. No dead storage. Formerly published as 12380000 Ninepipe Reservoir prior to 1988 water year.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 16,950 acre-ft, June 30, 1974, elevation, 3,012.3 ft; no storage Aug. 31, 1961.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 15,030 acre-ft, June 30, elevation, 3,010.13 ft; minimum observed, 1,820 acre-ft, Oct. 31, elevation, 2,997.81 ft.

12380000 UPPER JOCKO LAKE.--Lat 47°11'34", long 113°42'44" (NAD 27), in NE$^1/_4$NW$^1/_4$ sec. 36, T. 17 N., R. 17 W., Missoula County, Hydrologic Unit 17010212, at dam on Jocko River, 17.3 mi southeast of Arlee, and at river mile 41.8. DRAINAGE AREA, 2.99 mi^2. PERIOD OF RECORD, April 1968 to current year. Nonrecording gage read at end of month. U.S. Geological Survey began publishing data October 1988. Datum of gage is at sea level (levels by Bureau of Indian Affairs).

Reservoir is formed by earthfill dam; storage began in 1967. Was previously known as "Black Lake" prior to dam construction. Usable capacity, 5,200 acre-ft, between elevation 4,390.0 ft, outlet sill, and 4,440.0 ft, spillway elevation. Prior to 1993, usable capacity, 4,440 acre-ft. Dead storage, 763 acre-ft. Transmountain diversion takes water from Placid Creek in Clearwater River basin in SW$^1/_4$ sec. 29, T. 17 N., R. 16 W., to Upper Jocko Lake, thence to Lower Jocko Lake. Some water may then be diverted to St. Mary's Lake for use in the Mission Valley. Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Bureau of Indian Affairs.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 4,290 acre-ft, May 31, 1971, elevation, 4,439.1 ft; no storage at times each year.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 2,480 acre-ft, June 30, elevation, 4,422.46 ft; no storage most of year.

12380500 LOWER JOCKO LAKE.--Lat 47°12'10", long 113°45'35" (NAD 27), in NW$^1/_4$SW$^1/_4$NW$^1/_4$ sec.27, T.17 N., R.17 W., Missoula County, Hydrologic Unit 17010212, at dam on Jocko River, 15 mi east of Arlee, and at river mile 39.3. DRAINAGE AREA, 7.39 mi^2. PERIOD OF RECORD, December 1939, April 1940, September, 1940, to current year (no winter records most years since 1947). Records for November 1957, published only in WSP 1736. May to July 1948 scattered daily contents, published in WSP 1080. Nonrecording gage read at end of month. Datum of gage is at sea level (levels by Bureau of Indian Affairs).

Reservoir is formed by earthfill dam; storage began in 1937. Usable capacity, 6,380 acre-ft between elevation 4,267.0 ft and 4,340.0 ft. Prior to 1960, usable capacity, 7,600 acre-ft at elevation 4,350 ft and 1960-1992, usable capacity, 5,380 acre-ft. Dead storage unknown below elevation 4,267 ft, elevation of natural lake outlet. Transmountain diversion takes water from Placid Creek in Clearwater River basin in SW$^1/_4$ sec.29, T.17 N., R.16 W., to Upper Jocko Lake, thence to Lower Jocko Lake. Some water may then be diverted to St. Mary's Lake for use in the Mission Valley. Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Bureau of Indian Affairs.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 6,700 acre-ft, June 9, 1948, elevation, 4,342.7 ft; no storage at times.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 4,550 acre-ft, June 30, elevation, 4,323.20 ft; no storage most of year.

12390000 THOMPSON FALLS RESERVOIR.--Lat 47°35'42", long 115°21'36" (NAD 27), in NE$^1/_4$ sec.7, T.21 N., R.29 W., Sanders County, Hydrologic Unit 17010213, at dam on Clark Fork at Thompson Falls, at river mile 208.0. DRAINAGE AREA, 20,968 mi^2. PERIOD OF RECORD, October 1939 to current year. Nonrecording gage is read several times daily but only monthend figures supplied. Datum of gage is at sea level (levels by The Montana Power Company).

Reservoir is formed by two concrete dams, first generator installed July 1915. Usable capacity, 14,970 acre-ft between elevation 2,380.0 ft, spillway crest, and 2,396.0 ft, top of flashboards. Dead storage unknown. Figures given herein represent usable contents. Water is used for power development and recreation. Records furnished by PPL EnergyPlus, LLC.

EXTREMES FOR PERIOD OF RECORD: Maximum monthend contents observed, 16,420 acre-ft, May 12, 1997, elevation, 2,396.95 ft; no storage July 31, 1958.

EXTREMES FOR CURRENT YEAR: Maximum monthend contents observed, 15,310 acre-ft, June 1, elevation, 2,396.22 ft; minimum observed, 13,430 acre-ft, June 9, elevation, 2,394.93 ft.

12391300 NOXON RAPIDS RESERVOIR.--Lat 47°57'38", long 115°44'00" (NAD 27), in NE$^1/_4$SW$^1/_4$SW$^1/_4$ sec.33, T.26 N., R.32 W., Sanders County, Hydrologic Unit 17010213, at dam on Clark Fork, 3 mi southeast of Noxon, 7.2 mi upstream from Bull River, and at river mile 169.7. DRAINAGE AREA, 21,833 mi^2. PERIOD OF RECORD, April 1959 to current year. Prior to October 1962, published as "Noxon Reservoir." Record of daily elevation on file in Helena district office. Water-stage recorder, midnight readings. Datum of gage is at sea level (levels by the Washington Water Power Company).

Reservoir is formed by concrete and earthfill dam, construction began in 1955, completed in 1959. Storage began Apr. 3, 1959. Usable capacity, 334,600 acre-ft between elevation 2,270.00 ft, minimum operating level, and 2,331.00 ft. Figures given herein represent usable contents. Water is used for power production, flood control, and recreation. Records furnished by the Avista Corporation.

EXTREMES FOR PERIOD OF RECORD: Maximum contents, 335,400 acre-ft, Apr. 7, 1960, elevation, 2,331.10 ft; minimum since first filling, 26,380 acre-ft, May 10, 1967, elevation, 2,277.15 ft.

EXTREMES FOR CURRENT YEAR: Maximum contents, 332,500 acre-ft, July 3, elevation, 2,330.74 ft; minimum, 293,300 acre-ft, May 10, elevation, 2,325.62 ft.

SMALLER RESERVOIRS IN PEND OREILLE RIVER BASIN IN MONTANA--Continued

Monthend contents, in acre-feet, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date		Camas Reservoirs	Mission Valley Reservoirs	Upper Jocko Lake	Lower Jocko Lake	Thompson Falls Reservoir	Noxon Rapids Reservoir
Oct	31	8,620	25,430	0	0	14,580	330,100
Nov.	30	8,500	26,570	0	0	14,300	327,900
Dec.	31	e8,580	26,720	0	0	14,250	317,500
Jan.	31	11,200	27,930	0	0	14,450	320,400
Feb.	28	11,420	28,750	0	0	14,520	319,900
Mar.	31	13,430	30,510	0	0	14,800	325,900
Apr.	30	21,150	29,930	0	0	14,480	316,200
May	31	29,370	46,660	2,210	4,220	14,880	327,400
June	30	30,660	94,540	2,480	4,550	14,820	326,400
July	31	25,460	72,730	896	3,760	14,400	307,900
Aug.	31	19,450	34,930	0	1,600	14,770	317,600
Sept.	30	16,670	26,790	0	0	14,420	326,400

e--Estimated.

PEND OREILLE RIVER BASIN

12391950 CLARK FORK BELOW CABINET GORGE DAM, NEAR CABINET, ID

LOCATION.--Lat 48°05'18", long 116°04'16" (NAD 27), in SW¼SW¼NW¼ sec.27, T.55 N., R.3 E., Cabinet Quad., Bonner County, Hydrologic Unit 17010213, on right bank 0.7 mi downstream from Cabinet Gorge Dam at cableway, 2.1 mi downstream from Blue Creek, 6.1 mi southeast of Clark Fork, and at mile 149.2.

DRAINAGE AREA.--22,067 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1995 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,060.00 ft (NGVD 29) (levels by Washington Water Power Co). See WSP 1933 for history of changes made prior to Sept. 30, 1952. Water-stage recorder at site 0.4 mi upstream at datum 60.00 ft lower Oct. 1, 1952, to Sept. 30, 1964, and at present datum Oct. 1, 1964, to May 21, 1973.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by Hungry Horse Reservoir, Flathead Lake, and Noxon Rapids Reservoir. Extreme diurnal fluctuation caused by powerplant at Cabinet Gorge Dam. Diversions above station for irrigation of about 354,000 acres.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 134,000 ft^3/s, May 18, 1997, gage height, 29.14 ft; minimum daily, 3,330 ft^3/s, Feb. 8, 1998.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 98,000 ft^3/s, June 2, gage height, 24.41 ft; minimum daily, 5,350 ft^3/s, Jan. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5400	8580	5790	5350	16100	10500	16400	27700	84800	73600	17700	9640
2	5460	7320	5390	11000	13200	6500	19900	30400	92800	68500	13100	7550
3	6960	7230	7300	12000	8330	9730	15200	32300	93600	57700	6540	11600
4	7000	6620	7090	13900	15300	14400	15200	24700	94200	52900	14100	13100
5	7320	7830	6330	11100	14600	8370	16300	25500	93500	51000	15400	13600
6	6090	6070	7230	6010	15400	13100	10400	33400	91400	46800	14700	11000
7	7300	8720	6350	12900	16300	12700	12200	34500	88000	42100	18600	8420
8	6990	6740	6240	12800	13500	9620	17400	34500	86900	41400	20200	8090
9	5510	6280	7410	15900	10400	8380	20500	30600	83900	37900	20100	12400
10	6120	6300	7290	15600	10400	7180	22200	32000	83200	36500	9600	12300
11	5670	7170	5900	15700	13200	10500	20200	20600	81100	37000	13000	10900
12	6470	6110	6370	12100	17300	12500	22000	17500	78300	35900	15800	15600
13	5760	7390	6600	11800	17800	14900	17300	31300	75100	34900	17600	11100
14	5830	6390	7440	13800	13200	19000	27600	30000	75400	36100	15900	7550
15	6480	e7000	6780	15600	12700	17000	41500	29800	76000	33000	16600	5720
16	6000	e8000	7420	15300	8950	12100	38300	31300	76800	31800	15100	11100
17	5450	e6000	8840	13000	9850	15500	36400	34600	79500	36600	6920	12200
18	5420	e7500	12500	14400	15600	14500	36200	27100	79600	32400	10200	11300
19	7040	e7500	12700	7710	14700	17700	36200	29000	77700	28500	13300	11200
20	6940	e7000	12500	8620	13500	19300	26600	43100	69600	24500	14900	11000
21	5590	9360	12000	14600	11300	17300	27200	53100	67800	21600	12900	5860
22	6020	5730	6270	14600	8530	16700	30500	57000	65300	25500	16000	5660
23	6270	5560	10900	14400	12900	9870	29700	67100	65400	24500	17000	10700
24	6960	7160	11900	10700	10800	10400	28400	60800	67600	24100	10600	8350
25	6650	6840	8890	11000	14200	14800	27600	55100	70200	21100	9090	9630
26	6070	8130	15000	8900	13600	18300	28400	48900	73100	22400	16500	7390
27	6050	7870	14200	11000	11900	16000	23200	51200	75900	11500	12200	8370
28	7450	7750	14300	14300	11400	13200	18500	55400	76200	18300	15100	5560
29	7290	6230	13000	14700	---	15200	28300	55500	76600	16100	10400	5460
30	6530	5580	5790	12300	---	12900	29000	67700	76000	22000	5770	8420
31	6260	---	6440	15000	---	10900	---	74600	---	18900	10500	---
TOTAL	196350	211960	272160	386090	364960	409050	738800	1246300	2375500	1065100	425420	290770
MEAN	6334	7065	8779	12450	13030	13200	24630	40200	79180	34360	13720	9692
MAX	7450	9360	15000	15900	17800	19300	41500	74600	94200	73600	20200	15600
MIN	5400	5560	5390	5350	8330	6500	10400	17500	65300	11500	5770	5460
AC-FT	389500	420400	539800	765800	723900	811400	1465000	2472000	4712000	2113000	843800	576700

CAL YR 2001 TOTAL 3980400 MEAN 10910 MAX 36300 MIN 5270 AC-FT 7895000
WTR YR 2002 TOTAL 7982460 MEAN 21870 MAX 94200 MIN 5350 AC-FT 15830000

e--Estimated.

12391950 CLARK FORK BELOW CABINET GORGE DAM, NEAR CABINET, ID--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1984 to October 2002 (discontinued).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: May to July 1998, April to September 2000, Nov. 20, 2001 to Oct. 22, 2002 (discontinued).

INSTRUMENTATION.--Temperature recording data logger.

REMARKS.--Water-quality data previously published as Clark Fork at Whitehorse Rapids near Cabinet, ID (station 12392000).

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 22.0 °C August 7-8, 10-11, 2000; minimum 1.4°C Feb. 15 and Mar. 22, 2002.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 21.5 °C, July 26 ; minimum 1.4°C Feb. 15 and Mar. 22.

WATER-QUALITY DATA, APRIL 2002 TO SEPTEMBER 2002

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TURBID-ITY LAB HACH 2100AN (NTU) (99872)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
APR 2002										
03...	1115	22800	173	8.0	11.0	3.0	4.5	12.3	98	<1
MAY										
03...	1130	36700	152	7.9	13.5	8.5	3.4	10.8	102	<1
JUN										
04...	1430	94400	116	7.4	22.0	11.3	15	11.7	115	27

DATE	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
APR 2002							
03...	<.015	E.08	.041	<.007	.005	2	123
MAY							
03...	<.015	.14	.040	<.007	.015	11	1090
JUN							
04...	E.013	.18	.044	<.007	.029	17	4330

E--Estimated.

PEND OREILLE RIVER BASIN

12391950 CLARK FORK BELOW CABINET GORGE DAM, NEAR CABINET, ID--Continued

WATER TEMPERATURE, DEGREES CELSIUS, NOVEMBER 2001 TO OCTOBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	NOVEMBER			DECEMBER			JANUARY			FEBRUARY		
1				7.3	6.7	7.0	3.5	2.4	2.8	3.6	1.7	2.4
2				7.3	6.7	6.9	3.1	1.7	2.4	3.6	1.9	2.5
3				6.9	6.0	6.6	3.6	1.7	2.5	4.1	2.0	2.7
4				6.9	6.0	6.7	4.1	2.2	3.1	3.8	1.9	2.7
5				6.7	6.1	6.6	4.4	2.4	3.2	3.1	2.0	2.4
6				7.0	5.8	6.5	3.8	2.7	3.3	3.3	2.0	2.6
7				6.7	6.0	6.5	3.9	2.2	2.8	3.6	1.9	2.5
8				6.9	6.1	6.6	4.2	2.4	3.2	3.5	1.9	2.7
9				6.7	5.6	6.3	4.2	2.4	3.3	3.6	1.9	2.6
10				6.7	5.6	6.3	3.8	2.4	3.1	3.6	1.7	2.3
11				6.6	6.0	6.3	3.6	2.2	2.8	3.8	1.7	2.6
12				6.7	5.6	6.4	3.8	2.2	2.9	3.8	1.7	2.3
13				6.7	5.5	6.3	3.9	2.0	2.8	2.8	1.6	2.1
14				6.4	5.5	6.1	4.1	1.9	2.8	3.5	1.6	2.2
15				6.4	5.3	6.0	3.3	1.9	2.5	3.6	1.4	2.1
16				6.3	5.2	6.0	3.3	1.9	2.5	3.5	1.7	2.2
17				6.3	5.0	5.7	3.5	1.7	2.5	3.6	1.7	2.4
18				6.3	4.9	5.5	3.9	1.7	2.5	3.0	1.7	2.3
19				6.1	4.7	5.4	3.6	1.9	2.6	3.5	1.9	2.6
20	9.7	9.2	9.4	6.0	4.6	5.3	3.1	1.7	2.5	3.8	2.4	3.0
21	9.4	8.4	9.1	5.8	4.4	5.2	3.6	1.7	2.4	3.6	2.4	2.8
22	9.2	8.4	8.9	5.8	4.7	5.2	3.3	1.7	2.5	3.6	2.5	3.0
23	8.7	8.4	8.6	5.5	4.2	4.9	4.1	2.0	2.9	3.6	2.5	3.0
24	9.0	8.0	8.5	5.6	3.9	4.8	3.8	2.0	2.8	4.1	2.7	3.2
25	8.6	8.1	8.4	5.2	3.6	4.6	3.8	2.2	2.9	4.1	2.4	2.9
26	8.3	7.3	7.9	4.9	2.8	3.9	3.9	2.2	3.0	3.5	2.0	2.6
27	8.1	7.0	7.7	4.2	2.2	3.1	3.5	2.0	2.7	2.7	1.9	2.3
28	8.0	6.7	7.5	4.2	2.0	2.7	3.5	2.0	2.7	3.6	1.9	2.6
29	7.5	6.6	7.2	4.2	1.9	2.7	3.3	2.0	2.6	---	---	---
30	7.3	7.0	7.2	4.1	2.4	3.0	3.5	1.9	2.6	---	---	---
31	---	---	---	3.6	2.5	2.8	3.5	1.7	2.4	---	---	---
MONTH	---	---	---	7.3	1.9	5.4	4.4	1.7	2.8	4.1	1.4	2.6

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	MARCH			APRIL			MAY			JUNE		
1	3.5	1.9	2.7	4.2	3.5	3.7	8.7	8.1	8.5	11.2	10.9	11.1
2	3.9	2.4	3.0	3.9	3.3	3.6	8.9	8.3	8.7	11.7	11.2	11.3
3	4.1	2.4	3.0	4.4	3.0	3.5	8.9	7.7	8.6	11.8	11.4	11.5
4	3.6	2.5	2.9	4.1	3.0	3.4	8.7	8.0	8.5	11.8	11.4	11.6
5	4.1	2.7	3.3	4.1	3.1	3.5	8.7	8.0	8.4	11.7	11.2	11.4
6	3.6	2.7	3.0	4.1	3.6	3.8	8.6	8.0	8.4	11.4	11.2	11.3
7	3.9	2.4	3.0	4.4	3.8	4.0	8.6	8.4	8.5	11.2	10.9	11.0
8	3.5	2.2	2.7	4.7	3.8	4.2	8.9	8.3	8.6	11.2	10.7	10.9
9	3.3	2.0	2.6	4.7	4.1	4.4	9.2	8.3	8.9	10.7	10.6	10.7
10	3.8	2.2	2.9	4.9	4.4	4.6	9.5	8.4	9.1	10.9	10.7	10.7
11	3.6	2.4	2.9	5.2	4.6	4.8	9.7	8.6	9.3	10.7	10.4	10.6
12	3.9	2.5	3.1	5.5	5.2	5.4	9.7	9.0	9.4	10.7	10.3	10.5
13	3.9	3.0	3.4	6.0	5.5	5.7	9.7	9.2	9.4	10.6	10.3	10.4
14	3.9	2.8	3.1	6.4	5.8	6.1	9.4	8.4	9.0	10.9	10.3	10.4
15	3.5	2.5	2.9	6.6	6.3	6.4	9.0	8.3	8.9	11.7	10.7	11.0
16	3.3	2.5	2.9	6.6	6.3	6.5	9.4	8.4	9.1	12.3	11.5	11.8
17	3.6	2.4	2.9	6.9	6.6	6.7	9.4	9.0	9.2	12.9	12.1	12.4
18	3.1	2.2	2.6	7.3	6.9	7.1	9.5	8.6	9.1	13.1	12.9	12.9
19	3.0	1.9	2.3	7.7	7.2	7.5	10.1	8.9	9.4	13.2	13.1	13.1
20	3.3	1.7	2.1	8.0	7.3	7.6	10.3	10.0	10.1	13.5	13.1	13.2
21	2.8	1.6	2.0	8.0	7.5	7.8	10.1	10.0	10.0	13.7	13.4	13.5
22	2.4	1.4	1.9	7.8	7.5	7.6	10.1	10.0	10.0	13.5	13.2	13.3
23	3.8	1.7	2.5	7.5	6.7	7.3	10.4	10.0	10.1	13.4	13.1	13.2
24	3.5	2.2	2.7	7.5	7.0	7.2	10.4	10.3	10.4	13.5	13.1	13.3
25	3.8	2.5	3.1	7.7	7.2	7.5	10.4	10.0	10.2	14.0	13.4	13.6
26	3.8	3.0	3.3	7.8	7.3	7.7	10.0	9.5	9.8	14.5	13.8	14.0
27	4.2	3.0	3.5	7.8	7.3	7.6	9.5	9.2	9.4	14.9	14.3	14.5
28	3.9	3.0	3.5	7.8	7.5	7.7	9.4	9.0	9.2	15.4	14.8	14.9
29	4.2	3.0	3.3	8.3	7.3	7.9	9.5	9.2	9.4	15.6	15.2	15.4
30	3.8	3.1	3.5	8.7	7.8	8.3	10.3	9.5	9.8	16.0	15.6	15.8
31	4.2	3.3	3.7	---	---	---	11.1	10.3	10.5	---	---	---
MONTH	4.2	1.4	2.9	8.7	3.0	6.0	11.1	7.7	9.3	16.0	10.3	12.3

PEND OREILLE RIVER BASIN

12391950 CLARK FORK BELOW CABINET GORGE DAM, NEAR CABINET, ID--Continued

WATER TEMPERATURE, DEGREES CELSIUS, NOVEMBER 2001 TO OCTOBER 2002--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JULY			AUGUST			SEPTEMBER			OCTOBER	
1	16.5	16.0	16.2	21.2	19.7	20.5	19.1	18.1	18.4	15.7	15.1	15.4
2	16.7	16.2	16.4	20.9	19.4	20.1	18.9	17.8	18.3	15.2	14.8	15.0
3	16.5	15.9	16.2	20.7	19.7	20.2	18.7	17.3	18.1	15.1	14.4	14.8
4	16.2	15.6	15.9	21.0	20.0	20.3	18.6	17.6	18.1	14.8	14.3	14.6
5	15.7	15.6	15.6	20.9	19.4	20.0	18.4	17.3	17.9	14.6	14.1	14.4
6	15.9	15.4	15.7	20.4	18.7	19.6	18.4	16.8	17.7	14.9	14.1	14.4
7	15.6	15.2	15.5	19.9	18.7	19.5	18.3	17.3	17.7	14.9	14.1	14.4
8	15.6	15.1	15.3	20.0	18.9	19.6	18.1	17.3	17.6	14.8	14.1	14.3
9	15.9	15.2	15.6	20.0	18.6	19.6	18.3	17.1	17.8	14.8	14.1	14.3
10	16.4	15.7	16.1	20.0	18.6	19.2	18.4	17.0	17.8	14.6	14.1	14.2
11	16.8	16.2	16.6	20.0	19.2	19.6	18.1	17.1	17.6	14.3	13.7	14.1
12	17.1	16.7	16.9	20.0	18.1	19.3	18.4	17.1	17.9	14.1	13.5	13.8
13	17.5	15.4	17.1	19.6	18.4	19.0	18.6	17.3	17.9	14.1	13.2	13.6
14	17.8	17.1	17.5	19.2	17.9	18.6	18.4	17.4	18.0	13.5	12.9	13.2
15	18.1	17.5	17.8	19.2	17.9	18.6	18.3	17.6	17.9	13.4	12.6	12.8
16	18.6	16.8	18.1	18.9	17.9	18.4	18.4	17.6	17.8	12.9	12.3	12.5
17	19.2	18.1	18.6	18.6	17.4	18.1	18.1	17.3	17.6	12.6	12.1	12.3
18	19.9	17.3	19.2	18.9	17.6	18.1	17.6	16.7	17.2	12.6	12.0	12.2
19	20.0	18.1	19.5	18.7	17.6	18.2	17.3	16.5	16.9	12.9	12.1	12.3
20	20.2	18.7	19.8	18.7	17.1	18.1	17.3	16.3	16.7	13.0	12.1	12.4
21	20.5	18.7	20.0	18.6	17.3	17.9	17.3	16.5	16.8	12.7	12.1	12.3
22	20.7	19.2	20.3	18.9	17.4	18.3	17.1	16.3	16.7	12.6	12.1	12.3
23	20.9	19.6	20.4	19.1	17.9	18.6	17.1	16.2	16.6			
24	21.0	19.7	20.7	19.1	17.8	18.4	17.0	16.0	16.5			
25	21.3	19.7	20.8	19.2	17.9	18.6	16.8	15.9	16.3			
26	21.5	20.0	20.8	19.4	18.1	18.7	16.5	15.9	16.1			
27	21.3	19.4	20.5	19.2	17.9	18.6	16.7	15.9	16.2			
28	21.3	20.2	20.9	19.2	17.9	18.6	16.5	15.9	16.1			
29	21.3	19.9	20.6	19.4	17.9	18.5	16.2	15.7	15.9			
30	20.9	19.9	20.5	18.9	18.1	18.4	16.0	15.4	15.7			
31	21.0	19.4	20.2	19.1	18.1	18.5						
MONTH	21.5	15.1	18.2	21.2	17.1	19.0	19.1	15.4	17.3	---	---	---

PEND OREILLE RIVER BASIN

12392000 CLARK FORK AT WHITEHORSE RAPIDS, NEAR CABINET, ID

LOCATION.--Lat 48°05'30", long 116°07'00" (NAD 27), in NE¼ sec.30, T.55 N., R.3 E., Cabinet Quad., Bonner County, Hydrologic Unit 17010213, on right bank 3.0 mi downstream from Cabinet Gorge Dam, 4.5 mi southeast of Clark Fork, and at mile 146.9.

DRAINAGE AREA.--22,073 mi^2.

PERIOD OF RECORD.--September 1928 to current year. Prior to October 1952, published as "near Heron, Mont."

REVISED RECORDS.--WSP 1182: 1936. WSP 1736: 1931, 1936(m), 1937. WRD-ID-1973-1: 1972(M). WDR-ID-1973-1: 1972(M).

REMARKS.--Flow regulated by Hungry Horse Reservoir, Flathead Lake, and Noxon Rapids Reservoir. Extreme diurnal fluctuation caused by powerplant at Cabinet Gorge Dam. Diversions above station for irrigation of about 354,000 acres. Discharge measurements made at Whitehorse Rapids indicate about 600 ft^3/s ground-water inflow between the measuring cableway for Clark Fork River below Cabinet Gorge Dam (12391950) and Whitehorse Rapids. Records given herein represent flow at Whitehorse Rapids, computed by adding this 600 ft^3/s to observed flows at 12391950, and are considered comparable to records at former site near Heron, except for minor surface inflow from additional drainage area.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 153,000 ft^3/s, May 29 to June 1, 1948; maximum gage height, 50.97 ft, May 31, 1948, site and datum then in use; minimum observed, 270 ft^3/s, Aug. 12, 1952 (discharge measurement), at sites in use since October 1952, during filling of Cabinet Gorge Reservoir; minimum daily since reservoir filled, 762 ft^3/s, Sept. 2, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a discharge of 195,000 ft^3/s from floodmark, elevation of 2,137.1 ft, at site about 4 mi upstream and 0.1 mi below "near Heron" site.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 94,800 ft^3/s, June 4; minimum daily, 5,950 ft^3/s, Jan. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6000	9180	6390	5950	16700	11100	17000	28300	85400	74200	18300	10200
2	6060	7920	5990	11600	13800	7100	20500	31000	93400	69100	13700	8150
3	7560	7830	7900	12600	8930	10300	15800	32900	94200	58300	7140	12200
4	7600	7220	7690	14500	15900	15000	15800	25300	94800	53500	14700	13700
5	7920	8430	6930	11700	15200	8970	16900	26100	94100	51600	16000	14200
6	6690	6670	7830	6610	16000	13700	11000	34000	92000	47400	15300	11600
7	7900	9320	6950	13500	16900	13300	12800	35100	88600	42700	19200	9020
8	7590	7340	6840	13400	14100	10200	18000	35100	87500	42000	20800	8690
9	6110	6880	8010	16500	11000	8980	21100	31200	84500	38500	20700	13000
10	6720	6900	7890	16200	11000	7780	22800	32600	83800	37100	10200	12900
11	6270	7770	6500	16300	13800	11100	20800	21200	81700	37600	13600	11500
12	7070	6710	6970	12700	17900	13100	22600	18100	78900	36500	16400	16200
13	6360	7990	7200	12400	18400	15500	17900	31900	75700	35500	18200	11700
14	6430	6990	8040	14400	13800	19600	28200	30600	76000	36700	16500	8150
15	7080	e7600	7380	16200	13300	17600	42100	30400	76600	33600	17200	6320
16	6600	e8600	8020	15900	9550	12700	38900	31900	77400	32400	15700	11700
17	6050	e6600	9440	13600	10400	16100	37000	35200	80100	37200	7520	12800
18	6020	e8100	13100	15000	16200	15100	36800	27700	80200	33000	10800	11900
19	7640	e8100	13300	8310	15300	18300	36800	29600	78300	29100	13900	11800
20	7540	e7600	13100	9220	14100	19900	27200	43700	70200	25100	15500	11600
21	6190	9960	12600	15200	11900	17900	27800	53700	68400	22200	13500	6460
22	6620	6330	6870	15200	9130	17300	31100	57600	65900	26100	16600	6260
23	6870	6160	11500	15000	13500	10500	30300	67700	66000	25100	17600	11300
24	7560	7760	12500	11300	11400	11000	29000	61400	68200	24700	11200	8950
25	7250	7440	9490	11600	14800	15400	28200	55700	70800	21700	9690	10200
26	6670	8730	15600	9500	14200	18900	29000	49500	73700	23000	17100	7990
27	6650	8470	14800	11600	12500	16600	23800	51800	76500	12100	12800	8970
28	8050	8350	14900	14900	12000	13800	19100	56000	76800	18900	15700	6160
29	7890	6830	13600	15300	---	15800	28900	56100	77200	16700	11000	6060
30	7130	6180	6390	12900	---	13500	29600	68300	76600	22600	6370	9020
31	6860	---	7040	15600	---	11500	---	75200	---	19500	11100	---
TOTAL	214950	229960	290760	404690	381710	427630	756800	1264900	2393500	1083700	444020	308700
MEAN	6934	7665	9379	13050	13630	13790	25230	40800	79780	34960	14320	10290
MAX	8050	9960	15600	16500	18400	19900	42100	75200	94800	74200	20800	16200
MIN	6000	6160	5990	5950	8930	7100	11000	18100	65900	12100	6370	6060
AC-FT	426400	456100	576700	802700	757100	848200	1501000	2509000	4748000	2150000	880700	612300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

MEAN	11950	13230	14390	14420	14850	15820	24790	49140	57270	26500	11700	10570
MAX	25670	21970	34850	28020	38150	36480	59140	93830	115800	57650	19680	18300
(WY)	1960	1996	1996	1934	1996	1996	1934	1997	1948	1950	1997	1985
MIN	5466	5008	4732	3527	4217	5122	6165	16450	15480	9214	6320	5448
(WY)	1937	1937	1937	1937	1936	1937	1977	1941	1977	1940	1994	1994

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1929 - 2002	
ANNUAL TOTAL	4199440		8201320			
ANNUAL MEAN	11510		22470		22060	
HIGHEST ANNUAL MEAN					34250	1996
LOWEST ANNUAL MEAN					10180	1941
HIGHEST DAILY MEAN	36900	May 17	94800	Jun 4	153000	May 30 1948
LOWEST DAILY MEAN	5870	Feb 11	5950	Jan 1	762	Sep 2 1962
ANNUAL SEVEN-DAY MINIMUM	6050	Sep 25	6520	Oct 12	2710	Feb 10 1936
ANNUAL RUNOFF (AC-FT)	8330000		16270000		15980000	
10 PERCENT EXCEEDS	24800		59500		48200	
50 PERCENT EXCEEDS	8020		13900		15700	
90 PERCENT EXCEEDS	6170		6870		7180	

e--Estimated.

QUANTITY OF PRECIPITATION
PRICKLY PEAR CREEK BASIN

462905112035401 MCBEATH RESIDENCE NEAR CLANCY, MT (MT07)

(National trends network)

LOCATION.--Lat 46°29'05", long 112°03'54" (NAD 27), in NE$^1/_4$NW$^1/_4$NE$^1/_4$ sec.2, T.8 N., R.4 W., Jefferson County, Hydrologic Unit 10030101, at National Forest boundary fence at private residence on Lump Gulch Road, 5.1 mi west of Clancy and 10 mi south of Helena.

PERIOD OF RECORD.--Water years 1981-1982, 1984 to current year. Prior to Oct. 1984, published as 462905112034001.

EQUIPMENT.--The sample collector is an Aerochem Metrics Model 301 precipitation collector. An automatic sensor detects occurrences of precipitation, activating a motor which removes a cover from the wetfall collection vessel. When precipitation ceases, the cycle is reversed. The sampling vessel is polyethylene and has a collection diameter of 28.6 cm and a capacity of 13 liters. Precipitation is measured using a Belfort Universal rain gage, series 5-780 with an event recorder.

REMARKS.--Samples from this site were analyzed by the Illinois Water Survey Laboratory in Champaign, Illinois. Chemical data are available through the internet at http://bqs.usgs.gov/acidrain. Approximately .03 inches of rain fell sometime during July 23 and 24, but due to equipment malfunction exact dates and amounts could not be isolated.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.0	0.0	0.0	0.0	0.02	0.04	0.44	0.0	0.26	0.0	0.0	0.0
2	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.19	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.05	0.09	0.05
4	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.29	0.0
5	0.0	0.0	0.04	0.0	0.0	0.0	0.05	0.18	0.0	0.0	0.0	0.03
6	0.0	0.0	0.0	0.0	0.0	0.15	0.0	0.02	0.0	0.0	0.0	0.17
7	0.0	0.0	0.0	0.0	0.0	0.33	0.0	0.16	0.15	0.25	0.36	0.22
8	0.0	0.0	0.0	0.0	0.15	0.02	0.0	0.14	0.68	0.56	0.29	0.0
9	0.0	0.0	0.0	0.06	0.05	0.02	0.13	0.0	0.90	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.73	0.0	0.0	0.0
11	0.10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.10	0.0	0.0	0.0
12	0.22	0.0	0.0	0.02	0.0	0.05	0.03	0.0	0.0	0.0	0.0	0.0
13	0.03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.23	0.0	0.0
14	0.10	0.0	0.03	0.0	0.0	0.0	0.15	0.0	0.0	0.22	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.17	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.04	0.0	0.0	0.04	0.01	0.0	0.0
17	0.0	0.02	0.01	0.0	0.0	0.0	0.50	0.0	0.0	0.0	0.0	0.45
18	0.0	0.01	0.0	0.0	0.0	0.0	0.74	0.18	0.05	0.01	0.0	0.0
19	0.15	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.09	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.42	0.0	0.0	0.0	0.0	0.12	0.0
21	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.15	0.19	0.0	0.43	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.84	0.05	0.0	0.0	0.0
23	0.05	0.0	0.0	0.0	0.28	0.0	0.0	0.09	0.0	---	0.0	0.0
24	0.0	0.0	0.0	0.0	0.17	0.01	0.02	0.0	0.0	---	0.20	0.0
25	0.0	0.23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
26	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.01	0.04	0.0	0.0	0.00
27	0.0	0.0	0.0	0.0	0.0	0.03	0.14	0.0	0.0	0.04	0.02	0.32
28	0.05	0.0	0.10	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.00
29	0.0	0.0	0.05	0.0	---	0.03	0.0	0.0	0.10	0.0	0.0	0.00
30	0.0	0.0	0.0	0.0	---	0.0	0.04	0.0	0.0	0.15	0.0	0.00
31	0.10	---	0.04	0.0	---	0.0	---	0.0	---	0.0	0.0	---
TOTAL	0.85	0.26	0.33	0.08	0.72	1.15	2.26	1.77	3.49	---	1.80	1.24
MEAN	0.03	0.00	0.01	0.00	0.03	0.04	0.08	0.06	0.12	---	0.06	0.04
MAX	0.22	0.23	0.10	0.06	0.28	0.42	0.74	0.84	0.90	---	0.43	0.45
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	---	0.00	0.00

QUANTITY OF PRECIPITATION
MILK RIVER BASIN

482958109475101 NORTHERN MONTANA AGRICULTURAL RESEARCH CENTER NEAR HAVRE, MT (MT98)

(National trends network)

LOCATION.--Lat 48°29'58", long 109°47'51" (NAD 27), in NE$^1/_4$SW$^1/_4$SW$^1/_4$ sec.28, T.32 N., R.15 E., Hill County, Hydrologic Unit 10050004 at Northern Montana Agricultural Research Center Experiment Station, 3/4 mile south of U.S. Highway 87, 5.7 miles southwest of Havre.

PERIOD OF RECORD.--Water years 1986 to current year.

EQUIPMENT.--The sample collector is an Aerochem Metrics Model 301 precipitation collector. An automatic sensor detects occurrences of precipitation, activating a motor which removes a cover from the wetfall collection vessel. When precipitation ceases, the cycle is reversed. The sampling vessel is polyethylene and has a collection diameter of 28.6 cm and a capacity of 13 liters. Precipitation is measured using a Belfort Universal rain gage, series 5-780 with an event recorder.

REMARKS.--Samples from this site were analyzed by the Illinois Water Survey Laboratory in Champaign, Illinois. Chemical data are available through the internet at http://bqs.usgs.gov/acidrain. Missing data for Jan 28, 29, 31, and Feb. 1-4 due to equipment failure.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.0	0.0	0.0	0.0	---	0.0	0.0	0.0	0.19	0.0	0.0	0.03
2	0.0	0.0	0.0	0.0	---	0.0	0.0	0.0	0.14	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	---	0.0	0.0	0.0	0.0	0.0	0.0	0.10
4	0.02	0.0	0.0	0.0	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.32	0.0	0.0	0.17	0.0
6	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.11	0.0	0.0	0.0	0.25
7	0.0	0.0	0.0	0.0	0.0	0.05	0.0	0.11	0.02	0.0	0.40	0.25
8	0.0	0.0	0.0	0.0	0.15	0.0	0.0	0.20	0.18	1.75	1.00	0.0
9	0.0	0.0	0.0	0.03	0.06	0.0	0.0	0.0	0.62	0.0	0.27	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	1.42	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.12	0.0	0.0	0.0
12	0.0	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.11	0.08	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.03	0.0	0.0	0.0	0.0	0.08	0.0
17	0.0	0.0	0.0	0.0	0.0	0.06	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.07	0.0	0.0	0.10	0.0	0.0	0.05
19	0.0	0.0	0.0	0.03	0.0	0.01	0.0	0.0	0.18	0.0	0.0	0.00
20	0.0	0.0	0.0	0.02	0.0	0.04	0.0	0.0	0.0	0.0	0.0	0.11
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.57	0.03	0.0	0.0	0.00
23	0.0	0.0	0.0	0.0	0.08	0.0	0.20	0.18	0.01	0.0	0.0	0.00
24	0.15	0.02	0.0	0.0	0.12	0.0	0.0	0.0	0.0	0.0	0.0	0.05
25	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.07	0.00
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.17	0.0	0.00
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.13	0.00
28	0.07	0.0	0.0	---	0.0	0.0	0.0	0.0	0.01	0.05	0.0	0.00
29	0.0	0.0	0.0	---	---	0.0	0.0	0.0	0.30	0.0	0.0	0.00
30	0.0	0.0	0.0	0.0	---	0.06	0.0	0.0	0.0	0.0	0.0	0.30
31	0.0	---	0.0	---	---	0.0	---	0.0	---	0.0	0.0	---
TOTAL	0.24	0.04	0.0	---	---	0.33	0.21	1.51	3.32	2.10	2.20	1.14
MEAN	0.00	0.00	0.00	---	---	0.01	0.00	0.05	0.11	0.07	0.07	0.04
MAX	0.15	0.02	0.00	---	---	0.07	0.20	0.57	1.42	1.75	1.00	0.30
MIN	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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CONVERSION FACTORS

Multiply	By	To obtain
	Length	
inch (in.)	2.54×10^{1}	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^{0}	kilometer
	Area	
acre	4.047×10^{3}	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi^2)	2.590×10^{0}	square kilometer
	Volume	
gallon (gal)	3.785×10^{0}	liter
	3.785×10^{0}	cubic decimeter
	3.785×10^{-3}	cubic meter
million gallons (Mgal)	3.785×10^{3}	cubic meter
	3.785×10^{-3}	cubic hectometer
cubic foot (ft^3)	2.832×10^{1}	cubic decimeter
	2.832×10^{-2}	cubic meter
cubic-foot-per-second day [(ft^3/s) d]	2.447×10^{3}	cubic meter
	2.447×10^{-3}	cubic hectometer
acre-foot (acre-ft)	1.233×10^{3}	cubic meter
	1.233×10^{-3}	cubic hectometer
	1.233×10^{-6}	cubic kilometer
	Flow	
cubic foot per second (ft^3/s)	2.832×10^{1}	liter per second
	2.832×10^{1}	cubic decimeter per second
	2.832×10^{-2}	cubic meter per second
gallon per minute (gal/min)	6.309×10^{-2}	liter per second
	6.309×10^{-2}	cubic decimeter per second
	6.309×10^{-5}	cubic meter per second
million gallons per day (Mgal/d)	4.381×10^{1}	cubic decimeter per second
	4.381×10^{-2}	cubic meter per second
	Mass	
ton (short)	9.072×10^{-1}	megagram or metric ton

Temperature

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

$$°F = (1.8 \times °C) + 32$$