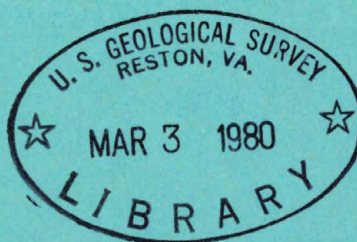


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Water Resources Data for Montana



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MT-78-1

WATER YEAR 1978

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

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CALENDAR FOR WATER YEAR 1978

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Water Resources Data for Montana

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MT-78-1

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Prepared in cooperation with the State of Montana
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UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

H. W. Menard, Director

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PREFACE

This report was prepared by the U.S. Geological Survey in cooperation with the State of Montana and with other agencies, by personnel of the Montana district of the Water Resources Division under the supervision of G. M. Pike, District Chief, and A. Clebsch, Jr., Regional Hydrologist, Central Region.

This report is one of a series issued State by State under the general direction of J. S. Cragwall, Jr., Chief Hydrologist, and S. M. Lang, Acting Assistant Chief Hydrologist for Scientific Publications and Data Management.

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16. Abstracts Water resources data for the 1978 water year for Montana 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 211 gaging stations; stage only records for 1 lake station; stage and contents for 9 lakes and reservoirs; water quality for 129 stations, 3 lakes; water levels for 23 observation wells. Also included are 173 crest-stage partial-record stations and 52 smaller reservoirs. Additional water data were collected at various sites, not part of the systematic data collection programs, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Montana.			
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(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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INTRODUCTION

Water resources data for the 1978 water year for Montana consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water-levels of ground-water wells. This volume contains records for water discharge at 211 gaging stations; stage only at 1 lake station; stage and contents at 9 lakes and reservoirs; water quality at 88 gaging stations, 41 water-quality stations, and 3 lake stations; and water levels at 23 observation wells. Also included are data for 173 crest-stage partial-record stations and 52 smaller reservoirs. Additional water data were collected at various sites, not involved in the systematic data collection program, and are published as miscellaneous measurements. A few pertinent stations (not included above) in bordering States are also included in this report; however, numerous stations in Canada operated for the International Joint Commission under cooperative agreement with the U.S. Department of State are included in the above. Locations of gaging stations are shown on figure 3, ground-water observation wells are shown on figure 4, and water-quality stations are shown on figure 4. These data represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Montana.

Records of discharge or stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a 5-year series for 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 Branch of Distribution, U.S. Geological Survey, 1200 South Eads St., Arlington, VA 22202.

For water years 1961 through 1974, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records beginning with the 1964 water year, and ground-water data since the 1971 water year have been similarly released either in separate reports or in conjunction with streamflow records.

Beginning with the 1975 water year, water data for streamflow, water quality, and ground water are published in official Survey reports on a State-boundary basis. These official Survey 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-78-1". For archiving and general distribution, the reports for water years 1971-74 are also identified as water-data reports. These water-data reports are for sale, in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the district chief at the address given on the back of the title page or by telephone (406) 449-5263.

COOPERATION

The U.S. Geological Survey and organizations of the State of Montana have had cooperative agreements for the systematic collection of streamflow records since 1906, for ground-water levels since 1964, and for water-quality records since 1946. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

Montana Department of Natural Resources and Conservation
T. J. Doney, director

Montana State Highway Commission
R. P. Richards, director of highways.

Montana Department of Fish and Game
R. F. Wambach, director

Montana Department of Health and Environmental Sciences
Dr. A. C. Knight, director

Montana State University
R. E. Huffman

Montana Bureau of Mines and Geology
S. L. Groff, director

Assistance in the form of funds or services was given by the Department of State, in collecting records published in this report for 53 gaging stations and 5 water-quality stations, by the Corps of Engineers, U.S. Army for 24 gaging stations and 9 water-quality stations; by the Bureau of Land Management, U.S. Department of the Interior for 7 gaging stations and 33 water-quality stations; by the Environmental Protection Agency for 16 water-quality stations; by the Bureau of Reclamation, U.S. Department of the Interior for 8 gaging stations; by the Bonneville Power Administration, U.S. Department of the Interior for 3 gaging stations and 2 water-quality stations; and the Bureau of Indian Affairs, U.S. Department of the Interior for 3 gaging stations.

The following organizations aided in collecting records:

The Montana Power Company, The Washington Power Company, Pacific Power and Light Company, and the city of Helena.

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

Organizations that supplied data are acknowledged in station descriptions.

Some records have been collected and computed by contractors in accordance with U.S. Geological Survey specifications and under Geological Survey quality control.

ACKNOWLEDGMENT

Montana district personnel who contributed significantly to the collection and preparation of the data in this report were: L.G. Moore, chief, Hydrologic Surveillance, Analysis and Research Section, assisted by J. H. Diamond, M.K. White, J. R. Knapton, R. R. Shields, C. O. Geiger, L. A. Merritt, L. L. Hull, E. J. Blank, and N. B. Melcher.

HYDROLOGIC CONDITIONS

Annual streamflow for the 1978 water year was near average for all reporting index stations in Montana. The average annual flows at these stations ranged from 91 to 111 percent of average. At the beginning of the water year most surface-water stations were reporting below average runoff (less than 80 percent of average). The low runoff was a carryover from the drought that affected many western States, including Montana, during the 1977 water year. Near-average or below-average flows continued through February statewide.

In March above-average monthend temperatures melted the prairie snowpack and increased the monthly average streamflow into the above-average range statewide except in the Middle Fork Flathead River and the upper Yellowstone River basins, where streamflow was normal. During the last 2 weeks of March, low-elevation snowmelt runoff caused isolated flooding in the Great Falls area as well as in the Marias and Milk River basins in north-central Montana, and the Powder River, Tongue River, and lower Yellowstone River basins in southeastern Montana.

In May four counties in southeastern Montana were declared disaster areas as a result of runoff from record amounts of precipitation. The unusually large precipitation resulted in all-time peak discharges at 23 surface-water gaging stations in southeastern Montana. See table 5, for a complete listing of flood stages and discharges during 1978.

Throughout the summer months and at the beginning of the 1979 water year, above-normal monthly precipitation and melting of the near-average mountain snowpack continued to keep Montana rivers and streams in the average to above-average streamflow range.

Contents in all major hydroelectric reservoirs began and ended the water year in the average range except Hungry Horse Reservoir and Fort Peck Lake. Hungry Horse Reservoir, in northwestern Montana, for 6 consecutive months at the beginning of the water year, had the lowest level of monthend contents since the reservoir was filled in 1952. However, no cutbacks in electric power production resulted from the low levels. Fort Peck Lake, in northeastern Montana, for 6 consecutive months at the end of the water year, had monthend contents in the above-average range. The monthend contents for July and August were the 2d highest and the monthend contents for September were the highest for the period of record, 1973 to present.

Most irrigation reservoirs in northern Montana continued to be affected by the 1977 drought at the beginning of the water year. Contents in Fresno and Gibson Reservoirs were below-average 5 and 6 consecutive months, respectively, with monthend contents of 25-77 percent of average. Melting of the mountain and prairie snowpack coupled with above-average summer precipitation then filled most northern Montana irrigation reservoirs to average to above-average levels at the end of the water year. Contents of southern Montana reservoirs were near-average to above-average most of the year.

Ground-water levels in observation wells for the water year about average and somewhat below those of last year. The water level in a key well at Missoula reached a new monthly minimum five months of the year based on records for 1960 to present.

NOTICE

During water year 1978, revisions were made in the terminology used to define 143 of the water-quality parameter codes that have been used by the Geological Survey in its publication of water-quality data and in its WATSTORE data system. These revisions were made to achieve consistency in terminology and to conform to a joint USGS-EPA agreement on terminology. They do not represent a change in the way the codes have been used in the past or in the association of specific code numbers with identified analytical procedures.

Use of the new terminology began with data for the 1978 water year, and therefore, it first appears in this publication. Definitions on which the terminology is based are included in the "Definitions" section of this report, and a table showing both old and new terminology is attached as an appendix to the report.

DEFINITION OF TERMS

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

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

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

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

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

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

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

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

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

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

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

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

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m³), and periphyton and benthic organisms is grams per square meter (g/m²).

Dry mass refers to the mass of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry mass values are expressed in the same units as ash mass.

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

Bottom material: See Bed material.

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

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons or 2,447 cubic meters.

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

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

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

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

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

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

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

Cubic foot per second (FT³/s, ft³/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

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

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

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

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

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

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

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

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

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate (CaCO₃).

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Map; each hydrologic unit is identified by an 8-digit number.

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

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

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

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

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

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 meters (m^2), acres, or hectares. 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 milliliters (mL) or liters (L). Numbers of planktonic organisms can be expressed in these terms.

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

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

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

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology.

The classification is as follows:

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

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

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

Pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

Pico,urie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 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.

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

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

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

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

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

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.

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

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

Recoverable from bottom material.--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 only 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.

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

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

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

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

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge times mg/L times 0.0027.

Suspended-sediment load is quantity of suspended sediment passing a section in a specified period.

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

Solute is any substance derived from the atmosphere, vegetables, soil, or rocks that is dissolved in water.

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

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

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in 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 lived.

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

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

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

Suspended, recoverable--The amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45 um membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by 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 would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

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

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

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

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical 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

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

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

Tons per day is the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

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

Total in bottom material.--The total 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 and "total in bottom material."

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

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

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.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

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

DOWNSTREAM ORDER AND STATION NUMBER

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

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number if 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 8-digit number for each station, such as 06090500, which appears just to the left of the station name includes the 2-digit part number "06" plus the 6-digit, downstream order number "090500." In this report, the records are listed in downstream order by parts. The part number refers to an area whose boundaries coincide with certain natural drainage lines. Records in this report are in Part 5 (Hudson Bay basin), Part 6 (Missouri River basin) and Part 12 (Upper Columbia 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.

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

The 8-digit downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits (assigned sequentially) identify the wells or other sites within a 1-second grid. See figure 1 on following page.

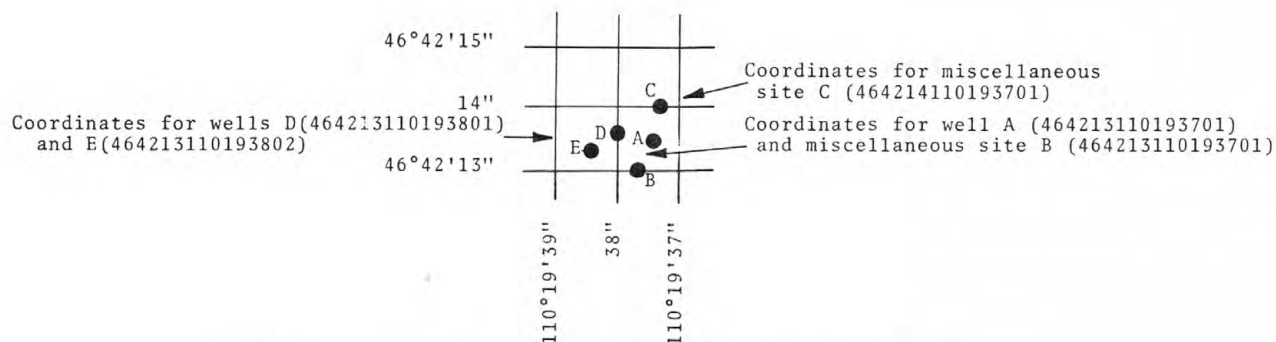


Figure 1. System for numbering wells and miscellaneous sites (latitude and longitude)

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network (NASQAN) is a data collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated into the network design. A real configuration of the network is based on river-basin accounting units (identified by 8-digit hydrologic-unit numbers) designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of streamflow and water-quality conditions nationwide on a year-by-year basis and (2) to detect and assess long-term changes in streamflow and stream quality.

Pesticide program is a network of regularly sampled water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

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

EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observation of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard textbooks, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharges are computed from the daily figures. 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 computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in 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 stream-gaging 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.

For a lake or reservoir stations, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

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 on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs, a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30. Records for some gaging stations on streams or canals in Canada and along the international boundary are published on an irrigation season basis and the tables of daily discharge generally show data from March through October. A calendar for the current water year is shown on the reverse side of the back cover to facilitate findings the day of the week for any date.

The description of the gaging station gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

The type of gage currently in use; the datum of the present gage referred to National Geodetic Vertical Datum; and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." National Geodetic Vertical Datum is explained in "DEFINITION OF TERMS" on page 5.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In the "EXTREMES" paragraph, the extremes for period of record is given first, information available outside the period of record is given next, and finally, those for the current year. Unless otherwise qualified, the maximum discharge (or contents), is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with "EXTREMES FOR THE CURRENT YEAR"; if they are, all independent peaks, including the maximum for the year, above the selected base with the time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharges for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to the table of daily discharge are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

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

Data collected at partial-record stations follow the information for continuous record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

Accuracy of Field data and computed results

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

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent, "good", within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharge have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations.

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 the 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 data available

Information of a more detailed nature than that published for most of the gaging stations such as observations of water temperatures, discharge measurements, gage-height records, and rating tables is on file in the district office. Also most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Information of the availability of unpublished data or statistical analyses may be obtained from the district office.

Publications

The annual series of water-supply papers that give information on quantity of surface waters in Montana are given in the following table. Data for the Hudson Bay basin is given in Part 5, for the Missouri River basin in Part 6, and for the Upper Columbia River basin in Part 12.

Table 1.--Water-supply paper numbers containing results of stream measurements in Montana 1899-1970 including compilation reports.

Year	Part 5	Part 6	Part 12	Year	Part 5	Part 6	Part 12
1899	36	36,37	38				
1900	49	49	51,52				
1901	65,66,75	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	128,130	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				
1930	700	701	707				
1931	715	716	722	1950	1308	1309	1316
1932	730	731	737	Compilation			
1933	745	746	752				
1934	760	761	767	1960	1728	1729	1736
1935	785	786	792	Compilation			

Records of discharge collected by agencies other than
the Geological Survey

Records of discharge not published by the Geological Survey were collected at 94 sites in Montana during the 1978 water year by the following agencies: Montana Department of Natural Resources and Conservation (47 sites); National Weather Service, National Oceanic and Atmospheric Administration (8 sites); Forest Service, U.S. Department of Agriculture (2 sites); Corps of Engineers, U.S. Army (8 sites); Montana University Joint Water Resources Center (12 sites); Soil Conservation Service, U.S. Department of Agriculture (17 sites).

EXPLANATION OF WATER-QUALITY RECORDS

Collection and examination of data

Surface water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, water temperatures, sediment discharge, etc.); extremes for the period of daily record; extremes for the current year; and general remarks.

Water analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on a following page.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

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

Water temperature

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

For stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the district office.

At stations where recording instruments are used, either maximum and minimum temperatures, or maximum, minimum and mean temperatures for each day are published.

Table 2.--Descriptor values for weather conditions.

0	Cloudless	70	Snow or sleet
1	Partly cloudy	71	Slight snow in flakes, intermittent
2	Cloudy	72	Slight snow in flakes, continuous
3	Overcast	73	Moderate snow in flakes, intermittent
10	Precipitation within sight	74	Moderate snow in flakes, continuous
13	Ugly, threatening sky	75	Heavy snow in flakes, intermittent
40	Fog	76	Heavy snow in flakes, continuous
50	Drizzle	77	Snow and fog
51	Slight drizzle, intermittent	78	Granular snow (frozen drizzles)
52	Slight drizzle, continuous	79	Ice crystals
53	Moderate drizzle, intermittent	80	Showers
54	Moderate drizzle, continuous	81	Slight or moderate rain shower (s)
55	Thick drizzle, intermittent	82	Heavy rain shower (s)
56	Thick drizzle, continuous	83	Slight or moderate snow shower (s)
57	Drizzle and fog	84	Heavy snow shower (s)
58	Slight or moderate drizzle and rain	85	Slight or moderate rain and snow shower (s)
59	Thick drizzle and rain	86	Heavy rain and snow shower (s)
60	Rain	87	Granular snow shower (s)
61	Slight rain, intermittent	88	Slight or moderate hail or rain and hail shower (s)
62	Slight rain, continuous	90	Thunderstorm
63	Moderate rain, intermittent	93	Slight thunderstorm with rain or snow
64	Moderate rain, continuous	94	Slight thunderstorm with hail
65	Heavy rain, intermittent	95	Moderate thunderstorm with rain or snow
66	Heavy rain, continuous	96	Moderate thunderstorm with hail
67	Rain and fog	97	Heavy thunderstorm with rain or snow
68	Slight or moderate mixed and snow	99	Heavy thunderstorm with hail
69	Heavy mixed rain and snow		

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross-section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

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 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 loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the period, and suspended-sediment loads for other periods of similar discharge.

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

In addition to the records of the quantities of suspended sediment, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

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 for Upper Columbia River basin are given in Part 12.

Table 3.--Water-supply paper numbers and parts,
water years, 1947-70.

<u>Year</u>	<u>Parts 5-6</u>	<u>Part 12</u>	<u>Year</u>	<u>Parts 5-6</u>	<u>Part 12</u>
1947	1102	----	1958	1572	1574
1948	1132	----	1959	1643	1645
1949	1162	----	1960	1743	1745
1950	1187	----	1961	1883	1885
1951	1198	1200	1962	1943	1945
1952	1251	1253	1963	1949	1951
1953	1291	1293	1964	1956	1959
1954	1351	1353	1965	1963	1966
1955	1401	1403	1966	1993	1996
1956	1451	1453	1967	2013	2016
1957	5121	1523	1968	2095	2100
			1969	2145	2150
			1970	2155	2160

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Only ground-water level data from a basic network of observation wells are published herein. This basic network contains observation wells so located that the most significant data are obtained from the fewest wells in the most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is provided for local needs. See figure 1.

Measurements are made in many types of wells, under varying conditions of access and at different temperatures; hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will ensure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to either National Geodetic Vertical Datum of 1929 or land-surface datum (lsd). National Geodetic Vertical Datum of 1929 is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above National Geodetic Vertical Datum of 1929 is given in the well description. The height, or the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

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 of 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 only 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 Geological Survey 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.

Table 4.--Water-supply paper numbers for Northwestern United States, calendar years 1940-70

<u>Year</u>	<u>WSP No.</u>	<u>Year</u>	<u>WSP No.</u>	<u>Year</u>	<u>WSP No.</u>
1940	910	1946	1075	1952	1225
1941	940	1947	1100	1953	1269
1942	948	1948	1130	1954	1325
1943	990	1949	1160	1955	1408
1944	1020	1950	1169	1956-60	1760
1945	1927	1951	1195	1961-65	1845
				1966-70	1980

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.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

Thirty-four manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing 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) is on 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 U.S. Geological Survey, Branch of Distribution, 1200 South Eads Street, Arlington, VA 22202 (authorized agent of the Superintendent of Documents, Government Printing Office. Prices are effective October 1978 but are subject to change.

NOTE: When ordering any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations".

- 1-D1. *Water temperature-influential factors, field measurement, and data presentation*, by H. H. Stevens Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages. \$1.60.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W.W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages. \$0.85.
- 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, Chapter D1. 1974. 116 pages. \$1.90.
- 2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages. \$1.75.
- 3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages. \$1.00.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages. \$0.35.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages. \$0.40.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages. \$1.00.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages. \$0.35.
- 3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6, 1968, 13 pages. \$1.00.
- 3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages. \$1.40.
- 3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages. \$1.25.
- 3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages. \$1.20.
- 3-A12. *Fluorometric procedures for dye tracing*, by J. F. Wilson Jr.: USGS--TWRI Book 3, Chapter A12. 1968. 31 pages. \$0.35. Not currently available.
- 3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages. \$0.70.
- 3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2 1976. 172 pages. \$2.50.
- 3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages. \$2.50.
- 3-C2. *Field methods for measurement of fluvial sediment*, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2, 1970. 59 pages. \$2.50.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages. \$2.10.
- 4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4 Chapter A1. 1968. 39 pages. \$1.60.
- 4-A2. *Frequency curves*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages. \$1.20.
- 4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972, 18 pages. \$0.65.
- 4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages. \$0.75.
- 4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages. \$0.65.
- 4-D1. *Computation of rate and volume of stream depletion by wells*, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages. \$1.10.
- 5-A1. *Methods for collection and analysis of water samples for dissolved minerals and gases*, by Eugene Brown, M. W. Skougstad, and M. J. Fishman: USGS--TWRI Book 5, Chapter A1. 1970. 160 pages. \$2.40.
- 5-A2. *Determination of minor elements in water by emission spectroscopy*, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages. \$0.80.
- 5-A3. *Methods for analysis of organic substances in water*, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages. \$0.90.
- 5-A4.* *Methods for collection and analysis of aquatic biological and microbiological samples*, edited by P.E. Greeson, T.A. Ehlke, G.A. Irwin, B.W. Lium, and K.V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages. \$20.00.
- 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, Chapter A5. 1977. 95 pages. \$16.00.
- 5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages. \$2.10.
- 7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages. \$2.30.
- 8-A1. *Methods of measuring water levels in deep wells*, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages. \$0.70.
- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages. \$1.10.

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WATER RESOURCES DATA FOR MONTANA, 1978
SUMMARY OF FLOOD STAGE AND DISCHARGE

19

The following table contains the record of flows at selected sites for flood which occurred during the 1978 water year; some are discussed in Open-File Report 78-985, Data for Floods of May 1978 in Northeastern Wyoming and Southeastern Montana, Parrett, Carlson, Craig, and Hull, November 1978.

Table 5.--Summary of flood stages and discharges during 1978

Permanent station number	Stream and place of determination	Drainage area (mi ²)	Maximum previously known				Maximum in 1978				
			Period of Record	Year	Gage height (feet)	Discharge (ft ³ /s)	Date	Gage height (feet)	Discharge		
									ft ³ /s	ft ³ /s per mi	Magnitude
06027700	Fish Creek near Silver Star	38.9	1959-78	75	1.91	240	3-31	1.97	250	6.42	1
06056300	Cabin Creek near Townsend	11.8	1960-78	60	2.00	70	5-10	1.39	52	4.40	2
06136000	Sage Creek at international boundary	220	c1946-78	51	4.72	52	4-12	4.44	66	.30	1
06216000	Pryor Creek at Pryor	117	1921-24; 1966-78	69	6.13	468	5-19	8.88	2,280	19.5	1
06216200	West Wets Creek near Billings	8.80	1955-78	64	6.90	565	5-19	6.81	545	61.9	2
06216500	Pryor Creek near Billings	440	1911-24; 1938-53; 1953-73	64	15.04	3,720	5-19	18.90	14,900	33.9	1
06217300	Twelvemile Creek near Shepherd	9.05	1973-78	70	1.89	70	5-18	3.04	250	27.6	1
06217750	Fly Creek at Pompeys Pillar	285	1968-78	71	9.23	2,680	5-19	15.94	10,300	36.1	1
06287500	Soap Creek near St. Xavier	98.3	1911-12; 1913; 1939-53; 1963; 1967-72	63	14.96	4,170	5-19	16.95	7,810	79.5	1
06288000	Rottengrass Creek near St. Xavier	147	1913-22; 1967-72	72	9.16	900	5-19	13.60	9,740	66.3	1
06288200	Beauvais Creek near St. Xavier	100	1967-78	68	8.00	1,600	5-19	9.54	7,350	73.5	1
06290000	Pass Creek near Wyola	111	1935-56	44	4.82	1,150	5-19	10.90	5,310	38.8	1
06290500	Little Bighorn River below Pass Creek, near Wyola	428	1939-75; 1977-78	63	7.43	3,630	5-19	10.02	8,010	18.7	1
06291500	Lodgegrass Creek above Willow Creek diversion, near Wyola	80.7	1939-74	64	6.14	1,130	5-19	6.27	992	12.3	2
06293300	Long Otter Creek near Lodgegrass	11.7	1973-78	75	4.60	76	5-19	8.04	298	3.92	1
06294000	Little Bighorn River near Hardin	1,294	1953-78	65	unknown	4,520	5-19	11.19	22,500	4.98	1
06294700	Bighorn River at Bighorn	22,885	1945-78	47	8.79	26,200	5-20	14.00	56,400	2.46	1

See footnotes on p. 20

Table 5.--Summary of flood stages and discharges during 1978--Continued

Permanent station number	Stream and place of determination	Drainage area (mi ²)	Maximum previously known				Maximum in 1978				
			Period of Record	Year	Gage height (feet)	Discharge (ft ³ /s)	Date	Gage height (feet)	Discharge		
									ft ³ /s	ft ³ /s per mi	Magnitude
06294930	Sarpy Creek tributary near Colstrip	4.44	1972-78	72	4.33	194	5-18	4.77	488	110	1
06294995	Armells Creek near Forsyth	370	1974-78	75	4.80	b500	5-20	4.87	687	1.86	1
06295000	Yellowstone River at Forsyth	40,339	1921-23; 1978	22	12.20	63,600	5-21	14.53	109,800	2.72	1
06296003	Rosebud Creek at mouth, near Rosebud	1,302	1974-78	75	5.78	b1,200	5-19	6.78	3,350	2.57	1
06306100	Squirrel Creek near Decker	33.6	1975-78	75	2.33	12	5-18	7.36	600	17.9	1
06306250	Prairie Dog Creek near Acme, WY	358	1970-78	75	6.01	738	5-19	12.60	4,180	11.7	1
06306300	Tongue River at Stateline, near Decker	1,477	1960-78	67	10.86	7,480	5-19	14.25	19,000	12.9	1
06307000	Tongue River Reservoir	1,770	1939-78	67	3425.9	d73,620	5-20	3428.0	d79,600	-----	----
06307500	Tongue River at Tongue River dam near Decker	1,770	1939-78	67	8.20	7,340	5-20	10.00	10,600	5.99	1
06307600	Hanging Woman Creek near Birney	470	1973-78	75	9.77	986	5-19	11.56	2,060	4.38	1
06307830	Tongue River below Brandenburg bridge near Ashland	4,062	1973-78	67	unknown	b5,740	5-22	9.96	8,340	2.04	1
06307930	Jack Creek near Volborg	5.47	1973-78	75	4.56	271	5-18	5.62	448	81.9	1
06308100	Sixmile Creek tributary near Epsie	.24	1973-78	73	3.18	74	5-18	4.30	73	304	2
06309000	Yellowstone River at Miles City	48,253	1922-23; 1928-78	44	12.74	96,300	5-22	16.50	103,600	2.14	1
06326300	Mizpah Creek near Mizpah	797	1975-78	75	9.80	1,920	5-23	9.75	2,010	2.52	1
06326500	Powder River near Locate	13,189	1938-78	43	11.23	31,000	3-22	11.59	30,300	2.30	2
06326550	Cherry Creek tributary near Terry	2.52	1973-78	73	3.05	72	5-30	4.97	466	185	1
06326600	O'Fallon Creek near Ismay	699	1963-78	76	unknown	4,700	3-22	9.35	3,100	4.63	3

a Estimated

b About

c Seasonal record only.

d Contents, in acre-feet.

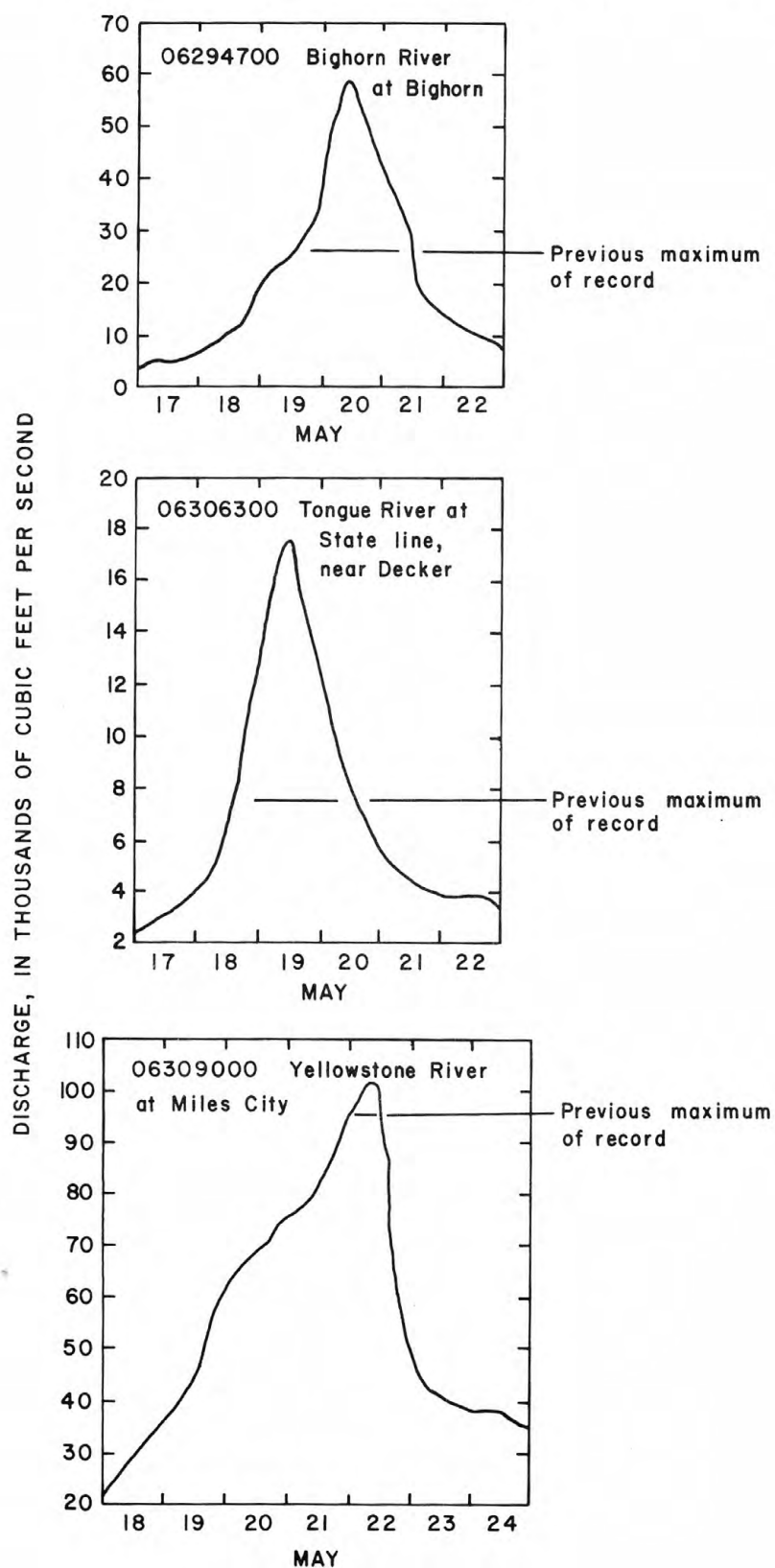


FIGURE 2.--Discharge at selected gaging stations, in southeastern Montana, floods of May 18-22.

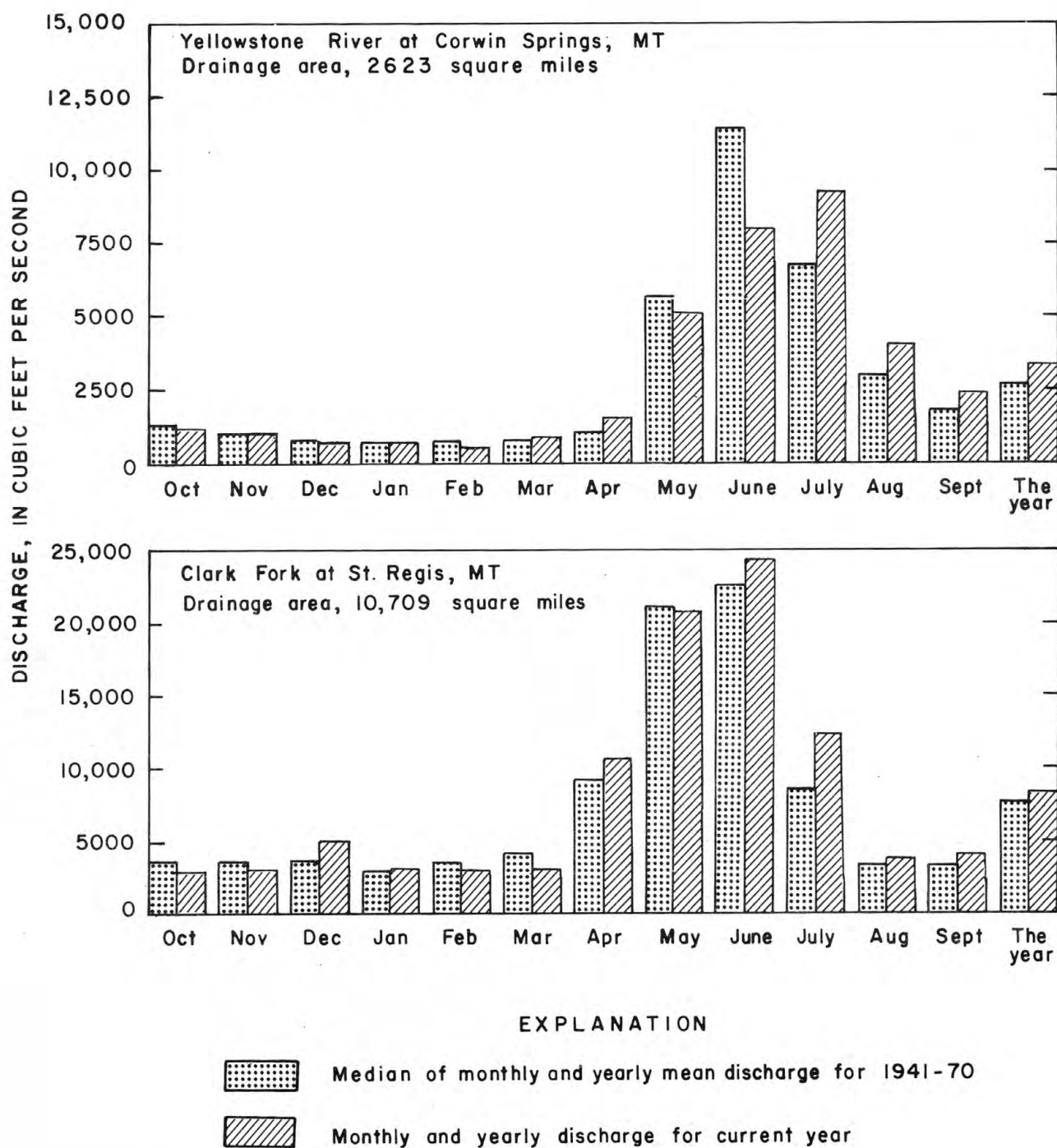


Figure 3.--Comparison of discharge at two long-term representative gaging stations during current year with medium discharge for period 1941-70.

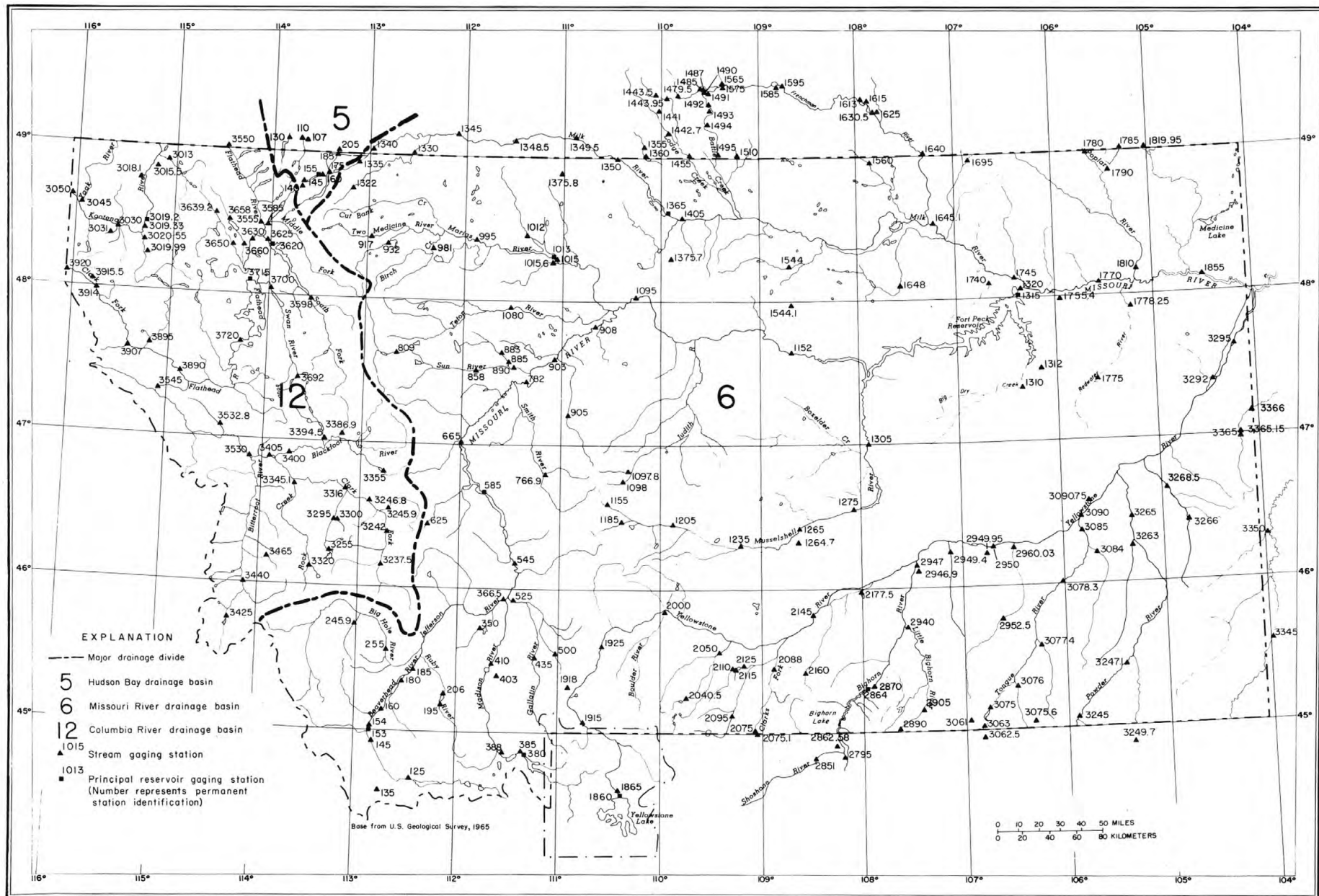


FIGURE 4.--LOCATION OF SURFACE-WATER GAGING STATIONS, 1978 WATER YEAR

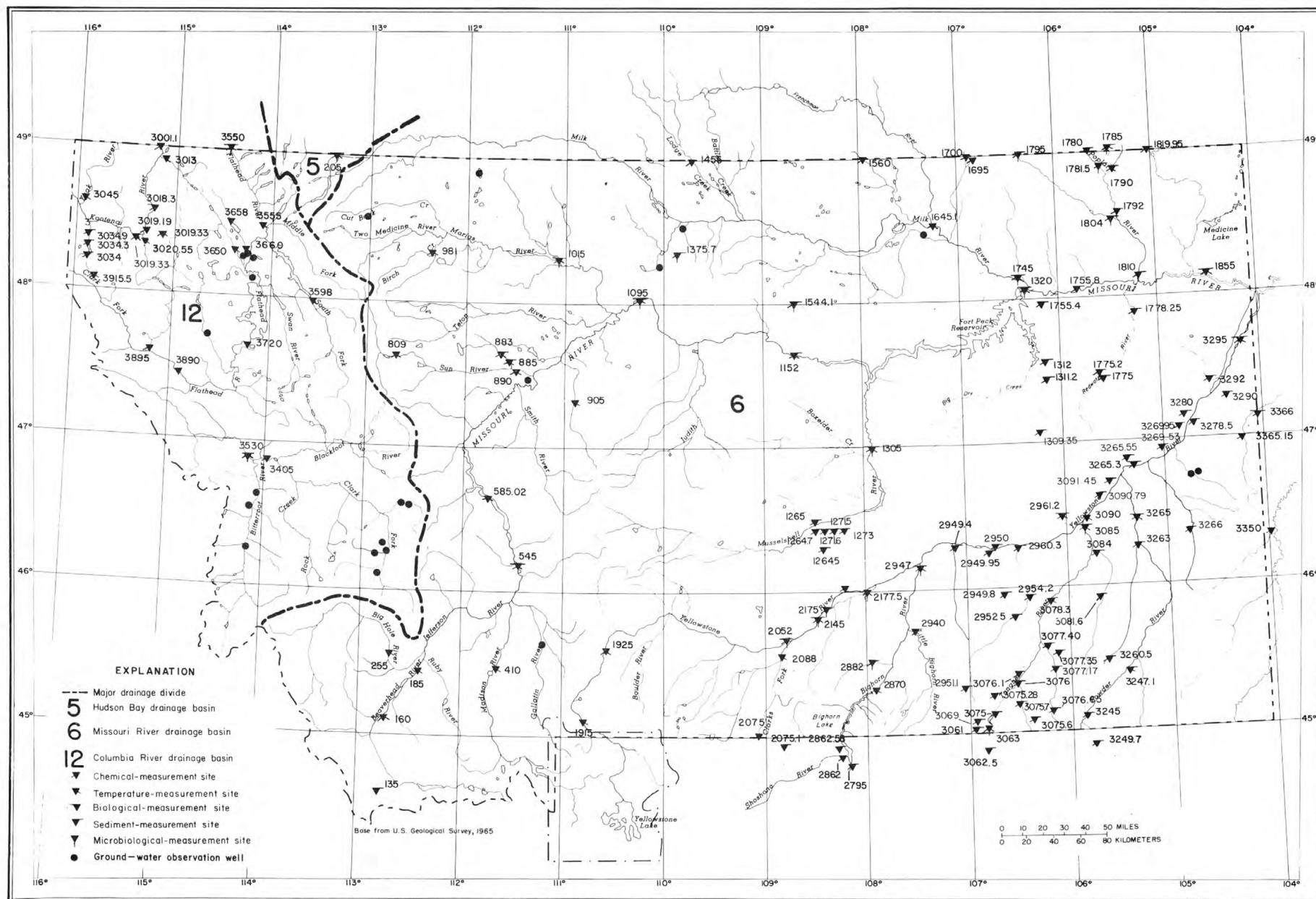


FIGURE 5.--LOCATION OF WATER-QUALITY STATIONS AND GROUND-WATER OBSERVATION WELLS, 1978 WATER YEAR

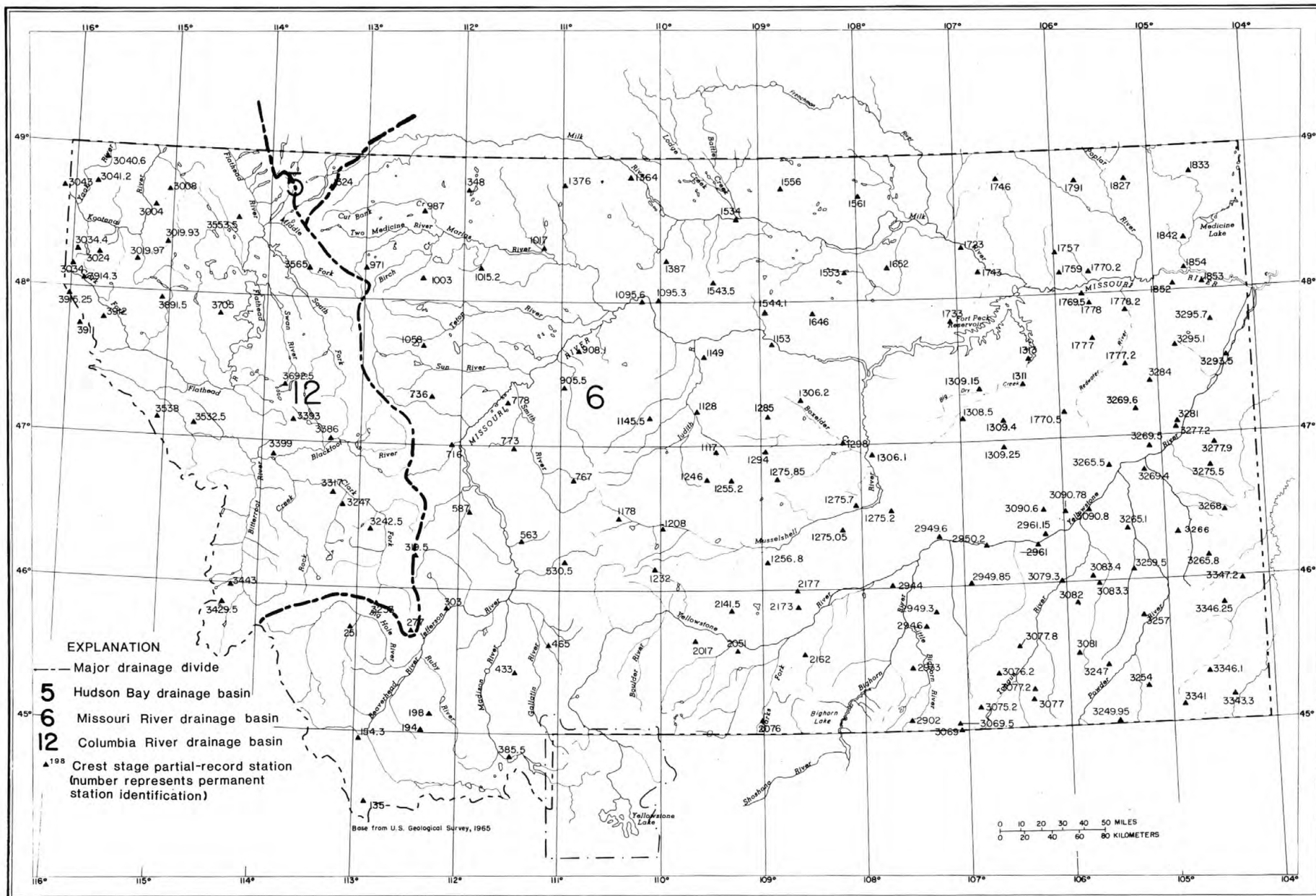


FIGURE 6.--LOCATION OF CREST STAGE PARTIAL-RECORD STATIONS, 1978 WATER YEAR

HUDSON BAY BASIN

SASKATCHEWAN RIVER BASIN

05010700 MOUNTAIN VIEW IRRIGATION DISTRICT CANAL NEAR MOUNTAIN VIEW, ALBERTA

(International gaging station)

LOCATION.--Lat 49°05'58", long 113°41'34", in NW¼ sec.4, T.2, R.28 W., fourth meridian, in Alberta, Hydrologic Unit 10010001, on left bank 1.5 mi (2.4 km) downstream from headgate, 5 mi (8 km) southwest of Mountain View, and 7 mi (11 km) north of international boundary.

PERIOD OF RECORD.--May 1935 to October 1978 (discontinued). Seasonal records only. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 4,377.26 ft (1,334.189 m) above mean sea level (Irrigation Surveys datum). Prior to May 12, 1950, nonrecording gage at site 600 ft (183 m) upstream at different datum. May 12, 1950, to May 22, 1952, nonrecording gages at sites 0.2 mi (0.3 km) upstream at different datums.

REMARKS.--Records good. Canal diverts water from Belly River on right bank for irrigation in Belly and St. Mary River basins in Alberta.

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, 187 ft³/s (5.30 m³/s) May 24, 1970; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				.60	1.6	7.6	42	26	28	9.8		
2				.60	1.4	3.8	43	26	29	9.8		
3				.60	1.5	3.0	45	25	28	9.6		
4				.60	1.6	2.4	45	24	28	9.4		
5				.54	1.7	7.1	44	23	30	9.5		
6				.42	2.2	12	44	23	31	9.7		
7				.28	2.5	10	49	24	31	9.5		
8				.25	3.5	8.9	47	28	23	9.3		
9				.27	3.8	9.0	42	33	18	9.5		
10				.21	2.6	8.9	35	33	17	9.4		
11				.58	2.1	8.2	25	33	18	9.0		
12				.47	1.7	7.8	26	33	22	8.9		
13				.30	1.6	7.0	26	33	12	9.1		
14				.25	1.7	15	25	32	1.8	9.0		
15				.39	1.6	35	26	32	1.7	8.8		
16				.44	1.7	35	26	40	1.6	8.8		
17				.46	1.8	31	28	48	1.5	24		
18				.53	1.6	27	35	48	1.5	36		
19				.91	1.5	28	31	47	1.5	35		
20				.89	1.4	24	25	47	1.4	35		
21				.96	1.5	15	24	48	1.5	36		
22				.98	1.4	15	22	50	1.4	36		
23				1.2	1.6	16	21	42	1.4	36		
24				1.1	3.3	16	21	32	1.5	35		
25				1.2	2.6	16	22	32	1.5	15		
26				1.0	1.7	15	26	31	1.5	.59		
27				1.3	1.6	15	27	30	5.1	.53		
28				1.4	1.4	15	26	30	10	.52		
29				1.2	1.5	15	25	29	10	.34		
30				1.2	2.1	30	25	29	9.8	.50		
31				---	14	---	26	29	---	.50		
TOTAL				21.13	72.0	458.7	974	1040	369.7	440.08		
MEAN				.70	2.32	15.3	31.4	33.5	12.3	14.2		
MAX				1.4	14	35	49	50	31	36		
MIN				.21	1.4	2.4	21	23	1.4	.34		
AC-FT				42	143	910	1930	2060	733	873		

THE SEASON APRIL TO OCTOBER

AC-FT

6,700

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

50511000 BELLY RIVER NEAR MOUNTAIN VIEW, ALBERTA

(International gaging station)

LOCATION.--Lat 49°06'00", long 113°41'48", in NE¼ sec.5, T.2, R.28 W., fourth meridian, in Alberta, Hydrologic Unit 10010001, on right bank 2 mi (3 km) downstream from intake of Mountain View Irrigation District Canal, 5 mi (8 km) southwest of Mountain View, and 7 mi (11 km) north of international boundary.

DRAINAGE AREA.--121 mi² (313 km²).

PERIOD OF RECORD.--November 1911 to September 1978 (discontinued). Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 4,342.88 ft (1,323.710 m) above mean sea level (Irrigation Surveys datum). November 1911 to Apr. 6, 1949, nonrecording gage at site 20 ft (6 m) upstream at same datum. Apr. 7, 1949, to June 19, 1975, water-stage recorder at present site at datum 2.02 ft (0.616 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Natural flow of stream affected by diversion to Mountain View Irrigation District Canal 2 mi (3 km) upstream from station (see preceding page).

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

AVERAGE DISCHARGE.--22 years (1912-34), prior to operation of Mountain View Irrigation District Canal, 327 ft³/s (9.261 m³/s), 236,700 acre-ft/yr (292 hm³/yr); 44 years (1934-78), 308 ft³/s (8.723 m³/s), 223,100 acre-ft/yr (275 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,400 ft³/s (464 m³/s) June 8, 1964, gage height, 11.40 ft (3.475 m), from floodmarks, datum then in use; maximum gage height, 12.13 ft (3.697 m) June 20, 1975, from floodmarks; minimum discharge, 0.50 ft³/s (0.014 m³/s) Oct. 22, 1963, result of upstream diversion.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,700 ft³/s (48.1 m³/s) June 6, gage height, 5.25 ft (1.600 m); minimum daily, 31 ft³/s (0.878 m³/s) Mar. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	104	88	58	32	35	278	504	870	981	431	257
2	96	127	86	56	33	33	275	549	773	955	413	252
3	94	124	84	53	34	31	252	640	818	987	377	243
4	92	118	80	51	48	34	224	681	1000	944	350	241
5	91	117	73	59	70	38	207	626	1300	891	337	245
6	88	115	65	69	72	43	187	556	1650	875	335	239
7	89	119	58	73	70	46	171	487	1570	850	328	241
8	95	101	53	79	70	48	163	447	1500	826	329	308
9	97	97	51	82	65	48	151	452	1650	765	336	330
10	90	91	56	80	58	46	145	569	1590	721	344	318
11	88	89	80	77	48	43	156	669	1330	710	329	321
12	84	88	106	72	40	39	155	665	1100	670	312	460
13	83	88	121	64	37	37	150	600	984	607	299	446
14	77	86	121	58	35	34	152	673	986	578	288	464
15	84	86	121	51	37	33	152	915	967	578	270	467
16	93	80	121	44	40	33	148	1060	865	606	267	504
17	89	72	112	40	43	46	143	963	774	699	307	457
18	88	65	104	41	46	41	140	821	804	974	324	415
19	87	64	93	48	49	38	137	736	872	1240	313	377
20	83	61	86	53	52	46	134	744	822	1040	322	344
21	82	61	93	61	53	51	142	896	804	811	345	308
22	86	61	80	61	53	49	136	1200	848	695	373	289
23	93	73	69	58	52	51	136	1320	928	628	473	277
24	96	82	59	53	51	55	134	1170	973	588	482	297
25	105	86	59	48	48	62	132	911	994	572	453	323
26	101	86	59	43	44	84	137	741	949	563	401	341
27	103	86	59	38	41	101	177	650	925	552	356	345
28	100	86	65	37	38	108	297	599	925	539	321	338
29	101	88	64	34	---	132	428	627	951	502	296	311
30	102	85	61	33	---	168	475	643	1010	464	277	267
31	106	---	59	32	---	249	---	928	---	454	262	---
TOTAL	2860	2691	2486	1706	1359	1907	5714	23042	31532	22872	10650	10065
MEAN	92.3	89.7	80.2	55.0	48.5	61.5	190	743	1051	738	344	336
MAX	106	127	121	82	72	249	475	1320	1650	1240	482	504
MIN	77	61	51	32	32	31	132	447	773	454	262	239
AC-FT	5670	5340	4930	3360	2700	3780	11350	45700	62540	45370	21120	19960
CAL YR 1977	TOTAL	54893	MEAN 150	MAX 629	MIN 11	AC-FT 108900						
WTR YR 1978	TOTAL	116884	MEAN 320	MAX 1650	MIN 31	AC-FT 231800						

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

SASKATCHEWAN RIVER BASIN

05013000 WATERTON RIVER NEAR WATERTON PARK, ALBERTA

(International gaging station)

LOCATION.--Lat 49°06'47", long 113°50'18", in NE¼ sec.8, T.2, R.29 W., fourth meridian, in Alberta, Hydrologic Unit 10010001, on right bank 300 ft (91 m) downstream from highway bridge, 0.3 mi (0.5 km) upstream from Crooked Creek, and 5.3 mi (8.5 km) northeast of Waterton Park.

DRAINAGE AREA.--238 mi² (616 km²).

PERIOD OF RECORD.--June to September 1908, April to November 1909, April to November 1910, May to October 1911, March 1912 to May 1931, September 1932, June to August 1933, April 1948 to September 1978 (discontinued). Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1908(M).

GAGE.--Water-stage recorder. Datum of gage is 4,154.19 ft (1,266.197 m) above mean sea level (Irrigation Surveys datum). Prior to Feb. 7, 1917, nonrecording gages at various sites and datums within 200 ft (61 m) of present site. Feb. 7, 1917, to Aug. 26, 1933, and Mar. 19, 1948, to Mar. 18, 1949, nonrecording gage on downstream side of old bridge 200 ft (61 m) upstream at present datum.

REMARKS.--Records good. No regulation or diversions.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

AVERAGE DISCHARGE.--48 years (1912-30, 1948-78), 672 ft³/s (19.03 m³/s), 38.34 in/yr (974 mm/yr), 486,900 acre-ft/yr (600 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,700 ft³/s (728 m³/s) June 9, 1964, gage height, 9.22 ft (2.810 m); minimum observed, 14 ft³/s (0.40 m³/s) Feb. 4, 1955, caused by temporary storage behind ice jam upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,130 ft³/s (117 m³/s) June 10, gage height, 3.95 ft (1.204 m); minimum, 39 ft³/s (1.10 m³/s) Nov. 9, gage height, 0.54 ft (0.165 m), result of freezeup upstream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	257	179	153	96	81	65	333	860	1720	2210	638	426
2	254	160	150	141	85	65	381	1010	1750	2160	607	401
3	252	162	155	120	86	68	395	1180	1870	2150	570	380
4	252	154	152	122	91	67	387	1320	2170	2050	530	367
5	250	156	146	127	92	64	406	1370	2650	1980	497	357
6	250	186	146	136	93	65	373	1340	3340	1920	473	359
7	247	171	164	130	88	69	368	1240	3710	1820	436	364
8	259	156	156	127	85	71	369	1130	3760	1740	411	412
9	242	119	148	124	82	69	349	1100	3980	1650	395	374
10	230	234	169	119	81	69	342	1210	3910	1540	380	366
11	226	178	182	121	80	71	348	1410	3460	1450	360	385
12	234	159	189	123	80	68	325	1510	2970	1310	341	457
13	222	151	197	114	79	69	318	1440	2630	1190	328	525
14	201	133	195	108	78	66	324	1460	2510	1070	322	580
15	204	126	193	104	78	65	327	1790	2490	1020	323	643
16	207	125	205	104	79	70	329	2140	2290	993	318	678
17	205	165	198	103	81	80	342	2230	2060	1030	333	670
18	203	127	185	102	78	69	324	2100	1890	1170	349	660
19	191	112	200	102	76	68	313	1970	1950	1410	347	655
20	172	104	260	104	73	72	308	1920	1960	1440	350	650
21	166	103	212	104	71	69	319	2100	1920	1340	364	609
22	176	100	168	106	74	67	328	2470	1980	1220	388	586
23	177	98	151	99	76	68	304	2720	2120	1120	430	538
24	181	95	159	93	73	62	288	2710	2250	1030	456	529
25	171	119	172	96	71	92	283	2460	2320	924	492	527
26	169	164	181	88	70	108	281	2070	2270	862	507	515
27	169	166	145	85	69	98	325	1760	2160	825	493	522
28	165	164	131	84	67	113	456	1550	2110	760	477	523
29	159	178	112	84	---	141	597	1440	2130	728	453	496
30	155	158	114	82	---	188	734	1420	2210	693	442	484
31	164	---	114	81	---	272	---	1530	---	671	433	---
TOTAL	6410	4402	5202	3329	2217	2668	10876	51960	74540	41486	13243	15038
MEAN	207	147	168	107	79.2	86.1	363	1676	2485	1338	427	501
MAX	259	234	260	141	93	272	734	2720	3980	2210	638	678
MIN	155	95	112	81	67	64	281	860	1720	671	318	357
CFSM	.87	.62	.71	.45	.33	.36	1.53	7.04	10.4	5.62	1.79	2.11
IN.	1.00	.69	.81	.52	.35	.42	1.70	8.12	11.65	6.48	2.07	2.35
AC-FT	12710	8730	10320	6600	4400	5290	21570	103100	147900	82290	26270	29830
CAL YR 1977 TOTAL	128024				1780	53	1.48	20.01	AC-FT	253900		
WTR YR 1978 TOTAL	231371				3980	64	2.66	36.16	AC-FT	458900		

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

05014000 GRINNELL CREEK NEAR MANY GLACIER, MT

LOCATION.--Lat 48°46'14", long 113°41'53", in SE¼ sec.21, T.35 N., R.16 W., (unsurveyed), Glacier National Park, Hydrologic Unit 10010002, on right bank 600 ft (183 m) upstream from trail crossing, 900 ft (274 m) downstream from Grinnell Lake, 0.3 mi (0.5 km) upstream from mouth, 2.6 mi (4.2 km) southwest of Many Glacier, and 13.5 mi (21.7 km) southwest of Babb.

DRAINAGE AREA.--3.32 mi² (8.60 km²).

PERIOD OF RECORD.--August 1949 to September 1978 (discontinued). No winter record since 1976.

GAGE.--Water-stage recorder. Altitude of gage is 4,920 ft (1,500 m), from topographic map. Prior to Oct. 12, 1949, nonrecording gages at various sites and datums.

REMARKS.--Records good. No regulation or diversion. Since 1964, some inflow from Cataract Creek has entered above gage during highwater periods in some years.

AVERAGE DISCHARGE.--27 years, (1950-76), 26.1 ft³/s (0.739 m³/s), 106.76 in/yr (2,711.7 mm/yr), 18,910 acre-ft/yr (23.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 540 ft³/s (15.3 m³/s) June 19, 1975, gage height, 4.90 ft (1.494 m), from rating curve extended above 219 ft³/s (6.20 m³/s) on basis of 1964 slope-area measurement of peak flow; minimum, probably less than 0.20 ft³/s (0.006 m³/s) at times in winter periods.

EXTREMES FOR CURRENT SEASON.--Peak discharges above base of 100 ft³/s (2.83 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)		Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)	
May 22	0300	165	4.67	2.60	0.792	July 18	1630	144	4.08	2.45	0.747
June 6	0400	*203	5.75	*2.86	0.872	Aug. 23	1030	119	3.37	2.29	0.698
July 1	0230	151	4.28	2.50	0.762						

Minimum discharge, 5.0 ft³/s (0.14 m³/s) Oct. 24, gage height, 0.88 ft (0.268 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15							40	32	145	49	34
2	14							45	33	135	41	32
3	12							53	48	115	37	34
4	10							41	84	87	39	34
5	9.3							32	138	83	43	34
6	8.5							26	184	82	44	30
7	8.9							21	140	80	44	32
8	9.3							18	154	84	46	51
9	11							23	187	70	46	45
10	9.7							47	131	79	45	36
11	8.5							48	88	75	42	33
12	7.4							37	72	61	37	35
13	8.5							29	77	69	34	31
14	10							41	90	80	32	29
15	9.7							74	85	81	34	33
16	9.3							76	61	82	47	37
17	9.3							52	53	90	53	28
18	8.1							40	82	131	45	22
19	8.1							37	97	103	41	19
20	7.8							48	71	66	50	16
21	7.1							94	84	56	57	14
22	6.8							154	105	53	52	12
23	5.7							96	115	55	105	18
24	5.4							56	120	58	71	26
25	8.1							38	127	61	44	26
26	10							29	124	57	34	25
27	8.5							25	127	58	29	23
28	7.8							32	127	55	29	23
29	9.3							37	134	49	29	20
30	11							34	140	48	27	18
31	12							34	---	48	29	---
TOTAL	286.1							1457	3110	2396	1355	850
MEAN	9.23							47.0	104	77.3	43.7	28.3
MAX	15							154	187	145	105	51
MIN	5.4							18	32	48	27	12
AC-FT	567							2890	6170	4750	2690	1690

SASKATCHEWAN RIVER BASIN

05014500 SWIFTCURRENT CREEK AT MANY GLACIER, MT

(Hydrologic bench-mark station)

LOCATION.--Lat 48°47'57", long 113°39'21", in SE¼ sec.11, T.35 N., R.16 W., (unsurveyed), Glacier County, Hydrologic Unit 10010002, Glacier National Park, on right bank 100 ft (30 m) upstream from outlet of Swiftcurrent Lake at Many Glacier, and 11 mi (18 km) southwest of Babb.

DRAINAGE AREA.--30.9 mi² (80.0 km²).

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 (1,486.443 m), above mean sea level. Prior to May 23, 1916, nonrecording gage on left bank of lake opposite present gage, May 23, 1916, to June 15, 1918, nonrecording gage at present site, and June 16, 1918, to Sept. 30, 1975, water-stage recorder at present site, all at datum 9.45 ft (2.880 m) lower.

REMARKS.--Records good. No regulation or diversion.

AVERAGE DISCHARGE.--22 years, (1917-19, 1958-78), 146 ft³/s (4.135 m³/s), 64.16 in/yr (1,630 mm/yr), 105,800 acre-ft/yr (130 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,700 ft³/s (190 m³/s) June 8, 1964, gage height, 10.00 ft (3.048 m) from floodmarks; from rating curve extended above 1,100 ft³/s (31.2 m³/s) on basis of computation of peak flow over dam; minimum, no flow Nov. 14-16, 1976 (result of pumping operation).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 680 ft³/s (19.3 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 22	1515	866 24.5	4.26 1.298	July 1	unknown	829 23.5	4.20 1.280
June 6	0930	*947 26.8	*4.46 1.359				

Minimum discharge, 9.0 ft³/s (0.25 m³/s) Mar. 17, gage height, 1.42 ft (0.433 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	64	47	18	16	11	205	262	273	700	177	122
2	65	65	49	16	16	11	164	308	270	700	161	112
3	64	62	61	17	16	10	128	403	345	650	137	112
4	61	65	52	18	15	9.6	103	352	523	550	125	112
5	58	75	45	19	15	10	91	259	705	470	126	112
6	55	75	45	20	15	11	80	193	904	420	133	110
7	53	61	34	19	16	10	72	151	760	390	130	105
8	62	56	29	20	16	11	64	126	740	370	132	173
9	55	49	37	21	15	12	57	140	849	350	132	194
10	56	47	44	21	15	11	54	286	756	330	133	170
11	50	49	50	20	14	11	66	388	559	320	124	151
12	53	52	50	18	14	11	76	315	454	310	113	160
13	46	46	47	18	14	12	76	240	436	300	105	160
14	49	51	50	18	13	11	74	317	499	300	97	171
15	52	75	50	18	13	12	69	566	504	310	94	190
16	54	76	46	17	12	11	65	614	409	340	126	231
17	50	56	42	17	11	10	60	490	339	380	161	201
18	51	45	40	17	10	11	55	369	395	450	190	173
19	49	39	36	18	10	12	52	310	513	500	170	148
20	49	34	29	18	11	12	52	365	411	430	211	124
21	48	29	26	17	11	13	58	551	403	350	265	114
22	45	29	25	17	11	15	55	825	482	300	258	106
23	46	29	24	17	11	15	52	708	539	260	397	120
24	39	30	23	15	12	18	49	481	570	230	399	151
25	50	27	22	14	12	19	48	332	574	220	288	176
26	54	60	21	15	12	23	53	243	563	230	213	174
27	51	75	21	17	12	39	62	197	537	231	170	161
28	54	74	20	17	11	59	183	211	550	222	144	142
29	57	65	21	17	---	67	268	261	600	199	129	136
30	62	55	21	16	---	133	273	265	650	191	117	120
31	65	---	20	16	---	217	---	286	---	176	113	---
TOTAL	1669	1677	1127	546	370	857.6	2784	10814	16112	11169	5290	4476
MEAN	53.8	55.9	36.4	17.6	13.2	27.7	92.8	349	537	360	171	149
MAX	65	65	61	21	16	217	273	825	904	700	399	231
MIN	39	27	20	14	10	9.6	48	126	270	176	94	105
AC-FT	3510	3330	2240	1080	734	1700	5520	21450	31960	22150	10490	8880

CAL YR 1977	TOTAL	37213.8	MEAN 102	MAX 510	MIN 9.6	AC-FT 73810
WTR YR 1978	TOTAL	56891.6	MEAN 156	MAX 904	MIN 9.6	AC-FT 112800

05015500 LAKE SHERBURNE AT SHERBURNE, MT

(International gaging station)

LOCATION.--Lat 48°49'42", long 113°31'16", in SE4SE4SE4 sec.35, T.36 N., R.15 W., Glacier County, Hydrologic Unit 10010002, in gatehouse at dam on Swiftcurrent Creek, 4.5 mi (7.2 km) southwest of Babb.

DRAINAGE AREA.--63.7 mi² (165 km²).

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.--WSP 1338: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,709.45 ft (1,435.440 m) above mean sea level. Prior to May 7, 1931, nonrecording gage at present site, and May 8, 1931, to Sept. 30, 1974, water-stage recorder at present site and datum.

REMARKS.--Reservoir is formed on 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 1919. The following capacity figures are from capacity table effective Oct. 1, 1975; see previous reports for superseded figures. Capacity, 66,400 acre-ft (81.9 hm³) between gage height 26 ft (7.9 m), 6 ft (1.8 m) above lowest outlet gate sill, and 88.00 ft (26.822 m), spillway crest. Streambed above gates prevents withdrawal of storage to sill elevation. Dead storage, 1,590 acre-ft (1.96 hm³) below gage height, 26.00 ft (7.925 m). Figures given herein represent usable contents. Water is used for irrigation on Milk River project of Bureau of Reclamation.

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, 66,780 acre-ft (82.3 hm³) July 14, 1972 (gage height, 88.34 ft or 26.926 m), by capacity table dated Dec. 1, 1929; by capacity table dated Oct. 1, 1975, maximum contents, 68,030 acre-ft (83.9 hm³) July 14, 1976 (gage height, 88.02 ft or 26.828 m); no usable contents at times.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 67,600 acre-ft (83.4 hm³) July 1, gage height, 87.75 ft (26.746 m); minimum, 12,580 acre-ft (15.5 hm³) Oct. 1, gage height, 42.53 ft (12.963 m).

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Gage height (feet)	Contents (acre-feet)	Change in Contents (acre-feet)
Sept. 30	42.53	12,580	--
Oct. 31	47.99	17,400	+ 4,820
Nov. 30	52.96	22,180	+ 4,780
Dec. 31	56.98	26,350	+ 4,170
CAL YR 1977			+12,990
Jan. 31	58.97	28,510	+ 2,160
Feb. 28	60.25	29,920	+ 1,410
Mar. 31	62.94	32,970	+ 3,050
Apr. 30	70.18	41,660	+ 3,690
May 31	75.40	48,760	+ 7,100
June 30	87.75	67,600	+18,840
July 31	84.96	63,170	- 4,430
Aug. 31	69.65	40,990	-22,180
Sept. 30	47.55	16,990	-24,000
WTR YR 1978			+ 4,410

SASKATCHEWAN RIVER BASIN

05016000 SWIFTCURRENT CREEK AT SHERBURNE, MT

(International gaging station)

LOCATION.--Lat 48°49'49", long 113°30'59", in NW¼SW¼SW¼ sec.36, T.36 N., R.15 W., Glacier County, Hydrologic Unit 10010002, on left bank 1,200 ft (366 m) downstream from outlet of Lake Sherburne Dam at Sherburne and 4.2 mi (6.8 km) southwest of Babb.

DRAINAGE AREA.--64.3 mi² (167 km²).

PERIOD OF RECORD.--July 1912 to November 1915 (no winter records), March 1916 to October 1923, May 1924 to current year (no winter records). 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 (1,441.783 m) above mean sea level. Prior to Aug. 10, 1920, nonrecording gages at two sites within 1,000 ft (305 m) 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 and datum.

REMARKS.--Records good. Flow regulated by Lake Sherburne (see preceding page). No diversions.

COOPERATION.--This is one of a number of stations which are maintained jointly by the United States and Canada.

AVERAGE DISCHARGE.--7 years (1916-23), 199 ft³/s (5.636 m³/s), 144,200 acre-ft/yr (178 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,420 ft³/s (68.5 m³/s) June 25, 1969, gage height, 7.63 ft (2.326 m); maximum gage height, 7.75 ft (2.362 m) June 21, 1975; no flow at times when gates in dam were closed.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 992 ft³/s (28.1 m³/s) June 9, gage height, 5.98 ft (1.823 m); minimum daily, 0.03 ft³/s (<0.001 m³/s) Feb. 20-22.

DISCHARGE, IN CUBIC FEET PER SEC,ND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.92	.23			---	.07	.65	225	502	739	546	703
2	.61	---			---	.07	.55	309	397	739	544	696
3	.53	---			---	.07	.50	311	240	738	541	690
4	.50	---			---	.06	.50	311	180	738	539	683
5	.51	---			---	.06	.45	312	280	618	536	677
6	.53	---			---	.05	.33	312	594	542	534	671
7	.64	---			---	.06	.29	312	945	542	532	665
8	.77	---			---	.17	.29	311	978	543	527	657
9	.97	---			---	.12	.29	225	984	432	525	649
10	.94	---			---	.09	.37	171	985	365	523	642
11	.83	---			---	.08	.51	172	763	368	520	637
12	.56	---			---	.08	.41	172	405	436	518	633
13	.36	---			---	.08	.40	172	245	488	516	625
14	.45	---			---	.08	.38	174	185	485	513	619
15	.46	---			.20	.08	.32	175	185	484	509	614
16	.49	---			---	.08	.32	274	185	484	507	607
17	.49	---			---	.20	.28	334	186	485	505	601
18	.49	---			---	.29	.28	548	186	487	504	596
19	.59	---			---	.20	.31	678	187	598	502	589
20	.64	---			.03	.26	.40	582	188	661	501	582
21	.59	---			.03	.33	.44	507	189	660	655	574
22	.42	---			.03	.17	.39	510	189	533	751	567
23	.33	---			.08	.26	.38	735	191	443	747	558
24	.32	---			.07	.29	88	925	192	443	745	551
25	.56	---			.07	.29	113	959	193	443	742	544
26	.51	---			.07	.60	79	886	333	443	737	538
27	.39	---			.07	.55	80	839	555	442	732	531
28	.53	---			.07	.65	81	834	566	484	727	524
29	.55	---			---	.70	82	519	739	550	721	517
30	.55	---			---	.76	82	234	739	548	715	510
31	.34	---			---	.82	---	353	---	546	705	---
TOTAL	17.37	---			---	7.67	614.04	13381	12686	16507	18419	18250
MEAN	.56	---			---	.25	20.5	432	423	532	594	608
MAX	.97	---			---	.82	113	959	985	739	751	703
MIN	.32	---			---	.05	.28	171	180	365	501	510
AC-FT	34	---			---	15	1220	26540	25160	32740	36530	36200

† Result of discharge measurement.

LOCATION.--Lat 48°50'00", long 113°25'08", in NW¼NW¼SE¼ sec.34, T.36 N., R.14 W., Glacier County, Hydrologic Unit 10010002, on right bank 0.7 mi (1.1 km) upstream from outlet of Lower St. Mary Lake and 2.0 mi (3.2 km) southeast of Babb.

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" 1901-2, and as "below Swift-current Creek, at Babb" 1910-15. Records for April 1902 to September 1915, May 1929 to September 1950 at sites about 1.5 mi (2.4 km) downstream not equivalent because flow of Swiftcurrent Creek not included 1905-15 and because diversion by St. Mary Canal not included 1929-50.

GAGE.--Water-stage recorder. Datum of gage is 4,468.13 ft (1,361.886 m) above mean sea level. Prior to Oct. 1, 1915, water-stage recorder or nonrecording gages at several sites about 3.8 mi (6.1 km) downstream at different datums. Oct. 1, 1915 to Sept. 30, 1925, water-stage recorder or nonrecording gages at several sites within 1.5 mi (2.4 km) downstream at different datums.

REMARKS.--Records good. Entire flow of Swiftcurrent Creek below Lake Sherburne is diverted into Lower St. Mary Lake above station. Flow of Swiftcurrent Creek regulated by Lake Sherburne (see p. 31) since 1919. Since October 1950, monthly discharge and runoff figures adjusted for change in contents (adjusted for evaporation since October 1961) in Lake Sherburne.

AVERAGE DISCHARGE.--44 years (1901-2, 1910-25, 1950-78), 792 ft³/s (22.43 m³/s), 573,800 acre-ft/yr (707 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,500 ft³/s (467 m³/s) June 9, 1964, gage height, 12.96 ft (3.950 m), from high-water mark in well, from rating curve extended above 6,100 ft³/s (173 m³/s) on basis of slope-area measurement of peak flow; minimum, 26 ft³/s (0.74 m³/s) Jan. 5, 1953, Jan. 8, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,120 ft³/s (117 m³/s) June 10, gage height, 5.82 ft (1.774 m); minimum, 55 ft³/s (1.56 m³/s) Mar. 17, gage height, 0.67 ft (0.204 m).

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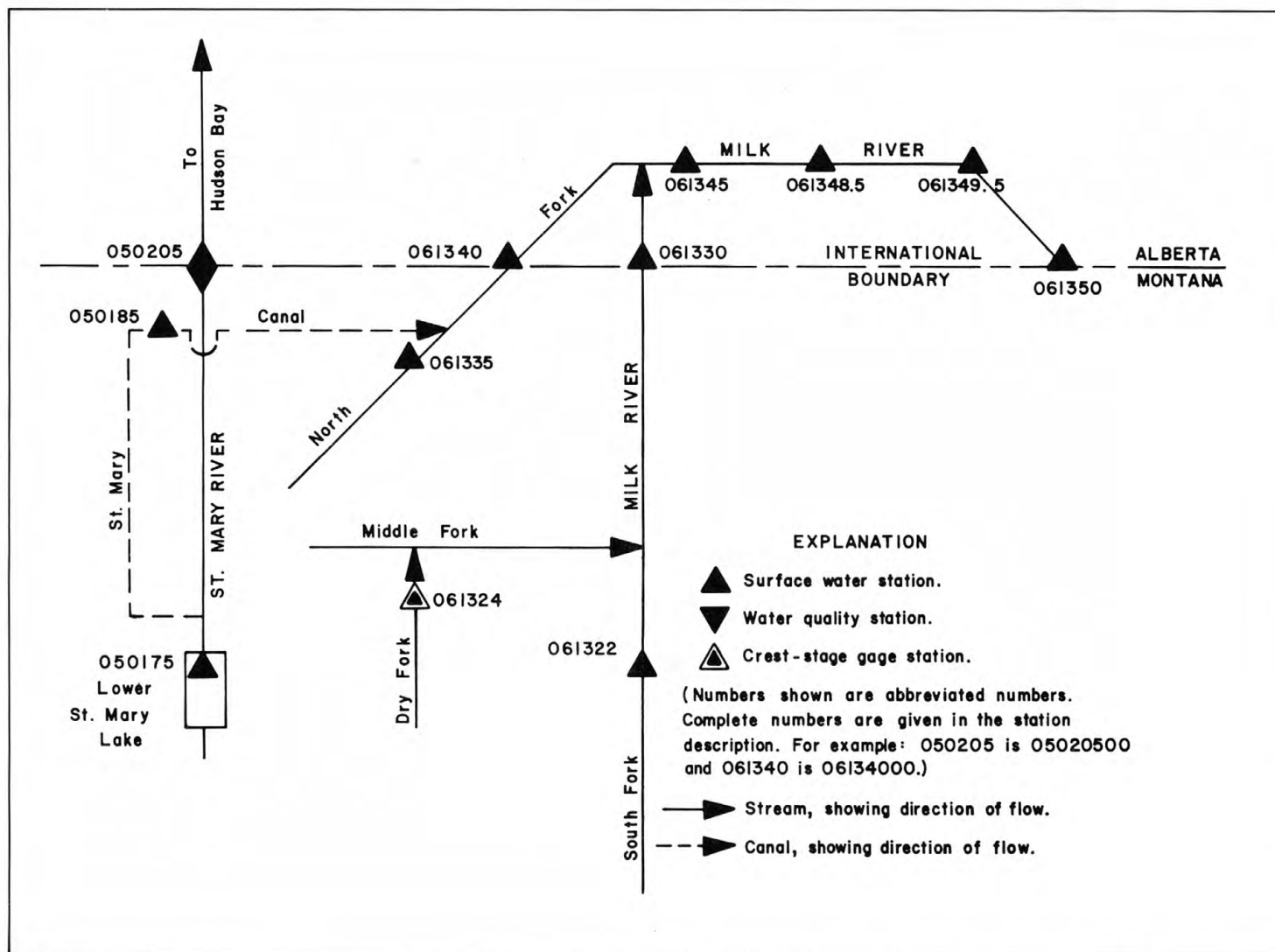


Figure 7. Schematic diagram showing diversion from St. Mary River in Part 5 to Milk River in Part 6.

05018500 ST. MARY CANAL AT ST. MARY CROSSING, NEAR BABB, MT

(International gaging station)

LOCATION.--Lat 48°56'50", long 113°22'28", in NE¼SW¼SW¼ sec.19, T.37 N., R.13 W., Glacier County, Hydrologic Unit 10010002, on left bank 50 ft (15 m) upstream from inlet of St. Mary siphon, 6.6 mi (10.6 km) northeast of Babb, and 9 mi (15 km) 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. Altitude of gage is 4,450 ft (1,360 m), from topographic map. Prior to June 14, 1951, water-stage recorder at several sites 0.8 mi (1.3 km) 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 east of Havre. Some water may be returned to St. Mary River at Kennedy Creek and St. Mary crossings.

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 ft³/s (21.7 m³/s) June 19, 28, 1936; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				.00	.00	202	654	519	643	.00		
2				.00	.00	195	648	514	639	.00		
3				.00	.00	190	651	511	639	.00		
4				.00	.00	189	649	509	638	.00		
5				.00	.00	187	648	509	610	.00		
6				.00	.00	191	643	509	461	.00		
7				.00	.00	195	644	506	240	.00		
8				.00	.00	196	639	504	112	.00		
9				.00	.00	246	633	505	11	.00		
10				.00	.00	344	596	504	8.0	.00		
11				.00	.00	346	526	504	2.6	.00		
12				.00	.00	389	520	505	.00	.00		
13				.00	.00	484	503	505	.00	.00		
14				.00	.00	481	394	504	.00	.00		
15				.00	.00	486	258	503	.00	.00		
16				.00	.00	480	254	505	.00	.00		
17				.00	.00	477	257	510	.00	.00		
18				.00	.00	475	261	507	.00	.00		
19				.00	.00	479	300	505	.00	.00		
20				.00	.00	474	417	508	.00	.00		
21				.00	.00	475	491	540	.00	.00		
22				.00	.10	488	491	619	.00	.00		
23				.00	96	534	485	645	.00	.00		
24				.00	197	575	494	650	.00	.00		
25				.00	201	583	523	654	.00	.00		
26				.00	199	596	523	653	.00	.00		
27				.00	197	623	523	654	.00	.00		
28				.00	195	637	521	651	.00	.00		
29				.00	194	658	522	651	.00	.00		
30				.00	192	660	522	647	.00	.00		
31				---	203	---	526	644	---	.00		
TOTAL				.00	1674.10	12535	15716	17154	4003.60	.00		
MEAN				.000	54.0	418	507	553	133	.000		
MAX				.00	203	660	654	654	643	.00		
MIN				.00	.00	187	254	503	.00	.00		
AC-FT				.00	3320	24860	31170	34020	7940	.00		

THE SEASON APRIL TO OCTOBER AC-FT 101,300

Note.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

SASKATCHEWAN RIVER BASIN

05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'12", long 113°18'48", in SW¼ sec.5, T.1, R.25 W., fourth meridian, in Alberta, Hydrologic Unit 10010002, on right bank 0.4 mi (0.6 km) north of international boundary, 2.5 mi (4.0 km) downstream from Boundary Creek, 7.5 mi (12.1 km) southwest of Kimball, Alberta, and 11.5 mi (18.5 km) northeast of Babb, Mt.

DRAINAGE AREA.--469 mi² (1,215 km²).

WATER-DISCHARGE RECORDS

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, 1908-1212. WSP 1508: 1902, 1908-9.

GAGE.--Water-stage recorder. Altitude of gage is 4,120 ft (1,260 m), from topographic map. Prior to Jan 1, 1913, nonrecording gages at two sites within 0.3 mi (0.5 km) of present site at different datums. Jan. 1, 1913, to Oct. 25, 1944, water-stage recorder at several sites about 8 mi (13 km) downstream from present site at various datums. Oct. 26, 1955, to Mar. 23, 1965, water-stage recorder at site 100 ft (30 m) upstream at datum 2 ft (0.6 m) higher.

REMARKS.--Records good except those for winter months, 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 Swift-current Creek.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

AVERAGE DISCHARGE.--14 years (1902-16), prior to operation of St. Mary Canal, 1,003 ft³/s (28.40 m³/s), 726,700 acre-ft/yr (896 hm³/yr); 62 years (1916-78), 704 ft³/s (19.97 m³/s), 510,800 acre-ft/yr (630 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,000 ft³/s (1,133 m³/s) June 5, 1908, gage height, 12.75 ft (3.886 m), from floodmarks, site and datum then in use, from rating curve extended above 6,000 ft³/s (170 m³/s); minimum daily, 16 ft³/s (0.45 m³/s) Nov. 29, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,090 ft³/s (116 m³/s) June 10, gage height, 7.11 ft (2.167 m); minimum daily, 83 ft³/s (2.35 m³/s) Mar. 16, 17.

DISCHARGE, IN CUBIC FEET PER SECND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	318	176	202	151	99	92	275	846	2100	2420	1070	771
2	305	195	202	143	101	90	290	1040	1940	2430	1050	741
3	293	183	207	133	102	90	315	1220	1800	2420	988	706
4	278	172	214	145	104	89	338	1370	1800	2380	926	684
5	278	181	219	155	105	89	355	1450	2020	2370	879	701
6	269	188	225	161	107	88	368	1520	2530	2250	827	682
7	266	183	232	157	107	88	376	1520	3090	2160	802	1120
8	269	174	241	155	105	87	384	1480	3520	2060	765	1310
9	257	188	246	153	102	87	380	1430	3910	1900	747	1350
10	254	188	252	149	102	86	380	1400	4010	1740	730	1330
11	249	179	254	145	99	86	404	1420	3830	1670	695	1360
12	249	179	257	143	101	86	399	1450	3150	1550	672	1520
13	235	170	260	141	101	86	384	1420	2600	1500	607	1490
14	227	165	257	139	99	84	391	1500	2280	1560	639	1440
15	219	157	252	135	101	84	387	1730	2190	1640	608	1420
16	217	153	246	131	105	83	387	1970	2090	1630	597	1440
17	212	147	235	128	105	83	387	2140	1920	1690	667	1410
18	209	141	225	124	104	84	338	2240	1790	1930	684	1370
19	197	143	219	122	102	86	331	2400	1810	2080	656	1360
20	190	144	209	119	101	90	353	2510	1780	1890	661	1320
21	188	146	202	117	99	95	399	2500	1730	1730	650	1300
22	190	147	192	115	98	101	416	2650	1730	1610	706	1260
23	183	143	183	112	96	110	412	2740	1750	1430	899	1210
24	179	147	176	109	96	124	399	2960	1810	1280	1000	1180
25	190	153	172	107	95	145	416	3090	1960	1180	1050	1190
26	188	172	165	105	93	170	437	2930	2070	1120	1050	1190
27	181	185	159	105	93	195	513	2610	2140	1080	1010	1180
28	174	190	153	104	92	214	684	2370	2170	1050	960	1180
29	170	197	149	102	---	219	718	2220	2230	1050	899	1160
30	174	202	155	102	---	246	759	1920	2350	1050	853	1150
31	185	---	151	99	---	281	---	2000	---	1070	802	---
TOTAL	6993	5086	6511	4006	2814	3638	12375	60046	70100	52920	25209	35725
MEAN	226	170	210	129	101	117	413	1937	2337	1707	813	1191
MAX	318	202	260	161	107	281	759	3090	4010	2430	1070	1520
MIN	170	141	149	99	92	83	275	846	1730	1050	597	684
AC-FT	13870	10090	12910	7950	5580	7220	24550	119100	139000	105000	50000	70860
CAL YR 1977	TOTAL	134348	MEAN	368	MAX	1350	MIN	71	AC-FT	266500		
WTR YR 1978	TOTAL	285423	MEAN	782	MAX	4010	MIN	83	AC-FT	566100		

SASKATCHEWAN RIVER BASIN

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05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 1977 to September 1978.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: February to September 1978.

WATER TEMPERATURES: February to September 1978.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 265 micromhos Mar. 27; minimum daily, 143 micromhos July 1, 16.

WATER TEMPERATURES: Maximum daily, 20.5°C July 25, 27, Aug. 11; minimum daily, 0.0°C Feb. 9, 11, 28.

WATER-QUALITY DATA, DECEMBER 1977 TO SEPTEMBER 1978

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (MMU CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	
DATE	TIME											
DEC 28...	1545	153	0	183	8.0	2.5	.0	1	--	12.3	98	
FEB 07...	1020	107	0	182	8.3	-5	.5	1	--	11.7	94	
MAR 07...	1345	88	1	191	7.7	8.5	.0	1	--	12.3	98	
29...	1230	209	1	257	8.2	20.0	4.5	8	--	11.7	102	
MAY 01...	1220	846	1	211	7.7	15.5	9.5	30	--	10.4	105	
31...	1400	2050	53	195	7.9	8.5	7.0	--	60	10.3	99	
JUN 26...	1315	2030	1	152	7.6	23.0	16.5	--	4.0	8.5	101	
JUL 26...	1430	1120	1	189	8.2	31.0	20.5	--	.80	7.6	97	
AUG 30...	1325	846	1	167	8.1	21.0	15.0	--	1.6	8.6	99	
		COLI- FORM, FECAL, 0.7 UM-MF (CCLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (CULS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
DATE												
DEC 28...	--	25	100	13	27	8.7	1.4	.1	.4	110		0
FEB 07...	K2	41	110	7	26	9.9	1.6	.1	.4	120	--	
MAR 07...	<1	K12	110	9	27	9.7	1.8	.1	.4	120		0
29...	<1	S1	140	7	34	13	5.6	.2	1.1	160		0
MAY 01...	K3	K12	110	4	28	10	1.9	.1	.4	130		0
31...	27	39	95	6	24	8.5	2.4	.0	.5	--	--	--
JUN 26...	K11	59	80	9	20	7.3	1.2	.1	.3	--	--	--
JUL 26...	K1	K4	80	10	20	7.4	.9	.0	.2	--	--	--
AUG 30...	K12	K5	85	9	22	7.4	3.1	.1	.7	--	--	--
		ALKA- LITY (MG/L AS CAC03)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FI)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
DATE												
DEC 28...	90	1.8	7.7	.5	.1	2.5	94	103	.13	38.8		.06
FEB 07...	98	1.0	8.6	.5	.1	2.5	98	109	.13	28.3		.09
MAR 07...	98	3.8	8.9	.4	.1	2.7	102	110	.14	24.2		.07
29...	130	1.6	16	.9	.1	3.4	141	153	.19	79.6		.06
MAY 01...	110	4.2	13	.4	.0	3.3	110	121	.15	251		.06
31...	89	--	13	.5	.1	2.8	--	--	--	--		.07
JUN 26...	71	--	7.3	.8	.1	2.9	85	83	.12	466		.12
JUL 26...	70	--	6.4	.5	.0	2.6	80	80	.11	242		.08
AUG 30...	76	--	9.6	1.2	.1	2.7	93	93	.13	212		.05

SASKATCHEWAN RIVER BASIN

05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY--Continued

WATER-QUALITY DATA, DECEMBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
DEC 28...	--	.09	--	.02	--	.00	.00	--	.9	.3
FEB 07...	.05	.00	.05	.05	.14	.04	.01	.8	--	--
MAR 07...	.07	.00	.07	.02	.14	.02	.01	1.0	--	--
29...	.59	.01	.60	.30	.66	.04	.02	--	3.9	.6
MAY 01...	.34	.01	.35	.05	.41	.05	.00	4.3	--	--
31...	--	.01	--	1.1	--	.09	.00	--	2.3	1.0
JUN 26...	.58	.05	.63	.45	.75	.02	.00	2.1	--	--
JUL 26...	.14	.01	.15	.31	.23	.00	.00	4.7	--	--
AUG 30...	.09	.01	.10	.61	.15	.02	.02	--	2.4	.5

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHROMIUM, DIS- SOLVED (UG/L AS CR)
DEC 28...	1545	--	0	100	100	1	0	0	10
MAR 29...	1230	1	1	400	200	1	0	20	0
MAY 31...	1400	2	1	700	200	20	0	--	5
AUG 30...	1325	1	1	200	100	0	0	0	0

DATE	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOV- ERABLE (UG/L AS MN)
DEC 28...	0	0	4	1	120	20	8	1	20
MAR 29...	1	0	7	1	530	50	6	2	20
MAY 31...	3	0	8	3	3100	0	33	2	60
AUG 30...	0	0	5	5	60	20	0	0	20

DATE	MANGANESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SELENIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 28...	20	.0	.0	--	0	2	0	10	10
MAR 29...	20	.0	.0	3	1	1	0	10	10
MAY 31...	--	.0	.0	0	0	0	0	30	10
AUG 30...	20	.0	.0	0	0	0	0	10	20

05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					---	208	222	210	190	143	158	157
2					---	209	232	206	180	144	157	158
3					---	212	204	206	180	145	159	159
4					---	210	201	193	170	150	159	161
5					---	208	196	198	170	150	156	149
6					---	207	189	195	190	150	155	150
7					207	209	201	190	170	151	154	146
8					199	186	188	186	160	158	156	146
9					199	202	193	190	160	150	157	148
10					201	210	183	187	160	149	165	148
11					205	212	193	187	160	150	158	148
12					202	219	202	183	150	149	158	153
13					202	218	189	186	150	153	159	153
14					205	210	182	194	160	147	161	154
15					201	211	192	190	160	149	162	152
16					198	205	183	180	160	143	165	154
17					197	222	187	175	160	150	176	155
18					201	201	209	180	160	158	166	157
19					201	218	188	180	160	150	163	154
20					200	225	190	170	160	147	165	159
21					201	226	189	172	160	146	169	158
22					203	235	188	172	150	149	163	151
23					206	231	204	167	150	153	161	154
24					208	243	191	174	---	151	158	152
25					208	204	185	177	150	154	165	152
26					197	258	193	163	150	151	153	153
27					204	265	212	162	150	153	153	157
28					207	256	214	162	160	152	160	153
29					---	258	213	163	150	150	156	152
30					---	259	206	165	150	149	163	153
31					---	258	---	200	---	149	159	---
MEAN					202	222	197	183	161	150	160	153

WTR YR 1978 MEAN 178 MAX 265 MIN 143
TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					---	.5	5.0	10.5	12.0	15.0	15.0	15.0
2					---	.5	6.5	10.0	15.0	15.0	17.0	16.5
3					---	.5	7.0	7.5	15.0	16.0	17.0	16.5
4					---	.5	8.5	5.0	15.0	17.0	17.5	17.0
5					---	.5	6.5	7.0	15.5	17.5	19.0	16.0
6					---	.5	4.0	8.0	10.5	17.5	19.5	17.0
7					.5	.5	8.5	6.5	12.5	15.0	19.5	15.5
8					.5	.5	5.0	10.0	13.5	12.0	19.5	16.0
9					.0	1.0	8.5	10.0	12.0	17.0	20.0	16.0
10					.5	1.0	8.5	10.0	12.5	17.0	17.5	16.0
11					.0	.5	7.5	7.5	12.5	15.0	20.5	12.0
12					.5	.0	7.5	7.5	15.0	16.0	17.5	15.0
13					.5	.5	7.0	10.5	13.0	15.0	18.0	12.0
14					.5	1.0	5.0	12.0	12.0	16.0	18.0	13.5
15					.5	1.0	5.5	10.5	13.0	17.0	17.0	12.5
16					.5	1.0	8.0	8.5	14.5	17.5	16.5	12.5
17					.5	2.0	5.0	10.0	14.0	15.5	13.5	13.0
18					.5	2.0	7.0	9.5	14.0	14.0	16.0	11.0
19					.5	3.5	8.5	12.0	14.0	16.0	15.0	15.0
20					.5	5.0	7.0	12.5	15.0	16.0	14.0	13.5
21					.5	4.5	6.5	12.0	16.5	16.0	14.5	12.0
22					.5	3.5	4.0	10.0	17.0	18.5	15.0	13.0
23					.5	6.5	8.5	9.0	15.0	17.0	15.0	13.5
24					.5	7.0	11.0	10.0	15.0	18.0	16.0	14.0
25					.5	4.5	10.5	8.0	15.0	20.5	17.5	14.0
26					.5	7.0	9.5	10.0	12.0	19.5	17.0	14.0
27					.5	4.5	7.5	10.0	16.0	20.5	15.0	13.0
28					.0	7.0	8.5	10.0	17.0	18.5	16.0	14.0
29					---	7.0	8.5	10.0	16.0	19.5	15.5	14.0
30					---	7.5	10.0	8.5	15.0	16.0	16.0	14.5
31					---	6.0	---	8.5	---	15.0	16.0	---
MEAN					.5	3.0	7.5	9.5	14.0	16.5	17.0	14.5

WTR YR 1978 MEAN 10.5 MAX 20.5 MIN .0

05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEGUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM
FEB 07...	1020	.5	107	6	1.7	--	--	--	--	--	--	--
MAR 07...	1345	.0	88	4	.95	--	--	--	--	--	--	--
29...	1230	4.5	209	22	12	--	--	--	--	--	--	89
MAY 01...	1220	9.5	846	109	249	--	--	--	--	--	--	82
31...	1400	7.0	2050	234	1300	40	68	89	94	99	100	--
JUN 26...	1315	16.5	2030	45	247	--	--	--	--	--	--	64
JUL 25...	1430	20.5	1120	6	18	--	--	--	--	--	--	84
AUG 30...	1325	15.0	846	5	11	--	--	--	--	--	--	87

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	MAR 29,78 1230	MAY 31,78 1400	JUN 26,78 1315			
TOTAL CELLS/ML	120	270	160			
DIVERSITY: DIVISION	0.0	1.0	0.8			
..CLASS	0.0	1.0	0.8			
...ORDER	0.0	1.7	0.8			
....FAMILY	0.8	1.9	0.8			
.....GENUS	1.2	2.4	1.1			
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....OCYSTACEAE						
.....ANKISTRODESMUS	--	-	30	11	--	-
.....OCYSTIS	--	-	--	-	120#	73
CHRYSOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
....COSCINODISCACEAE						
.....CYCLOTELLA	--	-	59#	22	--	-
...PENNALES						
....FRAGILARIACEAE						
.....ASTERIONELLA	--	-	44#	17	29#	18
....FRAGILARIA	--	-	--	-	15	9
.....HANNAEA	14	11	--	-	--	-
....SYNEURA	81#	67	89#	33	--	-
...GOMPHONEMACEAE						
.....GOMPHONEMA	--	-	15	6	--	-
...NAVICULACEAE						
.....NAVICULA	27#	22	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
....EUGLENACEAE						
.....TRACHELOMONAS	--	-	30	11	--	-

05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUL 26, 78 0000	AUG 30, 78 1325
TOTAL CELLS/ML	400	490
DIVERSITY: DIVISION	0.9	1.4
...CLASS	0.9	1.7
...ORDER	0.9	2.0
...FAMILY	2.4	2.4
...GENUS	2.6	2.6

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)				
..CHLOROPHYCEAE				
...CHLOROCUCCALES				
...CHARACIACEAE				
....SCHROEDERIA	--	-	*	0
...COELASTRACEAE				
....COELASTRUM	--	-	14	3
...DUCYSTACEAE				
....ANKISTRODESMUS	--	-	4	1
....DUCYSTIS	--	-	9	2
...SCENEDESMACEAE				
....CRUCIGENIA	--	-	14	3
....SCENEDESMUS	--	-	21	4
..TETRASPORALES				
...PALMELLACEAE				
....SPHAEROCYSTIS	--	-	27	5
..VOLVOCALES				
...CHLAMYDOMONADACEAE				
....CHLAMYDOMONAS	--	-	4	1
..ZYGEMATALES				
...DESMIDIACEAE				
....COSMARION	--	-	4	1
CHRYSOPHYTA				
..BACILLARIOPHYCEAE				
...CENTRALES				
...COSCINOIDISCEAE				
....CYCLOTELLA	--	-	5	1
..PENNALES				
...ACHNANTHACEAE				
....ACHNANTHES	88#	22	--	-
...CUCCONEIS	--	-	4	1
...CYMBELLACEAE				
....CYMBELLA	--	-	16	3
...FRAGILARIACEAE				
....FRAGILARIA	--	-	5	1
...HANNAEA	44	11	--	-
...SYNEDRA	22	6	12	3
...GOMPHONEMACEAE				
....GOMPHONEMA	66#	17	--	-
...NAVICULACEAE				
....NAVICULA	44	11	12	3
...NITZSCHACEAE				
....NITZSCHIA	22	6	*	0
...SURIPELLACEAE				
....SURIPELLA	--	-	*	0
..CHRYSOPHYCEAE				
...CHRYSDOMONADALES				
...OCHROMONADACEAE				
....DINOBRYON	--	-	69	14
CYANOPHYTA (BLUE-GREEN ALGAE)				
..CYANOPHYCEAE				
...HORMOGONALES				
...OSCILLATORIACEAE				
....OSCILLATORIA	110#	28	270#	54

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

MISSOURI RIVER MAIN STEM

06012500 RED ROCK RIVER BELOW LIMA RESERVOIR, NEAR MONIDA, MT

LOCATION.--Lat 44°39'22", long 112°22'14", in NE¼SE¼SE¼ sec. 31, T.13 S., R.6 W., Beaverhead County, Hydrologic Unit 10020001, on right bank just downstream from Lima Reservoir, 7 mi (11 km) northwest of Monida.

DRAINAGE AREA.--570 mi² (1,476 km²).

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, June 1974 to current year (no winter records). 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. Altitude of gage is 6,530 ft (1,990 m), estimated from spillway elevation based on Montana Department of Natural Resources and Conservation datum. See WSP 1709 for history of nonrecording gage changes prior to May 8, 1939.

REMARKS.--Seasonal records good. Flow regulated by Lima Reservoir (see p. 606). No storage during 1934. Diversions for irrigation of about 10,000 acres (40.5 km²) above reservoir.

AVERAGE DISCHARGE.--48 years (1911-18, 1925-33, 1934-35, 1936-38, 1939-69), 143 ft³/s (4.050 m³/s), 103,600 acre-ft/yr (128 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 2,500 ft³/s (70.8 m³/s) May 15, 1933, gage height, 5.40 ft (1.646 m), estimated by dam tender, released to prevent failure of dam; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 751 ft³/s (21.3 m³/s) June 12, gage height, 2.81 ft (0.856 m); minimum daily, 9.8 ft³/s (0.278 m³/s) Oct. 4, Apr. 1,2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	12					9.8	537	548	574	99	298
2	11	13					9.8	543	586	571	99	268
3	10	12					16	547	656	570	147	263
4	9.8	12					24	545	670	568	147	262
5	10	12					24	541	670	555	149	262
6	11	12					24	536	555	478	201	265
7	10	12					24	537	565	459	230	255
8	11	12					25	538	670	474	230	250
9	10	---					24	512	672	455	242	259
10	10	---					21	459	675	370	354	261
11	10	---					38	458	579	566	337	261
12	11	---					103	429	723	494	314	262
13	10	---					159	406	738	396	295	203
14	11	---					153	361	734	342	295	27
15	11	---					154	378	736	342	288	20
16	11	---					176	377	737	362	260	19
17	11	---					233	364	739	237	258	16
18	12	---					254	372	728	209	258	16
19	12	---					316	377	663	185	255	16
20	12	---					359	376	653	185	255	17
21	12	---					364	373	632	185	255	17
22	12	---					406	375	603	143	169	15
23	12	---					460	400	603	123	160	16
24	12	---					475	414	610	123	273	15
25	12	---					477	410	605	121	340	15
26	12	---					504	458	587	101	351	15
27	12	---					527	493	579	82	354	16
28	12	---					524	489	577	82	351	15
29	12	---					528	492	579	99	347	15
30	12	---					532	496	577	99	347	15
31	12	---					---	531	---	99	344	---
TOTAL	346.8	---					6965.6	14106	19544	9524	2054	3680
MEAN	11.2	---					232	455	651	307	266	123
MAX	12	---					532	547	739	574	354	298
MIN	9.8	---					9.8	364	548	82	99	15
AC-FT	686	---					13820	27980	38770	18690	15960	7500

06013500 BIG SHEEP CREEK BELOW MUDDY CREEK, NEAR DELL, MT

LOCATION.--Lat 44°39'19", long 112°46'41", in SW¼NW¼SE¼ sec.35, T.13 S., R.10 W., Beaverhead County, Hydrologic Unit 10020001, on left bank 2.2 mi (3.5 km) downstream from Muddy Creek, 6.5 mi (10.5 km) southwest of Dell, and 8.5 mi (13.7 km) upstream from mouth.

DRAINAGE AREA.--278 mi² (720 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to September 1936, May 1946 to September 1953. Annual maximums and daily flows for water years 1961-76 on file in Helena district office. October 1976 to current year. Published as Sheep Creek near Dell 1936, and Sheep Creek below Muddy Creek, near Dell 1946-53, 1960-65.

REVISED RECORDS.--WDR MT-75-1: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 6,390 ft (1,948 m), from topographic map. Apr. 21 to Sept. 30, 1936, nonrecording gage at site about 3 mi (5 km) downstream at different datum.

REMARKS.--Water discharge records good. Diversions for irrigation of about 6,600 acres (27.6 km²) above station.

AVERAGE DISCHARGE.--25 years (1947-53, 1961-78), 65.3 ft³/s (1.849 m³/s), 47,310 acre-ft/yr (58.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 909 ft³/s (25.7 m³/s) Apr. 18, 1952, gage height, 7.72 ft (2.353 m), from rating curve extended above 290 ft³/s (8.21 m³/s); minimum observed, 26 ft³/s (0.74 m³/s) May 11-13, 1936, gage height, 1.90 ft (0.579 m), site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 181 ft³/s (5.13 m³/s) Mar. 29, gage height, 4.54 ft (1.384 m), no peaks above base of 210 ft³/s (5.95 m³/s); minimum daily, 36 ft³/s (1.02 m³/s) Jan. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	45	43	56	41	40	126	61	82	92	80	56
2	52	55	44	58	41	40	88	82	75	98	79	53
3	50	47	44	40	40	40	58	71	81	109	78	48
4	50	56	45	39	41	40	57	61	86	130	78	47
5	49	56	44	39	41	40	56	56	82	119	76	52
6	50	57	44	39	41	40	53	55	90	110	77	62
7	51	49	45	39	41	40	58	62	106	99	73	59
8	50	41	44	39	41	40	72	81	113	103	71	54
9	51	40	44	39	41	41	72	78	123	109	71	51
10	51	41	44	39	41	41	65	76	142	97	69	52
11	49	45	44	40	41	41	71	75	150	93	67	67
12	50	48	44	39	41	40	57	86	131	87	66	64
13	50	49	44	40	41	40	54	62	137	83	66	62
14	51	48	44	40	40	40	50	65	147	79	70	59
15	53	50	45	40	41	40	55	68	143	78	69	55
16	53	48	44	40	41	40	65	72	143	89	68	52
17	53	46	43	40	41	41	71	86	136	88	69	52
18	53	41	44	40	41	41	53	104	130	86	69	57
19	54	40	43	40	41	43	53	126	133	84	65	58
20	55	38	41	40	41	44	54	119	113	97	62	60
21	54	38	41	40	41	46	54	115	112	114	59	66
22	54	36	41	40	41	49	47	99	126	103	58	79
23	55	38	41	40	41	63	47	97	123	95	57	92
24	55	39	41	40	40	92	46	93	97	90	57	78
25	55	40	41	41	41	54	48	69	120	89	55	72
26	55	44	41	41	41	102	60	86	137	85	55	67
27	56	45	41	41	41	122	66	80	118	84	54	66
28	55	45	41	41	40	125	61	75	107	91	53	64
29	55	44	41	41	---	126	57	75	93	105	53	64
30	55	44	41	41	---	128	71	73	86	100	52	64
31	50	---	40	41	---	119	---	77	---	90	53	---
TOTAL	1629	1355	1327	1233	1144	1808	1845	2505	3462	2978	2031	1832
MEAN	52.5	45.2	42.8	39.8	40.9	60.3	61.5	80.8	115	96.1	65.5	61.1
MAX	56	57	45	41	41	128	126	126	150	130	80	92
MIN	49	38	40	36	40	40	46	55	75	78	52	47
AC-FT	3230	2690	2630	2450	2270	3710	3660	4970	6870	5910	4030	3630
CAL YR 1977	TOTAL	20460	MEAN 56.1	MAX 234	MIN 38	AC-FT 40580						
WTR YR 1978	TOTAL	23209	MEAN 63.6	MAX 150	MIN 36	AC-FT 46040						

MISSOURI RIVER MAIN STEM

06013500 BIG SHEEP CREEK BELOW MUDDY CREEK, NEAR DELL, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1977 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: March to September 1977, April to July 1978.

SUSPENDED-SEDIMENT DISCHARGE: March to September 1977, April to July 1978.

REMARKS.--Temperatures and sediment samples collected by observer seasonally.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 22.5°C June 25, 29, 1977.

SEDIMENT CONCENTRATIONS: Maximum observed, 4,161 mg/L June 8, 1977; minimum observed, 7 mg/L July 27, 1978.

SEDIMENT LOADS: Maximum observed, 1,690 tons (1,533 tonnes) June 8, 1977; minimum observed, 1.0 ton (.91 tonne) March 23, 1977.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, June 5.

SEDIMENT CONCENTRATIONS: Maximum observed, 161 mg/L May 20; minimum observed, 7 mg/L July 27.

SEDIMENT LOADS: Maximum observed, 55 tons (50 tonnes) June 10; minimum observed, 1.2 ton (1.1 tonne) Apr. 24.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							10.0	12.0	16.5	17.0		
2							10.0	11.5	18.0	18.0		
3							10.0	12.0	16.5	14.0		
4							9.5	10.5	19.0	15.5		
5							10.0	8.0	22.0	14.5		
6							10.0	8.0	20.0	14.5		
7							8.0	10.0	19.0	16.5		
8							9.0	13.0	20.5	16.5		
9							12.0	14.5	18.0	19.0		
10							15.0	12.0	11.0	20.5		
11							12.0	11.0	9.5	17.0		
12							13.0	15.0	15.0	20.0		
13							11.0	16.0	15.0	19.0		
14							14.0	18.0	17.0	18.5		
15							14.0	18.0	14.0	19.0		
16							14.0	11.5	14.0	20.5		
17							10.0	9.5	17.0	19.0		
18							6.0	7.0	15.0	16.5		
19							14.0	12.0	14.5	19.0		
20							11.0	14.5	18.0	14.5		
21							9.0	16.0	12.0	16.5		
22							10.0	16.0	18.0	21.0		
23							14.0	15.0	18.0	19.0		
24							14.0	7.0	17.5	19.5		
25							13.0	7.0	13.0	19.0		
26							13.0	14.0	16.0	20.0		
27							13.0	14.5	19.5	20.0		
28							11.5	---	12.0	18.0		
29							14.0	---	19.5	21.0		
30							11.0	---	20.0	21.0		
31							---	10.0	---	20.0		
MEAN							11.5	12.5	16.5	16.5		
WTR YR 1978	MEAN	15.0		MAX	22.0	MIN	6.0					

MISSOURI RIVER MAIN STEM

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06013500 BIG SHEEP CREEK BELOW MUDDY CREEK, NEAR DELL, MT--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	58	20	53	12	27	6.0	22	5.5				
2	59	14	67	15	32	6.5	28	7.4				
3	48	7.5	46	8.8	29	6.3	37	11				
4	28	4.3	33	5.4	29	6.7	42	15				
5	21	3.2	32	4.8	30	6.6	42	13				
6	20	2.9	29	4.3	38	9.2	30	8.9				
7	17	2.7	29	4.9	69	20	36	9.0				
8	39	7.6	78	17	73	22	37	10				
9	52	10	65	14	97	32	27	7.9				
10	31	5.4	36	7.4	144	55	30	7.9				
11	32	6.1	31	6.3	125	51	20	5.0				
12	25	3.8	29	5.2	60	23	28	6.6				
13	13	1.9	26	4.4	85	31	21	4.7				
14	13	1.8	26	4.6	90	36	25	5.3				
15	24	3.6	27	5.0	60	23	15	3.2				
16	21	3.7	27	5.2	49	19	22	5.3				
17	33	6.3	55	13	47	17	16	3.8				
18	16	2.3	76	21	42	15	15	3.6				
19	10	1.4	150	51	44	16	17	3.9				
20	13	1.9	161	52	48	15	23	6.0				
21	11	1.6	138	43	42	13	30	9.2				
22	12	1.5	105	28	43	15	19	5.3				
23	11	1.4	65	17	44	15	25	6.4				
24	10	1.2	58	15	31	8.1	14	3.4				
25	10	1.3	57	14	44	15	10	2.4				
26	25	4.5	38	8.8	73	28	8	1.8				
27	23	4.1	25	5.4	36	11	7	1.6				
28	16	2.6	26	3.3	39	11	6	2.0				
29	17	2.6	25	5.1	40	10	11	3.1				
30	32	6.1	30	5.9	33	7.7	12	3.2				
31	---	---	21	4.4	---	---	11	2.7				
TOTAL	---	137.3	---	413.2	---	750.1	---	184.7				
TOTAL LOAD FOR YEAR: 1285.3 TONS.												

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT						
05...	1550	10.0	49	28	3.7	--
NOV						
08...	1250	7.5	44	15	1.8	--
DEC						
16...	0945	5.0	43	24	2.8	79
FEB						
03...	1235	5.5	43	21	2.4	--
MAR						
07...	1350	9.0	46	32	4.0	86
APR						
04...	1350	9.5	50	48	6.5	78
MAY						
10...	1200	10.5	77	30	6.2	92
JUN						
07...	1435	15.0	114	91	28	92
26...	2050	13.5	130	43	15	88
AUG						
03...	1545	18.5	80	8	1.7	84

MISSOURI RIVER MAIN STEM

06014500 RED ROCK RIVER AT RED ROCK, MT

LOCATION.--Lat 44°55'02", long 112°49'48", in SW¼SE¼ sec.33, T.10 S., R.10 W., Beaverhead County, Hydrologic Unit 10020001, on right bank 0.6 mi (1.0 km) downstream from bridge on county road, 1.8 mi (2.9 km) upstream from Clark Canyon Reservoir flow line, and 1.3 mi (2.1 km) northwest of Red Rock.

DRAINAGE AREA.--1,548 mi² (4,010 km²).

PERIOD OF RECORD.--January to October 1890 (monthly discharge only), October 1950 to September 1952, May 1974 to September 1975 (no winter records), October 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 5,582.45 ft (1,701.531 m), National Geodetic Vertical Datum of 1929. Prior to May 1974, records collected at site 0.6 mi (1.0 km) upstream at different datum.

REMARKS.--Records good except those for January, February, August and September, which are fair. Flow partly regulated by Lima Reservoir (see p. 606). Diversions for irrigation of about 39,000 acres (158 km²) above station.

AVERAGE DISCHARGE.--5 years, 221 ft³/s (6.259 m³/s), 160,100 acre-ft/yr (197 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,130 ft³/s (32.0 m³/s) May 16, 1975, gage height, 4.23 ft (1.289 m); maximum gage height, 4.26 ft (1.298 m) May 25, 1975 (backwater from tree below gage); minimum daily discharge, 4.0 ft³/s (0.113 m³/s) May 24, 1951, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 532 ft³/s (15.1 m³/s) May 2, gage height, 3.44 ft (1.049 m); minimum daily discharge, 71 ft³/s (2.01 m³/s) June 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	255	183	191	160	150	123	334	500	215	210	187	120
2	244	183	201	150	147	120	334	516	170	215	176	120
3	239	178	205	160	147	115	234	511	150	224	162	115
4	239	178	205	170	147	120	205	495	154	270	147	150
5	244	178	201	180	150	153	201	495	150	294	143	200
6	249	178	201	178	147	133	163	495	136	315	150	210
7	239	170	205	170	147	133	191	500	133	249	143	210
8	234	162	191	166	143	139	219	500	129	320	143	219
9	234	154	187	170	139	147	229	495	126	350	113	215
10	239	166	201	170	139	154	205	480	110	344	99	219
11	229	170	210	166	135	150	191	460	91	315	120	265
12	229	178	210	166	130	150	187	449	82	320	133	294
13	219	187	210	166	125	150	224	444	75	320	133	315
14	219	183	215	166	130	150	255	416	71	299	154	294
15	215	187	215	166	130	154	244	356	75	289	154	270
16	215	187	201	165	130	154	270	388	77	310	162	260
17	210	183	196	166	130	158	320	398	86	294	162	249
18	205	178	205	162	135	162	310	408	99	255	154	249
19	201	166	187	162	135	174	350	444	119	255	147	255
20	191	154	178	162	133	178	384	426	136	234	143	270
21	191	162	183	158	129	183	384	406	136	229	136	274
22	191	191	191	158	126	187	398	344	133	239	136	265
23	191	191	201	155	126	191	403	264	126	229	140	255
24	187	191	196	155	129	229	428	305	126	215	140	249
25	187	196	196	158	129	224	449	305	162	196	135	244
26	187	201	191	154	126	234	455	284	174	187	130	234
27	187	201	183	154	129	260	475	315	170	193	125	229
28	187	201	174	150	129	284	490	315	174	191	120	229
29	187	205	205	150	---	315	485	315	187	187	115	234
30	183	196	191	150	---	329	485	274	205	196	110	234
31	187	---	170	150	---	320	---	229	---	191	115	---
TOTAL	6614	5438	6096	5013	3792	5653	9522	12590	3977	7985	4329	6946
MEAN	213	181	197	162	135	182	317	406	133	258	140	232
MAX	255	205	215	180	150	329	490	516	215	360	187	315
MIN	183	154	170	150	125	115	183	229	71	193	99	115
AC-FT	13120	10790	12090	9940	7520	11210	18890	24970	7890	15840	8590	13780
CAL YR 1977	TOTAL	57436	MEAN	157	MAX	310	MIN	34	AC-FT	113900		
1978	TOTAL	77455	MEAN	214	MAX	516	MIN	71	AC-FT	154600		

06015300 CLARK CANYON RESERVOIR NEAR GRANT, MT

LOCATION.--Lat 45°00'06", long 112°51'27", in SE¼SW¼ 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 (2.4 km) upstream from Clark Canyon Creek, and 10 mi (16 km) east of Grant.

DRAINAGE AREA.--2,321 mi² (6,011 km²).

PERIOD OF RECORD.--May 1964 to current year (monthend contents only). Records of daily elevations are in files of Helena district office.

GAGE.--Water-stage recorder in shaft house. Datum of gage is at mean sea level (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). Usable capacity, 257,200 acre-ft (317 hm³) between elevation 5,455.00 ft (1,662.684 m), invert of outlet works, and 5,560.40 ft (1,694.810 m), top of flood control. Dead storage, 61 acre-ft (75,200 m³) below elevation 5,455.00 ft (1,662.684 m). Normal operating level, 177,500 acre-ft (219 hm³) at elevation 5,546.00 ft (1,690.421 m). Minimum operating level, 1,450 acre-ft (1.79 hm³) at elevation 5,470.60 ft (1,667.439 m). 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, 236,600 acre-ft (292 hm³) July 22, 1975 (elevation, 5,556.88 ft or 1,693.737 m); minimum since normal operating level was reached, 58,960 acre-ft (72.7 hm³) Oct. 11, 1974 (elevation, 5,516.80 ft or 1,681.521 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents at 2400, 185,300 acre-ft (228 hm³) May 21, elevation, 5,547.50 ft (1,690.878 m); minimum, 116,300 acre-ft (143 hm³) Oct. 1, elevation, 5,533.13 ft (1,686.498 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date		Elevation (feet)	Contents (acre-feet)	Change in Contents (acre-feet)
Sept.	30	5,533.02	115,800	-
Oct.	31	5,535.80	128,000	+12,200
Nov.	30	5,538.06	138,400	+10,400
Dec.	31	5,539.88	147,000	+ 8,600
CAL YR 1977				-10,500
Jan.	31	5,541.31	153,900	+ 6,900
Feb.	28	5,542.35	159,000	+ 5,100
Mar.	31	5,544.42	169,400	+10,400
Apr.	30	5,547.21	183,800	+14,400
May	31	5,547.00	182,700	- 1,100
June	30	5,544.20	168,300	-14,400
July	31	5,542.36	159,100	- 9,200
Aug.	31	5,537.20	134,400	-24,700
Sept.	30	5,537.95	137,900	+ 3,500
WTR YR 1978.				+22,100

MISSOURI RIVER MAIN STEM

06015400 BEAVERHEAD RIVER NEAR GRANT, MT

LOCATION.--Lat 45°00'12", long 112°51'10", in NW¼SW¼SE¼ sec.32, T.9 S., R.10 W., Beaverhead County, Hydrologic Unit 10020002, on right bank 0.4 mi (0.6 km) downstream from Clark Canyon Dam, 1.3 mi (2.1 km) upstream from Clark Canyon Creek, and 10.3 mi (16.6 km) east of Grant.

DRAINAGE AREA.--2,322 mi² (6,014 km²).

PERIOD OF RECORD.--September 1962 to current year. Prior to October 1968, published as "near Armstead."

GAGE.--Water-stage recorder. Datum of gage is 5,442.78 ft (1,658.959 m), National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for Aug. 1 to Sept. 30, which are fair. Diversions for irrigation of about 76,500 acres (310 km²) above station. Flow completely regulated by Clark Canyon Reservoir (see preceding page).

AVERAGE DISCHARGE.--16 years, 391 ft³/s (11.07 m³/s), 283,300 acre-ft/yr (349 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,110 ft³/s (59.8 m³/s) Feb. 7, 1963, gage height, 7.19 ft (2.192 m); no flow part of Oct. 1, 1968, when gates in dam were closed; minimum daily, 22 ft³/s (0.623 m³/s) Oct. 16, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 957 ft³/s (27.1 m³/s) June 9, gage height, 5.38 ft (1.640 m); maximum gage height, 5.60 ft (1.707 m) Aug. 9 (backwater from aquatic growth); minimum daily discharge, 63 ft³/s (1.78 m³/s) Oct. 4, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	86	109	128	125	152	154	462	603	491	812	415
2	64	86	128	128	125	152	154	542	603	490	809	411
3	64	88	128	128	125	152	154	617	604	466	815	396
4	63	88	130	128	125	152	152	640	603	426	830	396
5	63	88	128	125	125	152	155	635	602	407	835	381
6	68	88	128	125	128	152	155	640	636	405	830	332
7	66	86	128	125	125	152	155	649	752	408	830	312
8	66	86	130	125	125	155	155	654	853	407	815	312
9	66	90	130	125	145	155	155	654	934	404	804	312
10	66	90	130	125	155	155	155	603	906	422	784	315
11	64	96	128	125	155	155	158	559	855	442	754	309
12	64	96	128	125	155	155	158	546	823	409	769	277
13	94	96	130	125	152	156	158	546	790	434	749	242
14	109	96	130	125	152	157	158	546	814	477	691	233
15	111	98	130	125	152	156	158	529	820	557	603	232
16	111	98	130	125	152	156	160	524	883	575	529	236
17	109	96	130	123	152	156	160	479	895	575	503	235
18	109	96	130	123	152	156	160	529	895	585	483	246
19	109	100	130	123	152	155	160	617	889	640	463	244
20	109	100	130	123	152	155	160	637	888	656	487	240
21	109	100	130	123	152	155	193	745	846	660	487	238
22	109	96	128	123	152	155	228	779	823	662	499	240
23	109	96	128	125	155	155	228	774	825	660	503	240
24	100	98	128	125	155	155	231	735	824	697	508	244
25	90	96	128	125	155	155	231	710	822	736	475	244
26	90	98	128	125	155	155	231	759	749	784	454	244
27	90	98	128	125	155	155	231	734	677	810	458	241
28	90	98	128	125	152	156	247	774	636	804	419	244
29	68	98	128	125	---	156	299	740	566	801	427	245
30	88	98	128	125	---	156	388	668	505	802	430	244
31	88	---	128	125	---	155	---	608	---	807	415	---
TOTAL	2692	2836	3975	3875	4060	4794	5641	19744	22943	17899	19290	8498
MEAN	86.8	94.5	126	125	145	155	188	637	765	577	622	283
MAX	111	100	130	128	155	157	388	794	934	810	835	415
MIN	63	86	109	123	125	152	152	462	505	404	415	232
AC-FT	5340	5630	7880	7690	8050	9510	11190	39160	45510	35500	38260	16860

CAL YR 1977 TOTAL 90898 MEAN 249 MAX 749 MIN 61 AC-FT 180300
WTR YR 1978 TOTAL 116247 MEAN 318 MAX 934 MIN 63 AC-FT 230600

06016000 BEAVERHEAD RIVER AT BARRETTS, MT

LOCATION.--Lat 45°06'59", long 112°44'59", in SW¼SE¼ sec.19, T.8 S., R.9 W., Beaverhead County, Hydrologic Unit 10020002, on left bank 1 mi (2 km) upstream from Barretts, 2 mi (3 km) downstream from Grasshopper Creek, and 8.9 mi (14.3 km) southwest of Dillon.

DRAINAGE AREA.--2,737 mi² (7,089 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1907 to current year. 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 (1,605.738 m), National Geodetic Vertical Datum of 1929. Prior to Oct. 19, 1934, nonrecording gages at same site and datum.

REMARKS.--Water-discharge records good except those for Aug. 1 to Sept. 7, which are fair. Some regulation by Lima Reservoir (see p.606) and nearly complete regulation by Clark Canyon Reservoir (see p. 47) since August 1964. Diversions for irrigation of about 90,000 acres (364 km²) above station.

AVERAGE DISCHARGE.--71 years, 424 ft³/s (12.01 m³/s), 307,200 acre-ft/yr (379 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,720 ft³/s (105 m³/s) June 20, 1908, gage height, 6.1 ft (1.86 m); minimum recorded, 69 ft³/s (1.95 m³/s) Jan. 30, 1939, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,320 ft³/s (37.4 m³/s) June 10, gage height, 2.97 ft (0.905 m); minimum daily, 150 ft³/s (4.25 m³/s) Nov. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
YEAR VALUES

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	156	188	196	200	212	239	428	660	829	654	939	450
2	157	190	222	190	211	235	469	791	793	670	925	445
3	160	186	238	205	214	228	373	647	788	665	911	440
4	160	183	236	209	215	226	325	848	792	637	918	431
5	159	192	228	211	215	234	318	853	806	644	925	422
6	162	195	225	212	217	239	310	852	866	634	932	413
7	167	189	229	213	218	240	311	845	930	603	925	390
8	169	171	218	214	218	239	322	843	1150	594	911	386
9	169	167	215	217	225	242	306	630	1280	613	897	361
10	160	191	219	220	240	242	301	776	1300	612	878	351
11	166	194	231	220	241	243	304	740	1270	635	842	399
12	164	197	235	221	237	241	309	728	1270	594	830	390
13	181	195	234	221	235	240	296	710	1200	600	830	368
14	206	194	234	221	233	238	292	704	1160	610	786	350
15	206	203	239	224	237	239	298	698	1140	699	746	345
16	204	191	239	221	237	239	309	722	1190	752	650	341
17	205	180	223	221	237	244	321	716	1220	761	606	332
18	204	160	217	221	239	253	313	758	1190	755	564	350
19	204	170	217	221	241	259	306	660	1190	796	567	359
20	204	160	210	218	236	270	303	925	1230	834	556	354
21	203	150	200	220	237	285	318	971	1190	872	545	345
22	206	166	210	218	235	299	352	1040	1100	850	540	345
23	206	172	216	215	238	312	365	1050	1080	842	551	345
24	204	160	220	209	237	342	364	1040	1060	846	551	345
25	186	190	226	209	242	335	364	1050	1100	879	540	345
26	190	203	229	212	241	350	375	1080	1030	924	520	341
27	190	202	225	214	239	375	407	1070	913	993	505	336
28	190	203	207	216	239	377	430	1010	850	971	495	336
29	190	205	206	214	---	381	444	960	765	977	470	336
30	189	197	208	214	---	390	538	918	674	951	475	336
31	190	---	209	210	---	380	---	850	---	925	465	---
TOTAL	5717	5586	6861	6651	6468	6656	10473	26757	31426	23417	21817	11137
MEAN	184	186	221	215	231	219	349	863	1048	755	704	371
MAX	206	205	239	224	242	390	538	1080	1300	993	939	450
MIN	156	150	196	190	211	226	292	666	674	594	465	332
AC-FT	11340	11080	13610	13190	12830	17170	20770	53070	62330	46450	43270	22090
CAL YR 1977	TOTAL	127301	MEAN	349	MAX	925	MIN	150	AC-FT	252500		
WTR YR 1978	TOTAL	164966	MEAN	452	MAX	1300	MIN	150	AC-FT	327200		

MISSOURI RIVER MAIN STEM

06016000 BEAVERHEAD RIVER AT BARRETTS, MT--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at private road bridge 800 ft (244 m) upstream from Barretts, 1.0 mi (1.6 km) downstream from gaging station, 2.5 mi (4.0 km) downstream from Grasshopper Creek, and 8.0 mi (12.9 km) southwest of Dillon.

PERIOD OF RECORD.--Water years 1949-51, 1965 to October 1978 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1965 to September 1978.

WATER TEMPERATURES: July 1965 to September 1978.

REMARKS.--The computations of tons per day of dissolved solids refer to flow past the gaging station. Some regulation by Lima Reservoir and nearly complete regulation by Clark Canyon Reservoir. Many diversions for irrigation upstream from station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 633 micromhos Jan. 24, 1967; minimum daily, 353 micromhos June 8, 1967.

WATER TEMPERATURES: Maximum daily, 21.5°C Aug. 20, 1977; minimum daily, 0.0°C on several days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 627 micromhos Nov. 22; minimum daily, 409 micromhos Apr. 2.

WATER TEMPERATURES: Maximum daily, 20.5°C Aug. 6; minimum daily, 0.0°C Jan. 2.

WATER-QUALITY DATA, OCTOBER 1977 TO OCTOBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT , 1977												
04...	1810	160	528	12.5	240	61	62	21	22	.6	4.1	220
NOV												
09...	1000	151	593	2.5	290	62	72	26	29	.7	4.3	250
DEC												
15...	1030	237	543	4.5	260	68	65	23	23	.6	4.4	230
FEB , 1978												
02...	1830	211	575	4.5	260	74	64	25	24	.6	4.1	230
MAR												
08...	1200	237	592	4.5	270	73	67	25	23	.6	4.1	240
APR												
05...	0810	318	487	5.5	220	57	59	18	21	.6	4.2	200
MAY												
04...	1630	848	519	10.5	230	43	55	23	23	.7	3.9	230
JUN												
02...	1500	794	474	13.5	220	43	58	19	21	.6	3.9	220
22...	0930	1100	478	12.0	220	36	57	20	20	.6	3.6	230
JUL												
31...	1500	925	503	18.5	230	44	57	22	22	.6	4.0	230
SEP												
07...	0915	390	540	13.0	230	98	59	20	23	.7	4.5	160
OCT												
04...	1000	311	512	7.0	230	49	59	20	22	.6	3.5	220

06016000 BEAVERHEAD RIVER AT BARRETTS, MT--Continued

WATER-QUALITY DATA, OCTOBER 1977 TO OCTOBER 1978

DATE	SULFATE DIS- SOLVED (MG/L AS SU4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHOPHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHOPHOS- PHORUS, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT, 1977												
04...	100	13	.5	18	349	.47	151	.01	.01	.02	20	0
NOV												
09...	120	16	.6	15	408	.55	166	.03	.00	.00	20	4
DEC												
15...	100	10	.6	17	357	.49	228	.09	.00	.00	20	0
FEB, 1978												
02...	100	15	.6	17	363	.49	207	.07	.01	.01	20	10
MAR												
08...	110	12	.5	15	375	.51	240	.08	.01	.00	0	40
APR												
05...	77	12	.4	16	307	.42	264	.22	.04	.05	60	50
MAY												
04...	80	10	.5	15	324	.44	742	.10	.03	.02	40	10
JUN												
02...	70	12	.4	14	307	.42	658	.04	.01	.03	40	0
22...	65	9.6	.3	12	301	.41	894	.09	.02	.02	30	20
JUL												
31...	69	11	.4	17	317	.43	792	.13	.06	.06	10	40
SEP												
07...	88	17	.4	15	306	.42	322	.03	.02	.01	20	10
OCT												
04...	82	11	.5	12	319	.43	268	.03	.01	--	50	10

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), OCTOBER 1977 TO OCTOBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	559	571	582	596	599	588	454	508	488	477	519	552
2	551	573	601	602	602	595	409	498	495	464	521	557
3	549	578	588	595	594	599	452	516	492	462	520	552
4	552	591	586	594	569	606	507	526	489	462	521	551
5	551	590	579	591	583	587	497	528	488	450	521	553
6	548	589	588	588	593	590	501	528	482	446	520	548
7	549	587	585	585	592	594	508	529	486	462	526	554
8	551	576	587	582	565	592	501	532	488	468	526	558
9	551	609	599	582	585	565	512	540	491	476	523	556
10	561	581	586	578	600	582	514	538	487	477	526	555
11	558	578	577	580	591	588	512	532	475	477	523	550
12	557	573	571	577	588	576	497	517	462	476	526	524
13	558	559	578	576	608	595	513	521	466	482	524	512
14	555	581	583	578	612	602	530	520	470	494	528	519
15	560	556	572	579	597	594	525	521	483	500	523	521
16	554	580	559	578	595	592	518	502	488	500	523	552
17	554	598	578	581	598	597	503	489	491	497	523	550
18	553	601	600	575	592	578	511	477	496	499	520	519
19	549	604	591	573	582	562	518	499	493	500	522	519
20	552	611	612	565	569	577	528	505	477	496	524	522
21	548	621	621	577	596	568	523	508	482	485	532	552
22	552	627	613	579	599	549	539	512	493	489	520	529
23	550	619	604	588	590	540	541	491	491	492	532	529
24	551	601	577	597	597	511	543	488	497	499	534	524
25	550	590	561	597	582	521	543	478	496	502	533	537
26	549	561	567	590	585	512	539	467	489	503	532	534
27	547	563	584	582	592	513	519	486	486	498	500	528
28	544	572	609	579	597	458	492	502	488	499	533	537
29	551	579	611	590	---	477	513	499	500	498	540	535
30	549	591	610	582	---	502	532	489	497	499	538	537
31	552	---	608	596	---	476	---	471	---	499	542	---
MEAN	552	587	587	585	593	561	510	507	487	485	526	534
WTR YR 1978	MEAN	543	MAX	627	MIN	409						

MISSOURI RIVER MAIN STEM

06016000 BEAVERHEAD RIVER AT BARRETTS, MT--Continued

TEMPERATURE (DEG. C) OF WATER, OCTOBER 1977 TO OCTOBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	7.0	4.0	1.0	1.0	2.5	8.0	9.0	10.0	16.0	18.5	16.0
2	11.5	7.0	6.0	.0	4.0	1.0	6.5	10.0	13.0	16.5	18.5	16.0
3	11.5	7.0	6.0	1.0	4.0	2.5	4.5	9.0	12.5	14.0	19.0	16.0
4	11.0	7.0	4.5	3.0	3.0	3.5	7.0	8.0	13.0	16.0	18.0	17.0
5	11.0	6.5	3.0	4.0	7.0	7.5	6.5	7.0	12.0	14.0	19.0	17.5
6	10.0	6.0	3.5	4.5	4.5	6.0	6.5	7.5	13.0	14.0	20.5	16.0
7	11.5	6.0	4.0	4.5	3.5	5.5	6.0	9.5	15.0	14.5	16.5	15.5
8	9.5	5.5	2.0	4.5	5.5	5.0	7.5	8.0	12.5	17.0	16.5	15.0
9	10.0	4.5	2.0	3.0	4.5	6.5	8.0	9.0	14.0	16.0	17.5	14.0
10	10.0	4.0	4.5	5.5	3.5	5.0	8.0	10.5	12.0	18.0	17.0	15.0
11	11.0	4.5	5.0	2.5	.5	5.0	9.0	10.0	12.0	19.0	16.5	13.5
12	12.0	5.0	4.0	3.0	3.5	8.0	6.5	9.0	14.5	19.5	17.0	12.5
13	12.0	6.5	4.0	4.0	---	3.5	6.5	10.5	12.5	19.0	16.0	12.5
14	12.0	4.5	4.5	5.5	---	4.0	7.5	12.5	11.5	19.0	15.5	12.0
15	13.5	5.5	5.5	2.5	---	4.0	6.0	12.0	15.0	16.5	16.5	12.0
16	11.5	4.0	3.0	1.5	.5	3.5	9.5	9.5	12.5	17.0	16.5	12.5
17	11.5	3.5	2.0	4.5	1.5	4.5	7.0	10.5	12.5	15.5	14.5	13.5
18	12.5	3.0	4.0	4.5	2.5	6.0	7.0	9.0	14.0	16.5	14.5	11.0
19	12.0	.5	.5	5.0	8.0	9.5	8.0	9.5	13.0	15.0	16.0	9.5
20	12.0	.5	.5	4.0	6.0	6.0	8.5	11.0	14.5	15.0	18.5	9.5
21	11.5	.5	.5	5.5	2.0	6.0	7.5	12.0	15.0	16.0	15.5	9.0
22	12.5	3.5	2.0	6.0	3.0	5.5	7.5	12.5	14.0	15.5	18.0	10.0
23	12.5	4.5	2.5	---	3.0	5.5	8.0	11.0	15.5	19.0	16.0	12.0
24	12.0	5.0	2.5	2.0	5.5	6.0	8.5	10.5	14.0	17.0	15.0	12.5
25	12.0	4.5	4.0	4.5	4.0	6.5	10.0	9.5	12.5	17.0	15.5	11.5
26	12.0	5.5	4.5	3.5	5.0	7.5	10.0	9.5	15.0	18.5	15.5	11.5
27	11.5	5.5	1.5	3.5	5.0	5.5	10.5	10.5	17.5	19.0	19.5	15.5
28	11.5	4.5	.5	3.5	3.0	6.0	10.5	14.5	19.0	17.0	17.0	14.0
29	7.5	5.0	3.5	4.5	---	6.5	9.5	12.5	14.5	15.5	14.5	12.5
30	7.5	3.0	3.0	.5	---	8.0	10.0	11.0	14.5	16.0	18.5	10.5
31	7.0	---	.5	2.5	---	8.5	---	10.0	---	18.5	15.5	---
MEAN	11.0	4.5	3.0	3.5	3.5	5.5	8.0	10.0	13.5	16.5	17.0	13.0
WTR YR 1978	MEAN	4.5	MAX	20.5	MIN	.0						

06018000 BEAVERHEAD RIVER NEAR DILLON, MT

LOCATION.--Lat 45°18'18", long 112°33'45", in NW¼NE¼NE¼ sec.22, T.6 S., R.8 W., Beaverhead County, Hydrologic Unit 10020002, on right bank just upstream from county road bridge on Anderson Lane, 7.0 mi (11.3 km) northeast of Dillon.

DRAINAGE AREA.--3,484 mi² (9,024 km²).

PERIOD OF RECORD.--October 1950 to September 1952, August 1963 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,960 ft (1,512 m), by barometer. Prior to August 1963, nonrecording gage on upstream side of bridge at same datum.

REMARKS.--Records good. Flow partly regulated by Lima Reservoir (see p. 606) and Clark Canyon Reservoir (see p.) since August 1964. Diversions above station for irrigation of about 133,400 acres (540 km²) of which about 5,000 acres (20.2 km²) are irrigated by imported water from Birch and Willow Creeks and of which about 17,100 acres (69.2 km²) lies below station including about 600 acres (2.43 km²) in Ruby River drainage.

AVERAGE DISCHARGE.--17 years, 385 ft³/s (10.90 m³/s), 278,900 acre-ft/yr (344 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,570 ft³/s (44.5 m³/s) June 22, 1964, gage height, 5.52 ft (1.682 m); maximum gage height, 6.35 ft (1.935 m) Dec. 19, 1964 (backwater from ice); minimum discharge observed, 8.5 ft³/s (0.24 m³/s) June 21, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 562 ft³/s (15.9 m³/s) May 3, gage height, 3.79 ft (1.155 m); maximum gage height, 3.82 ft (1.164 m) May 27; minimum daily discharge, 114 ft³/s (3.23 m³/s) July 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	217	270	301	260	250	314	477	412	294	172	162	243
2	214	274	312	250	263	310	514	437	266	195	145	247
3	213	276	338	260	269	300	491	540	263	224	136	250
4	204	271	344	290	272	308	416	552	255	228	151	250
5	203	274	335	290	273	310	393	524	228	221	151	256
6	210	266	331	270	273	321	372	533	144	226	143	268
7	225	265	337	270	276	325	377	514	128	201	141	285
8	226	271	335	270	277	332	389	491	147	136	139	293
9	230	252	310	270	261	350	362	442	167	206	153	282
10	230	274	314	270	260	342	359	334	237	201	155	282
11	231	295	326	270	290	336	326	341	246	186	148	361
12	235	311	332	270	260	333	333	264	237	176	156	363
13	235	321	334	266	260	323	324	243	221	137	166	357
14	260	326	337	266	270	324	317	226	195	121	236	331
15	257	330	337	266	280	321	321	184	206	114	243	324
16	256	325	326	260	290	320	323	152	264	142	227	329
17	258	294	315	266	300	320	316	167	221	152	226	325
18	261	300	300	266	294	330	294	194	195	152	222	355
19	258	270	300	266	304	344	266	273	221	137	214	425
20	254	270	290	263	306	346	284	345	259	173	205	437
21	263	266	260	253	306	355	287	360	240	173	211	428
22	263	270	265	263	306	374	314	372	215	146	216	434
23	263	275	267	266	309	349	301	430	142	189	218	464
24	265	274	267	260	304	411	294	436	192	186	223	465
25	261	264	267	255	313	409	267	430	243	154	224	467
26	262	311	290	263	311	409	241	464	290	140	226	463
27	264	306	290	263	311	433	236	514	304	142	216	462
28	262	304	265	266	311	451	250	467	294	149	226	454
29	259	315	290	266	---	459	236	494	255	144	216	440
30	263	316	270	260	---	460	308	368	212	147	214	437
31	266	---	270	255	---	457	---	326	---	142	221	---
TOTAL	7503	5737	9589	8267	8081	11130	10039	11846	6770	5351	5905	10802
MEAN	245	291	304	267	269	359	335	382	226	173	190	360
MAX	266	330	344	290	313	460	519	552	304	228	243	469
MIN	203	252	270	250	250	300	236	152	128	114	151	243
AC-FT	15040	17330	19020	16400	16030	22060	19910	23500	13430	10610	11710	21430

CAL YR 1977 TOTAL 85062 MEAN 268 MAX 476 MIN 34 AC-FT 164800
WTR YR 1978 TOTAL 104102 MEAN 285 MAX 552 MIN 114 AC-FT 206500

MISSOURI RIVER MAIN STEM

06018500 BEAVERHEAD RIVER NEAR TWIN BRIDGES, MT

LOCATION.--Lat 45°23'01", long 112°27'07", in SW¼NW¼SE¼ sec.22, T.5 S., R.7 W., Madison County, Hydrologic Unit 10020002, on left bank at downstream side of bridge on State Highway 41, 11.5 mi (18.5 km) upstream from Ruby River, 12.7 mi (20.4 km) southwest of Twin Bridges, and 14.5 mi (23.3 km) northeast of Dillon.

DRAINAGE AREA.--3,619 mi² (9,373 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1935 to current year. Prior to October 1968, published as "at Blaine."

REVISED RECORDS.--WSP 1309: 1938(M), 1945(M). WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,809.15 ft (1,465.829 m), National Geodetic Vertical Datum of 1929. Prior to Feb. 17, 1949, nonrecording gage at bridge 0.5 mi (0.8 km) upstream at different datum. Feb. 17, 1949, to June 28, 1951, nonrecording gage at present site and datum.

REMARKS.--Water-discharge records good. Flow partly regulated by Lima Reservoir (see p. 606) and Clark Canyon Reservoir (see p. 47) since August 1964. Diversions above station for irrigation of about 135,400 acres (548 km²) of which about 5,000 acres (20.2 km²) are irrigated by imported water from Birch and Willow Creeks and of which about 9,200 acres (37.2 km²) lies below station including 600 acres (2.43 km²) in Ruby River drainage.

AVERAGE DISCHARGE.--43 years, 414 ft³/s (11.72 m³/s), 299,900 acre-ft/yr (370 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 3,130 ft³/s (88.6 m³/s) June 12, 1944, gage height, 6.76 ft (2.060 m), site and datum then in use; minimum observed, 7.0 ft³/s (0.20 m³/s) May 25, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 700 ft³/s (19.8 m³/s) May 27, gage height, 5.13 ft (1.564 m); minimum daily, 122 ft³/s (3.46 m³/s) June 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	507	567	379	500	523	402	574	446	554	274	168	333
2	366	377	366	300	340	372	638	554	324	269	176	348
3	543	373	415	550	354	330	627	620	306	285	164	339
4	537	367	421	355	353	370	518	597	302	345	164	324
5	539	373	409	550	357	405	473	580	254	537	166	336
6	549	388	401	351	362	414	459	595	173	531	178	411
7	553	389	406	348	368	431	475	591	122	262	191	420
8	546	366	366	351	370	428	496	557	125	265	186	430
9	550	338	350	561	368	456	465	509	125	287	206	402
10	551	361	395	563	365	451	457	452	172	505	236	396
11	546	595	387	563	359	433	406	415	223	254	231	533
12	550	414	398	563	350	424	393	376	220	215	222	572
13	550	414	398	563	340	416	391	296	206	188	251	594
14	374	422	403	365	350	406	387	250	187	164	337	519
15	370	425	426	567	570	401	389	240	161	148	361	489
16	575	422	416	343	364	598	397	226	164	170	528	472
17	583	593	595	375	381	598	365	242	191	194	558	465
18	586	585	368	562	380	422	365	247	193	185	565	475
19	590	543	357	559	386	437	349	376	202	166	335	585
20	588	517	332	562	391	437	542	456	253	185	518	612
21	585	328	335	558	397	444	346	497	231	178	322	594
22	585	554	371	560	395	465	365	521	223	202	512	590
23	585	554	375	347	401	479	356	596	224	226	330	612
24	581	556	367	551	406	503	353	605	232	235	337	616
25	577	566	357	355	405	514	311	593	316	215	526	612
26	576	397	376	355	405	508	276	622	456	176	511	597
27	572	392	349	355	405	533	265	670	449	150	515	594
28	572	391	334	353	403	551	292	626	395	156	515	594
29	565	394	349	358	---	558	265	489	349	161	504	568
30	564	590	357	349	---	564	325	433	289	166	295	558
31	565	---	325	343	---	561	---	493	---	176	518	---
TOTAL	11336	11351	11729	10915	10486	15911	12158	14682	7442	6881	8445	14990
MEAN	566	378	378	352	375	449	405	474	248	222	272	500
MAX	590	425	426	375	406	564	638	670	456	345	365	616
MIN	337	317	325	300	323	330	263	226	122	148	164	324
AC-FT	22480	22510	23260	21650	20800	27590	24120	29120	14760	13650	16750	29730

CAL YR 1977 TOTAL 109293 MEAN 299 MAX 551 MIN 55 AC-FT 216800
WTR YR 1978 TOTAL 134324 MEAN 368 MAX 670 MIN 122 AC-FT 266400

06018500 BEAVERHEAD RIVER NEAR TWIN BRIDGES, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1962 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1962 to current year.

WATER TEMPERATURES: July 1962 to current year.

REMARKS.--Prior to October 1968, published as "at Blaine." Flow partly regulated by Lima and Clark Canyon Reservoirs. Many diversions for irrigation upstream from station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 896 micromhos June 23, 1963; minimum daily, 433 micromhos May 23, 1969.

WATER TEMPERATURES: Maximum daily, 25.5°C July 27, 1973; minimum daily, 0.0°C on many days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 822 micromhos Aug. 9; minimum daily, 529 micromhos Mar. 27.

WATER TEMPERATURES: Maximum daily, 20.5°C June 8, 23, 28, July 28; minimum daily, 0.0°C on several days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLJW, INSTAN- TANEDUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT												
06...	1300	342	668	7.5	310	140	78	29	30	.7	6.0	210
NOV												
07...	1230	386	637	6.5	240	64	73	27	28	.7	5.3	280
DEC												
14...	1140	402	654	4.0	300	71	76	27	28	.7	5.5	280
FEB												
03...	1740	353	660	4.0	300	75	74	27	26	.7	5.0	270
MAR												
06...	1255	408	643	7.5	290	80	73	27	26	.7	4.9	260
APR												
05...	1000	472	584	7.5	260	58	56	26	24	.7	4.9	240
MAY												
04...	1235	601	596	7.5	260	47	63	25	25	.7	4.8	260
30...	1415	423	599	12.0	280	65	72	24	32	.8	5.6	260
JUN												
26...	1530	449	736	16.5	310	67	76	30	34	.8	8.4	300
JUL												
31...	1100	183	740	18.0	340	82	82	32	39	.9	7.9	310
SEP												
07...	1215	420	720	15.0	320	71	81	28	35	.9	7.0	300

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLOU- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SOM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT												
06...	130	19	.5	18	416	.57	384	.40	.01	.02	20	20
NOV												
07...	110	17	.6	22	423	.58	441	.43	.01	.00	20	10
DEC												
14...	110	14	.6	22	424	.58	460	.54	.04	.01	20	20
FEB												
03...	120	18	.6	22	428	.58	408	.53	.02	.01	20	10
MAR												
06...	110	14	.6	18	404	.55	445	.46	.03	.01	10	20
APR												
05...	93	14	.5	19	360	.49	459	.44	.03	.03	20	10
MAY												
04...	97	13	.5	18	376	.51	610	.28	.03	.01	40	10
30...	110	12	.5	18	403	.55	460	.24	.01	.02	70	10
JUN												
26...	130	19	.6	11	458	.62	555	.28	.02	.01	60	30
JUL												
31...	120	21	.6	28	484	.66	239	.16	.02	.01	10	20
SEP												
07...	110	21	.6	24	456	.62	517	.29	.02	.01	50	10

MISSOURI RIVER MAIN STEM

06018500 BEAVERHEAD RIVER NEAR TWIN BRIDGES, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

JAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	746	661	678	675	664	640	602	623	673	715	779	693
2	760	662	673	583	664	638	598	618	669	713	773	758
3	714	650	656	673	659	651	598	615	669	716	771	688
4	744	679	642	661	653	629	626	619	669	724	771	689
5	717	665	672	671	659	647	594	620	668	722	818	690
6	704	673	668	657	659	647	593	617	702	713	779	758
7	698	674	652	662	659	632	597	617	706	730	807	759
8	660	687	653	663	662	631	596	617	704	749	820	690
9	665	688	669	659	663	621	596	616	649	723	822	692
10	670	671	658	659	653	622	596	659	660	724	791	698
11	680	678	666	658	669	633	618	653	678	721	763	756
12	661	663	650	657	659	637	620	665	662	707	721	758
13	670	661	664	659	662	641	598	671	677	739	760	756
14	670	659	668	661	695	644	608	689	660	716	766	677
15	658	665	673	663	668	646	623	690	717	718	728	698
16	670	661	669	660	691	648	614	745	719	733	745	648
17	672	668	661	652	656	592	674	691	677	721	759	672
18	657	672	659	661	654	637	639	736	650	736	749	659
19	650	668	689	656	657	621	614	690	704	711	710	659
20	650	676	667	661	659	631	625	657	705	752	715	648
21	666	682	691	668	662	642	619	649	675	707	719	631
22	668	687	702	668	662	609	626	649	678	716	721	649
23	658	682	680	662	666	658	629	609	732	721	725	630
24	658	675	681	659	667	530	621	608	763	719	692	614
25	669	682	691	661	659	533	625	608	762	738	701	631
26	658	665	653	654	661	600	620	623	762	740	689	628
27	656	663	647	658	660	529	623	596	736	704	669	618
28	658	661	684	650	661	595	618	587	737	742	693	631
29	662	669	688	651	---	531	617	658	757	749	675	633
30	666	661	679	650	---	562	---	623	761	749	682	618
31	667	---	683	663	---	584	---	621	---	749	677	---
MEAN	676	670	671	658	663	615	615	643	699	726	742	678

WTR YR 1978 MEAN 672 MAX 822 MIN 529
TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

JAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.5	7.0	1.5	1.5	.0	.5	9.5	10.0	14.0	17.0	17.5	17.0
2	11.0	6.5	4.0	1.5	1.0	.0	8.0	12.0	13.0	18.0	19.0	15.0
3	8.0	6.0	3.5	1.5	2.0	.0	9.0	10.0	12.5	16.0	18.0	14.5
4	7.5	5.0	4.0	1.0	2.5	2.0	9.5	10.5	15.0	15.5	19.5	16.5
5	6.0	5.5	2.5	2.0	3.0	4.5	6.0	10.5	16.5	17.5	20.0	17.0
6	7.5	6.5	3.0	2.5	4.0	4.5	7.0	10.0	17.5	18.5	19.0	15.0
7	9.0	6.5	1.5	3.0	4.0	4.5	7.0	10.0	17.0	17.5	19.0	14.0
8	6.5	5.0	.0	3.5	4.0	4.0	10.5	10.5	20.5	18.0	18.5	14.5
9	9.0	2.5	.0	3.0	3.5	5.0	11.0	11.0	15.0	18.0	20.0	14.5
10	9.0	5.0	2.0	2.0	3.5	5.0	9.5	10.5	17.0	19.0	19.5	12.0
11	10.0	5.5	2.5	3.0	2.0	5.0	10.0	12.5	16.0	19.5	16.0	11.0
12	6.5	4.5	3.0	3.5	.5	4.5	10.5	11.0	13.0	16.5	15.0	10.0
13	9.0	4.0	4.0	3.0	1.0	4.0	10.0	14.0	17.5	19.0	16.0	11.5
14	8.5	4.5	3.5	1.5	.5	4.5	10.5	12.0	16.5	18.5	15.0	11.0
15	8.0	4.0	4.0	2.0	1.0	3.5	8.5	16.0	17.0	18.0	16.0	12.0
16	9.5	3.5	4.0	1.0	1.0	3.5	7.5	12.0	16.0	18.5	15.0	11.0
17	10.0	3.0	3.0	1.0	1.5	5.0	10.5	12.0	14.0	19.0	14.5	10.5
18	10.5	1.0	1.0	1.5	2.0	7.0	9.0	13.0	15.0	18.5	15.0	9.0
19	10.5	.0	1.5	1.0	3.0	6.0	9.5	10.0	13.5	19.0	17.0	7.5
20	12.0	.5	1.0	1.0	5.0	6.5	10.0	11.0	15.5	19.5	16.0	8.0
21	11.0	2.0	1.5	1.5	4.5	7.0	10.5	13.0	16.0	19.0	18.0	9.0
22	8.5	1.5	.0	1.0	4.0	7.0	6.0	13.5	16.5	18.5	16.0	9.5
23	7.0	1.5	1.5	1.5	4.5	7.5	10.0	13.0	20.5	---	15.5	10.0
24	8.5	2.0	.0	2.0	4.0	8.0	8.0	12.0	19.0	---	16.0	15.0
25	9.0	3.0	1.5	1.0	4.0	7.5	9.5	10.0	20.0	17.5	15.0	14.5
26	9.5	3.0	2.0	1.5	4.0	7.0	11.5	12.0	15.0	18.5	15.5	15.0
27	10.0	3.5	1.5	1.0	3.5	8.5	11.5	14.0	19.0	19.0	14.5	14.5
28	6.5	3.5	1.0	1.0	3.0	7.0	11.0	11.0	20.5	20.5	15.0	14.0
29	6.0	4.0	1.0	1.5	---	9.5	10.5	13.5	19.0	19.0	14.0	15.0
30	7.0	3.0	.0	1.0	---	10.0	11.0	11.5	17.0	20.0	16.0	13.5
31	8.0	---	.0	1.5	---	7.5	---	12.5	---	18.5	16.5	---
MEAN	9.0	4.0	2.0	2.0	2.5	5.5	9.5	12.0	16.5	18.5	16.5	12.5
WTR YR 1978	MEAN	9.0	MAX	20.5	MIN	.0						

06019500 RUBY RIVER ABOVE RESERVOIR, NEAR ALDER, MT

LOCATION.--Lat 45°10'31", long 112°08'52", in SW¼SW¼ sec.31, T.7 S., R.4 W., Madison County, Hydrologic Unit 10020003, on left bank at Puller Hot Springs 0.4 mi (0.6 km) upstream from Cottonwood Creek, 6 mi (10 km) upstream from Ruby Dam, and 10.5 mi (16.9 km) south of Alder.

DRAINAGE AREA.--538 mi² (1,393 km²).

PERIOD OF RECORD.--May 1938 to current year. Monthly discharge only for May 1938, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1938(M). WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,440.2 ft (1,658.17 m) National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Oct. 1, 1938, nonrecording gage at bridge 1,500 ft (457 m) downstream at datum 5.2 ft (1.58 m) lower. Oct. 1, 1938, to Aug. 5, 1955, water-stage recorder at site 500 ft (152 m) downstream at datum 0.5 ft (0.15 m) lower.

REMARKS.--Records good except those for period of no gage-height record, Apr. 26 to May 11, which are poor. Diversions for irrigation of about 3,000 acres (12.1 km²) above station.

AVERAGE DISCHARGE.--40 years, 178 ft³/s (5.041 m³/s), 129,000 acre-ft/yr (159 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,670 ft³/s (47.3 m³/s) June 10, 1970, gage height, 5.62 ft (1.713 m); minimum daily, 35 ft³/s (0.99 m³/s) Jan. 23, 1962.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 640 ft³/s (18.1 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 16	1600	942 26.7	4.34 1.323	June 10	1200	*936 27.3	*4.38 1.335
May 24	1100	804 22.8	4.08 1.244	June 15	0900	877 24.8	4.22 1.286

Minimum discharge, 97 ft³/s (2.75 m³/s) Mar. 2,3, gage height, 2.33 ft (0.710 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	144	67	67	55	57	77	116	187	503	386	354	380
2	145	67	67	57	59	79	116	214	459	397	397	380
3	145	67	67	57	59	79	116	264	478	399	397	380
4	155	67	67	57	59	79	116	340	562	329	391	380
5	111	66	67	57	59	79	116	335	694	312	389	380
6	105	65	68	57	59	79	116	335	734	312	386	380
7	90	65	68	57	59	79	116	335	622	304	385	380
8	90	65	68	57	59	79	116	334	856	239	381	381
9	97	67	68	57	60	79	116	333	857	280	381	379
10	94	67	68	59	73	95	116	331	891	274	460	375
11	62	67	68	59	73	119	114	331	892	253	469	360
12	63	67	68	59	73	119	114	331	761	239	466	264
13	94	67	68	59	73	119	121	331	708	310	464	252
14	79	67	61	58	73	116	136	331	799	358	420	248
15	65	67	55	57	73	116	136	332	859	371	420	248
16	59	67	56	57	75	116	136	335	803	369	420	244
17	60	67	54	57	75	116	136	333	851	355	420	240
18	61	67	54	57	75	116	136	481	568	354	420	240
19	62	67	57	57	75	116	136	512	577	364	420	240
20	62	67	57	56	75	116	136	491	589	359	420	236
21	62	67	57	57	75	116	139	497	540	327	400	229
22	63	66	57	57	75	116	139	543	533	298	400	183
23	63	67	57	57	75	114	136	696	520	268	400	183
24	63	67	57	57	75	114	136	788	408	267	400	187
25	64	67	57	57	75	114	136	771	475	286	400	187
26	65	67	57	57	75	116	136	618	457	299	400	214
27	65	67	57	57	75	116	145	549	408	308	400	225
28	66	67	56	57	75	116	167	512	358	336	400	225
29	65	67	56	57	---	116	167	543	364	335	400	203
30	67	67	59	57	---	116	167	597	367	335	400	193
31	67	---	59	57	---	115	---	562	---	335	400	---
TOTAL	2574	2602	1904	1776	1951	3242	3991	13510	16633	10044	12657	6416
MEAN	83.0	83.7	61.4	57.3	63.1	105	133	450	537	324	408	281
MAX	145	67	68	59	75	119	187	768	892	397	469	381
MIN	59	65	54	56	57	77	114	187	364	263	354	183
AL-FI	5110	3770	3760	3520	3870	6430	7920	26800	36960	19920	25110	16690
CAL YR 1977	TOTAL	65105	MEAN 173	MAX 555	MIN 20	AL-FI	125200					
WTR YR 1978	TOTAL	60700	MEAN 221	MAX 892	MIN 34	AL-FI	160100					

06020600 RUBY RIVER BELOW RESERVOIR, NEAR ALDER, MT

LOCATION.--Lat 45°14'32", long 112°06'36", in SE&NE¼ sec.8, T.7 S., R.4 W., Madison County, Hydrologic Unit 10020003, on right bank 0.2 mi (0.3 km) downstream from Ruby Dam and 5.7 mi (9.2 km) south of Alder.

DRAINAGE AREA.--596 mi² (1,544 km²).

PERIOD OF RECORD.--November 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 5,290 ft (1,612 m), National Geodetic Vertical Datum of 1929 (from river-profile map).

REMARKS.--Records good. Flow regulated by Ruby River Reservoir (see p. 606). Diversions for irrigation of about 3,500 acres (14.2 km²) above station.

AVERAGE DISCHARGE.--15 years (water years 1964-1978), 223 ft³/s (6.315 m³/s), 161,600 acre-ft/yr (199 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,610 ft³/s (45.6 m³/s) June 10, 1970, gage height, 5.37 ft (1.637 m); minimum, 1.4 ft³/s (0.04 m³/s) Dec. 5, 1974, dam closure, result of discharge measurement; minimum daily, 19 ft³/s (0.54 m³/s) Feb. 15-19, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 948 ft³/s (26.8 m³/s) June 10, gage height, 3.80 ft (1.158 m); minimum daily, 54 ft³/s (1.53 m³/s) Dec. 16, 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	174	116	118	105	110	106	293	540	494	311	164	128
2	157	125	125	105	110	102	278	580	403	302	158	123
3	132	120	125	110	111	100	207	600	479	294	154	121
4	156	126	125	110	109	106	196	570	550	266	156	119
5	147	127	118	114	110	114	166	520	619	304	146	121
6	145	131	120	111	111	118	174	470	684	296	148	132
7	151	122	123	111	111	114	177	420	779	277	145	132
8	150	112	112	112	113	116	192	390	760	257	142	119
9	145	109	117	113	111	123	192	400	519	260	146	115
10	145	116	116	113	112	123	199	459	671	241	141	114
11	140	127	121	113	111	114	209	440	716	231	142	136
12	142	135	126	113	104	113	202	548	506	232	141	171
13	143	134	120	113	105	116	196	536	600	222	143	167
14	143	131	120	114	105	111	167	405	751	206	157	155
15	141	135	121	114	105	108	192	615	779	200	159	149
16	141	126	122	114	110	109	201	619	513	206	152	149
17	141	116	109	113	105	120	205	615	497	202	162	144
18	140	115	110	113	107	137	164	526	473	197	165	151
19	137	116	110	111	109	151	166	444	548	194	151	153
20	132	100	110	114	110	154	194	436	461	195	142	150
21	133	105	115	113	109	149	211	474	465	197	137	149
22	133	110	115	112	109	168	194	500	473	190	134	148
23	132	110	114	109	109	163	193	609	455	153	131	146
24	132	114	117	110	111	159	185	752	446	176	132	152
25	135	126	116	113	112	153	197	550	436	171	131	152
26	134	126	115	113	110	156	240	477	599	166	132	147
27	130	125	116	111	108	177	356	445	557	164	135	145
28	127	125	119	110	109	197	456	436	552	165	137	144
29	126	125	110	111	---	202	500	526	525	187	132	145
30	132	123	110	108	---	232	520	513	319	171	131	143
31	127	---	110	105	---	257	---	445	---	163	127	---
TOTAL	4357	3021	3610	3451	3062	4378	7081	15769	16385	6564	4461	4224
MEAN	141	121	116	111	104	141	235	509	546	221	144	141
MAX	174	135	125	114	113	257	520	619	871	311	165	171
MIN	126	100	109	105	104	106	174	336	319	163	127	114
AC-FI	6050	7160	7160	6350	6070	6650	14050	31250	32500	13610	8650	6380
CAL YR 1977	TOTAL	60975	MEAN	167	MAX	655	MIN	86	AC-FI	120900		
WTR YR 1976	TOTAL	77265	MEAN	212	MAX	871	MIN	100	AC-FI	153500		

LOCATION.--Lat 45°42'49", long 113°01'28", in NE¼ sec.36, T.1 S., R.12 W., Beaverhead County, Hydrologic Unit 10020004, on left bank just downstream from bridge on old county road, 6.5 mi (10.5 km) southwest of Wise River.

PERIOD OF RECORD.--October 1972 to current year.

REMARKS.--Records fair. Minor diversions for irrigation above station.

AVERAGE DISCHARGE.--6 years, 188 ft³/s (5.324 m³/s), 136,200 acre-ft/yr (168 hm³/yr).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 14, 1927, when Wise River Reservoir dam failed, exceeded all other known floods at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 350 ft³/s (9.91 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)	Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)
May 11	0330	383	10.8	3.88	1.183	May 29	1100	834	23.6	5.33	1.625
May 16	0430	739	20.9	4.97	1.515	June 10	0830	*1,910	54.1	*7.63	2.326
May 24	1000	1,050	29.7	5.81	1.771	June 19	1300	1,570	44.5	6.93	2.112

Minimum daily discharge, 30 ft³/s (0.85 m³/s) Nov. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	87	54	62	37	41	40	162	265	585	726	165	103
2	82	58	63	35	40	38	163	301	594	701	159	99
3	81	43	63	40	40	36	144	306	727	651	154	94
4	78	54	59	48	39	37	136	287	924	624	150	93
5	75	57	57	51	41	39	131	260	1180	631	143	99
6	75	60	57	51	41	41	121	237	1470	620	140	121
7	77	51	56	50	41	39	122	226	1700	529	136	121
8	76	42	53	50	40	39	117	218	1740	503	132	129
9	74	35	53	50	41	40	116	214	1760	475	129	120
10	72	52	54	48	40	36	117	296	1790	432	126	114
11	68	57	53	47	38	38	137	345	1470	405	123	154
12	71	60	52	47	36	38	130	282	1190	366	122	158
13	73	57	51	47	34	38	121	286	1190	331	124	150
14	72	55	53	45	35	38	126	398	1360	308	133	147
15	70	54	54	45	36	37	130	645	1360	297	131	146
16	68	47	50	44	36	39	141	705	1210	322	133	150
17	67	41	46	44	35	40	134	579	1050	303	143	138
18	65	36	47	43	37	41	125	555	1020	272	143	133
19	64	33	47	43	36	44	127	457	1370	250	135	135
20	62	30	43	43	38	50	140	437	1150	256	126	138
21	61	32	42	43	39	54	139	503	1010	266	120	141
22	59	35	46	40	38	58	129	656	1000	233	118	146
23	58	44	50	40	39	58	125	820	943	207	122	150
24	58	55	49	40	40	59	124	1000	989	204	118	152
25	58	60	47	44	40	54	130	819	931	194	114	145
26	63	71	47	43	40	60	165	670	832	188	111	140
27	64	73	43	41	41	68	197	621	716	182	114	136
28	61	69	40	41	41	80	206	651	696	180	111	135
29	60	66	42	41	---	94	206	797	743	190	108	134
30	63	63	41	39	---	111	219	750	753	179	106	129
31	58	---	39	40	---	151	---	649	---	170	105	---
TOTAL	2120	1544	1559	1360	1083	1615	4280	15215	33493	11205	3994	3950
MEAN	68.4	51.5	50.3	43.9	38.7	52.1	143	491	1116	361	129	132
MAX	87	73	63	51	41	131	219	1000	1790	726	165	156
MIN	58	30	39	35	34	36	116	214	585	170	105	93
AC-FT	4210	3060	3090	2700	2150	3200	8490	30180	66430	22230	7920	7830
CAL YR 1977	TOTAL	38929	MEAN 107	MAX	1040	MIN 30	AC-FT	77220				
WTR YR 1978	TOTAL	81418	MEAN 223	MAX	1790	MIN 30	AC-FT	161500				

BIG HOLE RIVER BASIN

06025500 BIG HOLE RIVER NEAR MELROSE, MT

LOCATION.--Lat 45°31'36", long 112°42'03", in SE4SE4SW4 sec.34, T.3 S., R.9 W., Madison County, Hydrologic Unit 10020004, on left bank at downstream side of bridge on Interstate Highway 15 and U.S. Highway 91, 0.1 mi (0.2 km) downstream from Rock Creek, and 7 mi (11 km) south of Melrose.

DRAINAGE AREA.--2,476 mi² (6,413 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1923 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 5,032.87 ft (1,534.018 m) above mean sea level. Prior to June 14, 1927, water-stage recorder, and July 17, 1927, to Sept. 30, 1931, nonrecording gage, at site 1.7 mi (2.7 km) upstream at different datum.

REMARKS.--Water-discharge records good except those for winter period, which are fair. Diversions for irrigation of about 136,000 acres (550 km²) above station.

AVERAGE DISCHARGE.--55 years, 1,163 ft³/s (32.94 m³/s), 842,600 acre-ft/yr (1.04 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,000 ft³/s (651 m³/s) June 14, 1927, when Wise River Reservoir dam failed (gage height, 14.0 ft or 4.27 m, from floodmark, site and datum then in use), from rating curve extended above 8,000 ft³/s (227 m³/s); maximum discharge unaffected by dam failure, 14,300 ft³/s (405 m³/s) June 10, 1972, gage height, 8.04 ft (2.451 m); minimum observed, 49 ft³/s (1.39 m³/s) Aug. 17, 1931, gage height, 0.70 ft (0.213 m), site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 3400 ft³/s (96.3 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Apr. 1	0100	5770	163	5.21	1.588	June 10	1300	*7550	214	* 5.86	1.786
May 2	1045	3670	104	4.17	1.271	July 5	0215	4340	123	4.44	1.353
May 25	0130	5520	156	5.01	1.527						

Minimum discharge, 100 ft³/s (2.83 m³/s) Nov. 20, 21, gage height, 0.79 ft (0.241 m), result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	665	563	605	290	410	438	4460	3140	3780	3370	1060	446
2	691	583	605	280	400	450	4560	3600	3600	3480	996	421
3	677	568	650	372	440	330	3630	3620	3460	3760	933	408
4	639	526	650	422	459	442	2700	3420	3590	4010	861	414
5	593	547	605	425	453	432	2330	3160	4010	4290	839	414
6	576	561	590	445	472	442	2160	3010	4740	4140	822	456
7	561	568	568	428	440	472	2050	2870	5670	3820	757	501
8	573	519	479	443	440	480	1970	2680	6220	3410	710	509
9	561	431	470	451	421	491	2110	2550	6710	3290	657	529
10	580	351	560	446	454	504	2110	2780	7240	3150	627	533
11	575	492	650	436	390	495	2420	3210	6790	2940	612	667
12	580	466	650	443	326	485	2390	3300	6050	2640	583	783
13	585	479	512	459	342	459	2110	3160	5650	2430	575	896
14	580	466	568	459	390	446	1920	3160	5300	2270	627	890
15	570	460	635	458	619	441	1940	3560	5070	2120	672	872
16	560	488	612	426	552	429	2140	4120	4740	2080	733	828
17	550	401	515	458	539	478	2310	4460	4400	2070	781	801
18	547	330	499	438	539	606	2050	4790	4130	2010	813	813
19	540	253	445	402	549	626	1890	4760	4640	1880	813	842
20	533	118	425	455	497	724	1930	4530	4880	1830	765	906
21	519	141	405	457	434	732	2010	4160	4600	1820	702	928
22	519	400	427	445	432	743	1890	4230	4230	1730	650	946
23	519	409	485	421	442	777	1720	4670	4050	1590	635	917
24	512	440	474	418	458	818	1650	5300	4020	1450	590	897
25	519	464	476	452	445	850	1630	5390	3960	1340	554	874
26	540	526	486	464	435	965	1760	4970	3750	1240	519	857
27	590	583	423	459	435	1190	2230	4460	3580	1130	526	854
28	590	627	366	446	441	1710	2630	4060	3550	1090	519	835
29	583	650	383	472	---	2520	2600	4040	3290	1160	499	819
30	590	605	427	440	---	3350	2610	4060	3320	1200	485	784
31	597	---	354	421	---	3970	---	3910	---	1180	479	---
TOTAL	17814	14035	15999	13311	12634	27185	69930	119090	138820	73920	21414	21640
MEAN	575	468	516	429	451	877	2331	3642	4627	2385	691	721
MAX	691	650	650	472	619	3970	4580	5390	7240	4290	1080	946
MIN	512	118	354	280	326	330	1630	2550	3290	1090	479	408
AC-FT	35330	27840	31730	26400	25060	53920	138700	236200	275300	146600	42470	42920
CAL YR 1977	TOTAL	243370	MEAN	667	MAX	4630	MIN	118	AC-FT	482700		
WTR YR 1978	TOTAL	545792	MEAN	1495	MAX	7240	MIN	118	AC-FT	1083000		

BIG HOLE RIVER BASIN

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06025500 BIG HOLE RIVER NEAR MELROSE, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: June 1977 to current year.

INSTRUMENTATION.--Temperature recorder since June 22, 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 22.0°C July 23, 1977; minimum, 0.0°C on many days during winter period.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum recorded, 21.5°C Aug. 6; minimum, 0.0°C on many days during November to March.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.5	7.0	8.0	3.5	1.5	2.5	.0	.0	.0	.0	.0	.0
2	9.5	6.0	7.5	5.0	3.0	3.5	.0	.0	.0	.0	.0	.0
3	9.5	5.5	7.5	3.0	1.0	2.0	.5	.0	.5	.0	.0	.0
4	9.5	5.5	7.0	3.0	1.0	2.0	.5	.0	.5	.0	.0	.0
5	8.0	5.0	7.0	3.0	1.0	2.0	.0	.0	.0	.0	.0	.0
6	8.5	5.5	7.0	5.0	3.0	3.5	.5	.0	.0	.0	.0	.0
7	9.5	7.0	8.0	3.5	2.0	2.5	1.0	.0	.5	.0	.0	.0
8	9.0	6.0	7.5	2.0	.0	1.0	.0	.0	.0	.0	.0	.0
9	8.0	6.5	7.0	1.0	.0	.5	.0	.0	.0	.0	.0	.0
10	7.5	4.0	6.0	2.5	.0	1.0	.0	.0	.0	.0	.0	.0
11	7.5	3.5	5.5	2.5	.0	1.0	.5	.0	.5	.0	.0	.0
12	8.5	4.0	6.0	3.0	1.0	2.0	1.5	.5	1.0	.0	.0	.0
13	7.5	5.5	6.5	2.5	1.0	2.0	1.5	.5	1.0	.0	.0	.0
14	9.0	5.0	7.0	2.5	.5	1.5	2.0	1.5	2.0	.0	.0	.0
15	9.0	5.0	7.0	2.5	1.5	2.0	2.0	1.0	2.0	.0	.0	.0
16	8.5	5.0	7.0	1.5	.5	1.0	1.0	.0	.5	.0	.0	.0
17	9.0	5.5	7.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
18	8.5	4.5	7.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	8.5	5.0	7.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	9.0	6.0	7.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	8.5	6.0	7.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	8.0	5.0	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	7.5	4.5	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	8.0	5.0	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	9.0	6.0	7.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	8.5	6.5	7.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	7.5	4.5	6.0	.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
29	7.0	5.5	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	6.0	4.5	5.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	4.5	3.0	4.0	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	9.5	3.0	6.5	5.0	.0	1.0	2.0	.0	.5	.0	.0	.0

06025500 BIG HOLE RIVER NEAR MELROSE, MT--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	.0	.0	.0	1.5	.0	.5	5.0	1.0	3.5	8.5	7.5	8.0
2	.0	.0	.0	.0	.0	.0	4.5	3.5	4.0	9.5	7.5	8.5
3	.0	.0	.0	.0	.0	.0	4.0	2.0	3.0	9.5	7.5	8.0
4	.0	.0	.0	.0	.0	.0	5.5	3.5	4.5	8.0	6.0	7.0
5	.0	.0	.0	2.0	.0	1.0	6.0	4.0	5.0	6.5	4.5	5.0
6	.5	.0	.0	5.0	1.5	3.0	6.0	4.0	5.0	5.0	3.5	4.5
7	.5	.0	.0	4.5	1.0	2.5	5.5	4.0	4.5	7.5	4.5	6.0
8	1.0	.0	.5	4.0	1.5	3.0	7.0	3.5	5.0	9.0	6.0	7.5
9	.5	.0	.0	4.0	2.5	3.0	6.0	5.0	6.0	9.5	7.0	8.5
10	.5	.0	.0	5.0	1.0	3.0	9.0	5.5	7.0	11.0	9.0	9.5
11	.0	.0	.0	5.5	1.5	3.5	9.0	6.0	7.5	10.5	8.5	9.0
12	.0	.0	.0	4.0	1.5	3.0	7.5	4.0	5.5	10.0	7.0	8.5
13	.0	.0	.0	3.5	.5	2.0	7.5	4.0	5.5	11.5	8.0	10.0
14	.0	.0	.0	2.5	.0	1.0	7.5	5.0	6.0	13.0	10.0	11.5
15	.0	.0	.0	4.5	.0	2.0	8.0	5.0	6.5	12.0	9.0	11.0
16	.0	.0	.0	5.0	.5	2.5	8.0	6.5	7.5	9.0	7.5	8.0
17	.0	.0	.0	6.5	1.5	4.0	6.5	4.5	5.5	7.5	6.5	7.0
18	.0	.0	.0	7.0	3.0	4.5	7.5	3.5	5.5	6.5	6.0	6.0
19	.0	.0	.0	6.0	2.5	4.0	9.5	5.5	7.0	7.5	5.5	6.5
20	.5	.0	.0	6.5	2.5	4.5	8.0	7.0	7.5	9.0	6.5	8.5
21	1.0	.0	.5	7.0	2.5	5.0	7.0	6.0	6.5	11.5	9.0	10.5
22	2.5	.0	1.0	7.0	3.5	5.0	7.0	5.0	5.5	11.5	9.5	10.5
23	2.5	.5	1.5	7.0	3.5	5.0	7.5	4.0	6.0	11.5	8.5	10.0
24	2.0	1.5	2.0	6.5	3.0	4.5	8.5	5.0	6.5	9.0	6.5	8.0
25	3.0	.5	1.5	6.0	2.0	4.0	10.0	6.5	8.0	7.5	6.0	7.0
26	3.5	1.0	2.0	7.0	3.0	5.0	9.0	7.5	8.5	9.5	6.0	8.5
27	2.5	.5	1.5	6.5	3.0	4.5	10.0	7.0	8.0	11.0	8.0	9.5
28	3.0	.0	1.5	6.0	2.0	4.5	9.5	7.5	8.5	12.5	9.0	11.0
29	---	---	---	5.0	.5	3.5	10.0	7.5	8.5	15.0	10.5	11.5
30	---	---	---	4.0	1.0	2.5	9.0	8.0	8.5	10.5	8.5	9.5
31	---	---	---	4.5	1.0	3.0	---	---	---	9.0	7.5	8.0
MONTH	3.5	.0	.5	7.0	.0	3.0	10.0	1.0	6.0	13.0	3.5	8.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	11.0	7.5	9.0	16.0	13.5	14.5	20.5	15.5	17.5	---	---	---
2	13.0	9.0	11.0	15.5	13.5	14.5	19.5	15.0	17.0	---	---	---
3	14.0	11.0	12.5	14.5	12.5	13.5	20.5	15.0	17.5	---	---	---
4	13.5	11.5	12.5	12.5	11.0	12.0	21.0	15.0	17.5	---	---	---
5	14.5	11.5	13.0	13.0	12.0	12.5	20.5	15.5	18.0	---	---	---
6	14.5	12.0	13.5	14.0	12.0	13.0	21.5	15.5	18.0	16.5	14.0	15.0
7	14.0	12.0	13.0	15.5	12.5	14.0	---	---	---	17.5	13.5	15.5
8	14.0	12.0	13.0	15.5	14.5	15.0	---	---	---	16.5	13.5	15.0
9	14.5	12.5	13.5	16.5	14.5	15.5	---	---	---	16.0	11.5	14.0
10	13.5	10.5	12.0	16.5	15.0	16.0	---	---	---	14.5	12.0	13.0
11	10.0	8.5	9.5	18.0	15.0	16.5	---	---	---	12.0	10.5	11.0
12	12.0	9.0	10.5	17.5	14.5	16.0	---	---	---	10.5	6.5	9.5
13	14.0	11.0	12.5	18.0	15.0	16.5	---	---	---	12.0	8.0	9.5
14	14.0	12.0	13.0	19.0	15.0	17.0	---	---	---	12.5	8.0	10.0
15	14.0	12.0	13.0	19.0	16.5	17.5	---	---	---	13.5	8.5	10.5
16	13.0	11.0	12.0	18.0	15.5	17.0	---	---	---	13.0	8.5	10.5
17	13.0	10.0	11.5	16.5	15.5	17.0	---	---	---	---	---	---
18	13.0	11.5	12.5	18.0	15.0	16.5	---	---	---	---	---	---
19	12.0	10.5	11.5	16.5	14.5	15.5	---	---	---	---	---	---
20	13.0	9.5	11.5	15.0	13.0	14.5	---	---	---	---	---	---
21	13.5	11.5	12.5	16.5	12.5	15.0	---	---	---	---	---	---
22	14.5	11.5	13.0	18.5	14.5	16.5	---	---	---	---	---	---
23	15.0	12.5	13.5	20.0	15.5	17.5	---	---	---	---	---	---
24	15.0	13.5	14.0	20.0	16.0	18.0	---	---	---	---	---	---
25	14.0	12.0	12.5	21.0	16.0	18.5	---	---	---	---	---	---
26	13.0	10.0	11.5	20.5	15.5	18.0	---	---	---	---	---	---
27	15.0	12.0	13.0	21.0	17.0	19.0	---	---	---	---	---	---
28	16.5	14.0	15.0	20.5	17.0	18.0	---	---	---	---	---	---
29	16.5	13.0	15.0	19.5	15.5	17.5	---	---	---	---	---	---
30	15.5	13.0	14.5	21.0	16.0	18.0	---	---	---	---	---	---
31	---	---	---	20.5	16.0	18.0	---	---	---	---	---	---
MONTH	16.5	7.5	12.5	21.0	11.0	16.0	21.5	15.0	17.5	17.5	8.0	12.0
YEAR	21.5	.0	6.0									

06035000 WILLOW CREEK NEAR HARRISON, MT

LOCATION.--Lat 45°43'21", long 111°44'17", in SW¼NW¼ sec.28, T.1 S., R.1 W., Madison County, Hydrologic Unit 10020005, on right bank 2.2 mi (3.5 km) upstream from Willow Creek Dam, 2.5 mi (4.0 km) northeast of Harrison, and 11 mi (18 km) upstream from mouth.

DRAINAGE AREA.--83.8 mi² (217 km²).

PERIOD OF RECORD.--April 1938 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1559: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 4,750 ft (1,448 m), from topographic map. Prior to Oct. 8, 1946, water-stage recorder at datum 0.22 ft (0.067 m) higher, with different concrete control.

REMARKS.--Records good except those for winter period, which are poor. Diversions for irrigation of about 12,500 acres (50.6 km²) of which 3,500 acres (14.2 km²) is in Norwegian Creek drainage.

AVERAGE DISCHARGE.--40 years, 40.0 ft³/s (1.133 m³/s), 28,980 acre-ft/yr (35.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 813 ft³/s (23.0 m³/s) Feb. 3, 1963, gage height, 4.24 ft (1.292 m), from floodmarks, from rating curve extended above 300 ft³/s (8.50 m³/s); minimum, 1.4 ft³/s (0.040 m³/s) Sept. 17, 1956, gage height, 0.39 ft (0.119 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 191 ft³/s (5.41 m³/s) June 25, gage height, 2.04 ft (0.622 m); maximum gage height, 2.10 ft (0.640 m) Jan. 20 (backwater from ice); minimum discharge, 6.6 ft³/s (0.187 m³/s) Aug. 11, gage height, 0.47 ft (0.143 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	27	23	13	16	23	44	30	24	156	19	10
2	24	27	33	15	17	21	42	25	18	168	16	10
3	25	26	31	19	17	20	37	20	14	171	17	10
4	29	28	27	20	18	25	36	19	12	175	16	11
5	31	27	25	21	19	30	35	21	15	155	13	12
6	32	28	27	22	20	41	34	27	19	147	12	15
7	33	27	28	22	19	44	41	28	26	131	11	17
8	33	26	22	21	19	40	41	27	29	136	10	16
9	33	32	19	21	16	40	39	26	32	155	10	15
10	35	29	23	20	17	38	35	29	64	145	9.3	16
11	35	28	25	20	17	35	37	32	58	142	8.6	21
12	35	26	24	20	16	32	34	30	37	136	8.2	30
13	34	27	23	19	15	31	32	31	33	121	10	29
14	34	27	23	19	16	28	32	33	60	110	11	25
15	35	27	22	15	17	32	32	38	79	95	10	23
16	32	26	20	19	16	32	32	36	69	101	12	21
17	31	24	18	19	16	36	31	26	56	97	17	22
18	31	20	17	18	17	45	30	64	46	71	17	44
19	31	18	16	17	17	45	29	52	75	60	15	49
20	30	15	15	17	18	42	29	32	65	63	14	50
21	29	16	16	18	18	38	31	22	66	65	13	47
22	29	22	16	19	19	39	25	22	117	49	11	44
23	29	26	19	18	19	36	28	35	121	37	11	43
24	28	31	18	18	20	37	28	59	131	26	12	43
25	28	43	17	17	21	34	29	52	168	28	12	42
26	29	61	17	17	21	35	31	38	138	23	10	41
27	29	45	16	17	22	36	31	34	112	21	11	40
28	28	44	17	18	22	37	29	29	109	20	12	42
29	29	36	18	18	---	38	28	30	128	27	11	44
30	31	28	17	17	---	41	27	28	146	22	10	42
31	29	---	15	16	---	45	---	28	---	21	10	---
TOTAL	438	873	649	573	507	1097	992	1003	2070	2879	374.1	875
MEAN	30.3	29.1	20.9	18.5	18.1	35.4	33.1	32.4	69.0	92.4	12.2	29.2
MAX	35	61	33	22	22	46	44	64	168	175	19	50
MIN	19	15	15	13	15	20	27	19	12	20	8.2	10
AC-FT	1860	1730	1290	1140	1010	2130	1970	1990	4110	5710	752	1740
CAL YR 1977	TOTAL	7877.9	MEAN	21.6	MAX	68	MIN	4.2	AC-FT	15630		
WTR YR 1978	TOTAL	12835.1	MEAN	35.2	MAX	175	MIN	8.2	AC-FT	25460		

MADISON RIVER BASIN

06038500 MADISON RIVER BELOW HEBGEN LAKE, NEAR GRAYLING, MT

LOCATION.--Lat 44°52'00", long 111°20'15", near northeast corner of sec.22, T.11 S., R.3 E., Gallatin County, Hydrologic Unit 10020007, Gallatin National Forest, on right bank 1,500 ft (457 m) downstream from Hebgen Dam, 8 mi (13 km) northwest of Grayling, 17 mi (27 km) upstream for West Fork, and at mile 103 (166 km).

DRAINAGE AREA.--905 mi² (2,344 km²).

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 (1,965.494 m) National Geodetic Vertical Datum of 1929 (after 1959 earthquake). Prior to July 13, 1943, nonrecording gage in stilling well.

REMARKS.--Records excellent. Flow completely regulated by Hebgen Lake (see p.606). Diversions for irrigation of about 1,100 acres (4.45 km²) above station.

AVERAGE DISCHARGE.--69 years, 997 ft³/s (28.24 m³/s), 14.96 in/yr (380 mm/yr), 722,300 acre-ft/yr (891 hm³/yr), adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,200 ft³/s (289 m³/s) Aug. 17, 1959, caused by wave over Hebgen Dam during earthquake (gage height, 5.3 ft or 1.62 m, from floodmark), from rating curve extended above 3,500 ft³/s (99.1 m³/s) on basis of slope-area measurement of peak flow; minimum daily, 5.0 ft³/s (0.142 m³/s) May 9-12, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,040 ft³/s (57.8 m³/s) Mar. 15, 27, 28, gage height, 2.48 ft (0.756 m); minimum daily, 61 ft (1.73 m³/s) June 9, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1280	1320	1530	753	817	757	1990	1300	734	57	960	1210
2	1280	1540	1530	753	818	719	1990	1300	734	57	956	1210
3	1280	1540	1530	753	818	657	1960	1310	739	57	906	1200
4	1280	1540	1530	753	817	656	1970	1310	743	57	877	1200
5	1330	1530	1110	785	818	656	1470	1190	743	57	878	1200
6	1360	1530	826	828	818	656	1320	1190	749	58	877	1210
7	1380	1530	826	828	818	656	1300	1190	753	58	869	1210
8	1370	1530	827	828	818	656	1300	1200	521	59	770	1210
9	1370	1520	783	828	818	656	1290	1180	61	59	665	1210
10	1370	1520	753	828	796	656	1290	1180	61	59	539	1210
11	1360	1520	753	828	755	656	1310	1180	62	59	759	1210
12	1360	1510	753	828	753	656	1340	1190	62	59	909	1210
13	1360	1510	753	828	753	657	1340	1190	62	59	908	1210
14	1360	1540	753	828	753	999	1330	1200	62	63	908	1210
15	1360	1560	754	828	754	1760	1330	1200	62	148	908	1210
16	1360	1550	753	828	756	2010	1330	1200	63	243	908	1210
17	1380	1550	753	828	756	2000	1330	1100	64	556	908	1210
18	1390	1550	753	828	755	1990	1320	1000	64	981	908	1240
19	1390	1540	753	827	755	1990	1320	930	64	981	908	1260
20	1270	1540	754	825	755	1990	1320	762	64	981	908	1260
21	1190	1540	753	818	757	1980	1320	762	64	982	908	1260
22	1190	1540	753	818	755	1970	1310	770	64	981	963	1260
23	1190	1530	756	819	755	1960	1310	772	64	975	1090	1260
24	1180	1530	757	818	755	1960	1310	780	65	972	1090	1260
25	1180	1520	753	819	755	1970	1310	781	65	972	1090	1260
26	1180	1540	753	819	754	1990	1310	788	66	971	1180	1260
27	1180	1550	753	818	753	2000	1300	790	66	969	1220	1250
28	1160	1540	753	819	754	2020	1300	792	67	960	1220	1250
29	1180	1540	753	819	---	2010	1300	800	67	961	1210	1250
30	1170	1540	753	818	---	2000	1300	749	67	960	1210	1250
31	1170	---	754	818	---	2000	---	731	---	961	1210	---
TOTAL	39900	45840	27068	25216	21739	43313	42240	31817	7123	15606	29720	36860
MEAN	1267	1528	873	813	776	1397	1408	1026	237	503	959	1229
MAX	1390	1560	1530	828	818	2020	1990	1310	753	982	1220	1260
MIN	1170	1320	753	753	753	656	1290	731	61	63	639	1200
AC-FT	79140	90920	53690	50020	43120	85910	83780	63110	14130	30950	58950	73110
MEAN +	731	726	741	813	776	615	966	1,958	2,214	1,042	775	795
CFSM +	.81	.80	.81	.90	.86	.68	1.06	2.16	2.44	1.15	.85	.87
IN +	.93	.89	.94	1.03	.89	.78	1.19	2.49	2.72	1.32	.98	.98
AC-FT +	44,940	43,220	45,590	50,020	43,120	37,810	57,480	120,410	131,730	64,050	47,650	47,310
OBSERVED												
CAL YR 1977	TOTAL	291,079	MEAN	797	MAX	1,560	MIN	155	AC-FT	577,400		
WTR YR 1978	TOTAL	366,442	MEAN	1,004	MAX	2,020	MIN	61	AC-FT	726,800		
ADJUSTED												
CAL YR 1977	TOTAL	301,891	MEAN	827	CFSM	.91	IN	12.41	AC-FT	598,800		
WTR YR 1978	TOTAL	369,714	MEAN	1,013	CFSM	1.12	IN	15.20	AC-FT	733,300		

+ Adjusted for change in Hebgen Lake

06038800 MADISON RIVER AT KIRBY RANCH, NEAR CAMERON, MT

LOCATION.--Lat 44°53'22", long 111°34'46", in NE¼SE¼ sec.10, T.11 S., R.1 E., Madison County, Hydrologic Unit 10020007, on upstream side of county bridge 0.2 mi (0.3 km) upstream from West Fork Madison River, and 22 mi (35 km) south of Cameron.

DRAINAGE AREA.--1,065 mi² (2,758 km²).

PERIOD OF RECORD.--September 1959 to September 1963. May 1978 to July 1978.

GAGE.--Nonrecording gage. Altitude of gage is 5,860 ft (1,786 m), from topographic map. Aug. 31, 1959 to Oct. 2, 1959, nonrecording gage at present site but at a different datum. Oct. 3, 1959 to September 1963, water-stage recorder at site 75 ft (23 m) upstream at different datum.

REMARKS.--Records fair. Flow regulated by Hebgen Lake (see p. 606). Diversions for irrigation of about 1,500 acres (6.07 km²) above station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Wave over dam during earthquake (Aug. 17, 1959) at Hebgen Dam 17 mi (27 km) upstream resulted in momentary discharge of 10,200 ft³/s (289 m³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,710 ft³/s (133 m³/s) Oct. 23, 1959, gage height, 3.04 ft (0.930 m), site and datum then in use; minimum daily, 280 ft³/s (7.93 m³/s) May 26, 27, 1960.

EXTREMES FOR CURRENT SEASON.--Maximum discharge observed, 1,730 ft³/s (49.0 m³/s) May 16, 17, gage height, 1.66 ft (0.506 m); minimum daily, 516 ft³/s (14.6 m³/s) July 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								1550	1030	795		
2								1500	1100	758		
3								1480	1140	733		
4								1550	1220	733		
5								1510	1260	721		
6								1330	1440	652		
7								1420	1550	608		
8								1330	1630	641		
9								1370	1180	652		
10								1300	1100	608		
11								1370	1090	630		
12								1320	795	619		
13								1350	808	597		
14								1390	834	545		
15								1530	999	516		
16								1730	1010	641		
17								1730	900	663		
18								1400	746	1220		
19								1390	795	1270		
20								1090	783	1250		
21								1170	758	1330		
22								1120	770	1220		
23								1300	847	1230		
24								1220	887	1250		
25								1220	860	1230		
26								1140	770	1230		
27								1140	721	1250		
28								1180	698	1280		
29								1180	733	1250		
30								1250	821	1230		
31								1100	---	1220		
TOTAL								41660	29295	28622		
MEAN								1344	977	923		
MAX								1730	1630	1530		
MIN								1090	698	516		
AC-FT								82630	56110	56770		

LOCATION.--Lat 45°21'23", long 111°34'51", in NE¼Sec.34, T.5 S., R.1 E., Madison County, Hydrologic Unit 10020007, Beaverhead National Forest, on left bank 800 ft (244 m) upstream from bridge at forest boundary, 8.8 mi (14.2 km) east of Ennis.

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

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

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 555 ft³/s (15.7 m³/s) June 14, 1974, gage height, 3.97 ft (1.210 m) in gage well, about 4.97 ft (1.515 m) from outside gage; minimum, 5.0 ft³/s (0.142 m³/s) Mar. 7, 1975, gage height, 1.84 ft (0.561 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 150 ft³/s (4.25 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 3	0700	ice jam	*3.61 1.100	June 10	1600	*294 8.33	3.57 1.088
May 15	2030	216 6.12	3.32 1.012	June 15	0100	284 8.04	3.38 1.030
May 24	0100	216 6.34	3.35 1.021				

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	19	16	8.0	12	13	60	69	114	174	60	33
2	25	20	17	9.0	14	8.5	51	75	113	171	59	32
3	25	18	17	13	13	8.5	43	77	120	165	59	31
4	24	19	16	15	13	12	37	70	136	156	57	30
5	23	19	15	15	13	13	34	64	159	149	56	30
6	23	21	17	15	13	13	32	59	190	140	55	37
7	25	19	16	14	13	13	31	54	199	131	53	34
8	25	14	14	14	13	13	30	53	219	132	53	34
9	24	15	16	15	13	13	29	56	250	126	51	30
10	23	21	18	14	13	13	30	60	263	123	50	30
11	22	19	17	14	12	13	36	81	221	122	50	42
12	23	18	16	14	10	13	36	72	191	114	49	47
13	23	18	16	14	9.0	13	34	84	213	104	51	41
14	24	18	17	14	9.0	13	33	119	245	99	51	42
15	23	18	17	14	11	12	36	176	259	94	48	44
16	23	17	16	14	13	15	39	181	208	91	48	46
17	22	16	14	14	13	14	39	129	167	85	49	39
18	22	15	17	13	13	15	35	130	191	81	47	39
19	21	12	14	13	13	15	35	128	210	79	44	36
20	21	9.0	10	15	13	15	37	129	183	60	42	38
21	21	11	14	14	13	17	40	140	181	76	41	39
22	20	18	17	14	13	16	35	166	175	72	40	41
23	20	20	17	13	13	18	33	165	172	70	36	44
24	20	19	16	12	13	19	33	196	171	71	37	45
25	19	19	15	14	13	17	38	173	169	69	36	43
26	20	21	15	15	13	19	51	149	177	67	35	41
27	20	18	13	14	12	23	56	129	172	68	36	38
28	19	17	12	14	13	28	57	128	174	69	35	37
29	19	17	15	14	---	34	59	137	181	67	34	37
30	20	17	16	13	---	46	62	129	177	65	33	36
31	20	---	11	13	---	59	---	122	---	62	34	---
TOTAL	689	522.0	477	421.0	349.0	556.0	1201	3542	5642	3174	1431	1138
MEAN	22.2	17.4	15.4	13.6	12.5	17.9	40.0	114	188	102	46.2	37.9
MAX	28	21	18	15	14	59	62	196	263	174	60	47
MIN	19	9.0	10	8.0	9.0	8.5	29	53	113	62	33	30
AC-FT	1370	1040	946	835	692	1100	2380	7030	11190	6300	2840	2260
CAL YR 1977	TOTAL	11762.0	MEAN	32.2	MAX	153	MIN	9.0	AC-FT	23330		
WIR YR 1976	TOTAL	19142.0	MEAN	52.4	MAX	263	MIN	8.0	AC-FT	37970		

06041000 MADISON RIVER BELOW ENNIS LAKE, NEAR MCALLISTER, MT

LOCATION.--Lat 45°29'25", long 111°38'00", in NW¼ sec.17, T.4 S., R.1 E., Madison County, Hydrologic Unit 10020007, on right bank 500 ft (152 m) downstream from Madison powerplant, 1.5 mi (2.4 km) downstream from Ennis Lake, and 5.7 mi (9.2 km) northeast of McAllister.

DRAINAGE AREA.--2,186 mi² (5,662 km²).

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. Altitude of gage is 4,700 ft (1,433 m), from topographic map. 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 and Ennis Lakes (see p.606-607). Diversions for irrigation of about 23,000 acres (93.1 km²) above station.

AVERAGE DISCHARGE.--40 years (1938-78), 1,763 ft³/s (49.93 m³/s), 1,277,000 acre-ft/yr (1.57 km³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,550 ft³/s (270 m³/s) June 12, 1970, gage height, 8.01 ft (2.441 m); minimum daily, 210 ft³/s (5.95 m³/s) Aug. 25, 26, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,700 ft³/s (105 m³/s) June 7, gage height, 4.93 ft (1.503 m); minimum daily, 816 ft³/s (23.1 m³/s) Jan. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JUL	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2170	1830	2140	1280	1410	1430	2740	1980	2040	1870	1590	1550
2	2060	1940	2160	1060	1370	1410	2680	2060	1970	1920	1490	1550
3	1850	2020	2180	816	1490	1380	2590	2160	1940	1940	1470	1560
4	1820	2100	2240	966	1520	1370	2580	2180	1950	1910	1470	1550
5	1850	2180	2050	1350	1510	1250	2570	2180	2020	1910	1470	1550
6	1870	2210	1690	1550	1480	1330	1700	2180	2190	1930	1470	1570
7	1940	2210	1770	1590	1590	1410	2070	2080	2990	1890	1420	1580
8	1980	2200	1780	1550	1620	1410	2060	1970	3390	1660	1430	1710
9	1970	2250	1860	1520	1610	1500	2040	1860	3000	1610	1370	1720
10	1970	2250	1550	1520	1500	1480	1960	1780	3000	1610	1250	1700
11	1950	2260	1520	1520	1410	1470	1900	1830	3180	1550	1190	1780
12	1920	2320	1510	1550	1270	1460	1750	1930	2740	1500	1280	1880
13	1890	2270	1510	1710	1150	1450	1680	2050	2310	1410	1450	2040
14	1900	2240	1520	1770	1220	1390	1790	2050	2240	1380	1270	1870
15	1910	2060	1520	1740	1280	1360	1700	2060	2410	1490	1170	1770
16	1910	2030	1520	1560	1360	1780	1880	2550	2760	1470	1160	1760
17	1910	2060	1520	1450	1390	2380	1860	3070	2820	1470	1170	1720
18	1940	2090	1520	1420	1300	2600	1920	3020	2580	1470	1250	1720
19	1970	2050	1490	1420	1150	2610	1970	2690	2250	1660	1340	1750
20	1970	1800	1280	1430	1290	2580	1910	2280	2090	1970	1420	1760
21	1900	1800	1100	1450	1410	2570	1900	2020	2000	2060	1310	1940
22	1790	2010	1100	1450	1420	2580	1910	1840	1980	2020	1290	1920
23	1810	2300	1220	1450	1420	2550	1900	1920	2030	1950	1360	1750
24	1820	2580	1370	1450	1430	2540	1890	2390	2070	1820	1380	1760
25	1830	2590	1380	1520	1430	2520	1890	2730	2180	1720	1430	1760
26	1810	2560	1280	1360	1440	2500	1900	2500	2220	1600	1460	1810
27	1790	2410	1280	1420	1440	2510	1910	2200	2130	1630	1510	1960
28	1920	2250	1270	1420	1440	2540	1930	2080	1910	1920	1570	2010
29	1820	2160	1270	1440	---	2570	1940	2000	1840	1880	1590	1880
30	1820	2120	1330	1490	---	2650	1950	2020	1800	1830	1590	1810
31	1820	---	1440	1490	---	2750	---	2050	---	1710	1560	---
TOTAL	58760	65170	48170	44512	39350	61330	60490	67710	70030	53760	43180	52690
MEAN	1895	2172	1554	1436	1405	1978	2016	2184	2334	1734	1393	1756
MAX	2170	2590	2240	1770	1620	2750	2740	3070	3390	2060	1590	2040
MIN	1790	1800	1100	816	1150	1250	1680	1780	1800	1380	1160	1550
AC-FT	116600	129300	95550	88240	76050	121600	120000	134300	136900	106600	85650	104500
CAL YR 1977	TOTAL	538848	MEAN	1476	MAX	2590	MIN	894	AC-FT	1069000		
WTR YR 1978	TOTAL	665152	MEAN	1822	MAX	3390	MIN	816	AC-FT	1319000		

MADISON RIVER BASIN

06041000 MADISON RIVER BELOW ENNIS LAKE, NEAR MCALLISTER, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972, 1977 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: June 1977 to current year.

INSTRUMENTATION.--Temperature recorder since June 21, 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 22.0°C on several days during June to August both years; minimum, 0.0°C Nov. 19-22, 1977.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 22.0°C July 28, Aug. 10; minimum, 0.0°C Nov. 19-22.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	11.0	10.0	10.5	6.5	5.0	5.5	1.5	1.0	1.5	1.0	1.0	1.0
2	10.5	10.0	10.0	4.5	3.5	4.5	2.0	1.5	2.0	1.0	1.0	1.0
3	10.5	10.0	10.0	3.5	3.0	3.5	2.0	1.5	2.0	1.5	1.0	1.0
4	10.5	10.0	10.5	4.0	3.5	4.0	1.5	1.5	1.5	1.5	1.0	1.5
5	10.0	9.5	9.5	3.5	3.5	3.5	1.5	1.5	1.5	1.5	1.0	1.5
6	9.5	9.5	9.5	4.0	3.5	4.0	2.0	1.5	1.5	1.5	1.5	1.5
7	9.5	9.0	9.0	3.5	3.5	3.5	2.0	1.5	1.5	1.5	1.5	1.5
8	9.0	8.0	8.5	4.0	3.0	3.5	1.5	1.0	1.0	1.5	1.5	1.5
9	8.0	8.0	8.0	3.0	2.5	2.5	1.5	1.0	1.5	1.5	1.5	1.5
10	8.0	7.5	7.5	2.5	1.5	2.0	1.5	1.5	1.5	1.5	1.0	1.0
11	7.5	7.0	7.0	2.0	1.0	1.5	1.5	1.5	1.5	1.5	1.0	1.0
12	7.0	6.5	7.0	2.0	2.0	2.0	1.5	1.5	1.5	1.0	1.0	1.0
13	7.0	7.0	7.0	2.5	2.0	2.0	1.5	1.5	1.5	1.0	1.0	1.0
14	7.5	7.0	7.0	2.5	2.0	2.5	1.5	1.5	1.5	1.0	1.0	1.0
15	7.5	7.0	7.5	2.5	2.5	2.5	1.5	1.5	1.5	1.0	.5	1.0
16	8.5	7.5	8.0	2.5	2.0	2.0	1.5	1.5	1.5	1.0	.5	1.0
17	9.0	8.0	8.0	2.5	1.5	2.0	1.5	1.5	1.5	1.0	1.0	1.0
18	9.0	9.0	9.0	1.5	1.0	1.5	1.5	1.5	1.5	1.0	.5	1.0
19	9.5	8.5	9.0	1.0	.0	.0	1.5	1.5	1.5	1.0	1.0	1.0
20	9.5	9.0	9.0	.0	.0	.0	1.5	1.0	1.5	1.0	1.0	1.0
21	9.5	8.5	9.0	.0	.0	.0	1.5	1.5	1.5	1.0	1.0	1.0
22	9.5	9.0	9.5	.5	.0	.0	1.5	1.5	1.5	1.0	.5	1.0
23	9.5	8.5	8.5	.5	.5	.5	1.5	1.5	1.5	1.0	.5	1.0
24	8.5	8.0	8.5	.5	.5	.5	1.5	1.0	1.5	1.0	.5	1.0
25	8.5	8.5	8.5	.5	.5	.5	1.5	1.5	1.5	1.0	.5	1.0
26	8.5	8.0	8.5	.5	.5	.5	1.5	1.5	1.5	1.0	.5	1.0
27	8.0	8.0	8.0	.5	.5	.5	1.5	1.0	1.5	.5	.5	.5
28	8.0	8.0	8.0	.5	.5	.5	1.5	1.0	1.5	.5	.5	.5
29	8.0	7.5	8.0	1.0	.5	1.0	1.5	1.5	1.5	.5	.5	.5
30	7.5	7.0	7.5	1.0	1.0	1.0	1.5	1.0	1.0	.5	.5	.5
31	7.0	6.5	6.5	---	---	---	1.0	1.0	1.0	.5	.5	.5
MONTH	11.0	6.5	8.5	6.5	.0	2.0	2.0	1.0	1.5	1.5	.5	1.0

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

GALLATIN RIVER BASIN

06043500 GALLATIN RIVER NEAR GALLATIN GATEWAY, MT

LOCATION.--Lat 45°29'51", long 111°16'09", in SE¼SE¼SE¼ sec.7, T.4 S., R.4 E., Gallatin County, Hydrologic Unit 10020008, on left bank 0.3 mi (0.5 km) downstream from Spanish Creek, 7.3 mi (11.7 km) south of Gallatin Gateway, and at mile 42.5 (68.4 km).

DRAINAGE AREA.--825 mi² (2,137 km²).

PERIOD OF RECORD.--August 1889 to September 1894, June 1930 to September 1969, annual maximum, water years 1970-71, October 1971 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.

GAGE.--Water-stage recorder. Datum of gage is 5,167.7 ft (1,575.11 m), National Geodetic Vertical Datum of 1929. Prior to Oct. 20, 1932, nonrecording gages at several different sites and datums within 0.8 mi (1.3 km) of present site.

REMARKS.--Records good. Diversions for irrigation of about 1,400 acres (5.67 km²) above station.

AVERAGE DISCHARGE.--51 years, 816 ft³/s (23.11 m³/s), 591,200 acre-ft/yr (729 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,690 ft³/s (274 m³/s) June 17, 1974, gage height, 7.38 ft (2.249 m); minimum, 117 ft³/s (3.31 m³/s) Jan. 19, 1935, gage height, 0.68 ft (0.207 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2900 ft³/s (82.1 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 16	0300	2960 83.8	3.90 1.189	June 10	0130	*5230 148	*5.12 1.561
May 24	0530	3020 85.5	3.94 1.201	June 15	0215	4900 139	4.95 1.509
				June 30	0115	3830 108	4.41 1.344

Minimum discharge, 218 ft³/s (6.17 m³/s) Nov. 22, gage height, 1.14 ft (0.347 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	522	368	307	250	322	312	682	888	1870	3290	948	546
2	464	407	317	256	327	283	645	1000	1850	3190	905	536
3	473	374	332	297	322	279	555	1030	2040	3070	863	523
4	472	418	317	317	317	317	522	1060	2340	2910	838	517
5	453	401	307	317	317	327	503	974	2770	2720	814	516
6	453	424	297	312	327	327	476	648	3420	2350	748	569
7	490	385	312	302	327	312	476	850	3800	2370	774	583
8	472	352	274	302	332	307	484	806	3730	2490	750	609
9	466	288	252	307	322	327	522	806	4510	2490	752	551
10	460	358	250	302	327	322	503	1020	4920	2340	749	535
11	418	363	288	302	322	312	542	1120	4020	2360	751	632
12	442	379	307	312	288	302	535	1020	3420	2200	724	693
13	453	368	312	307	279	312	535	1020	3480	2010	724	632
14	460	379	322	307	302	307	509	1240	4150	1910	740	624
15	448	374	342	317	312	288	522	2050	4650	1600	709	617
16	448	352	322	322	312	279	546	2710	4040	1620	692	657
17	453	347	274	322	297	312	566	2220	3530	1760	737	611
18	442	337	302	322	293	332	503	2010	3490	1620	713	625
19	430	297	283	322	297	358	509	1740	3710	1520	671	612
20	442	247	251	327	312	358	535	1600	3340	1550	640	594
21	436	226	234	332	307	358	575	1740	3390	1450	620	596
22	424	307	269	322	297	353	522	2120	3710	1320	512	626
23	418	352	307	322	307	358	509	2500	3740	1250	610	648
24	418	332	297	293	317	363	478	2850	3830	1220	595	670
25	412	327	274	309	317	337	522	2510	3800	1190	576	680
26	418	352	302	317	322	347	603	2190	3170	1140	572	677
27	424	337	259	322	317	368	720	2040	2940	1090	585	673
28	412	332	269	317	317	401	735	2050	3170	1110	576	681
29	407	327	293	322	---	436	758	2340	3460	1180	563	654
30	413	317	322	317	---	503	798	2200	3490	1050	556	624
31	401	---	302	307	---	589	---	2040	---	992	548	---
TOTAL	13780	10427	9112	9612	8755	10711	16898	57792	103880	59032	21715	16323
MEAN	445	348	294	310	313	346	563	1838	3403	1904	700	611
MAX	522	424	342	332	332	369	798	2850	4920	3290	948	693
MIN	401	226	234	255	279	279	478	806	1850	992	548	517
AC-FI	27330	20680	18070	19070	17370	21250	33520	100700	206000	117100	43070	36340
CAL YR 1977 TOTAL	231247		MEAN 634	MAX 3190	MIN 226	AC-FI 458700						
WTR YR 1978 TOTAL	333037		MEAN 912	MAX 4920	MIN 226	AC-FI 660000						

06050000 HYALITE CREEK AT HYALITE RANGER STATION, NEAR BOZEMAN, MT

LOCATION.--Lat 45°33'42", long 111°04'12", in NW¼SE¼ sec.23, T.3 S., R.5 E., Gallatin County, Hydrologic Unit 10020008, Gallatin National Forest, on right bank 0.8 mi (1.3 km) south of Hyalite ranger station, 7.3 mi (11.7 km) south of Bozeman, and 20 mi (32 km) upstream from mouth.

DRAINAGE AREA.--48.2 mi² (124.8 km²).

PERIOD OF RECORD.--August 1895 to October 1896, calendar year 1897 (discharge measurements only), April 1898 to October 1899, June to October 1900, May to September 1902, calendar year 1903 (discharge measurements only), September to December 1904, September 1934 to current year. Monthly discharge only for some periods, published in WSP 1309. Prior to 1934, published as Middle Creek near Bozeman.

REVISED RECORDS.--WSP 84: 1898-99. WSP 1509: 1902, 1939(M). WSP 1559: Drainage area. WSP 1709: 1953, 1956-57.

GAGE.--Water-stage recorder. Datum of gage is 5,539.6 ft (1,688.47 m), National Geodetic Vertical Datum of 1929. Prior to September 1934, nonrecording gages at two sites 0.5 mi (0.8 km) upstream at different datums. Sept. 13, 1934, to May 13, 1948, water-stage recorder at site 0.3 mi (0.5 km) downstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Flow regulated by Middle Creek Reservoir (see p. 607) since March 1951.

AVERAGE DISCHARGE.--46 years (1895-96, 1898-99, 1934-78), 67.2 ft³/s (1.903 m³/s), 18.93 in/yr (481 mm/yr), 48,700 acre-ft/yr (60.0 hm³/yr), adjusted for storage in Middle Creek Reservoir.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 956 ft³/s (27.1 m³/s) June 14, 1898, gage height, 2.10 ft (0.640 m), site and datum then in use; maximum gage height, 4.01 ft (1.222 m) Dec. 15-18, 1940 (backwater from ice), site and datum then in use; minimum daily discharge, 5.0 ft³/s (0.14 m³/s) Jan. 27, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 263 ft³/s (7.45 m³/s) June 10, gage height, 2.51 ft (0.765 m); maximum gage height, 3.32 ft (1.012 m) Mar. 4 (backwater from ice); minimum daily discharge, 13 ft³/s (0.37 m³/s) Mar. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	43	23	16	17	14	72	87	148	215	100	87
2	44	44	23	16	18	14	70	92	145	207	97	85
3	44	42	23	17	19	13	59	101	142	211	95	85
4	44	42	23	17	19	14	55	92	155	222	93	82
5	43	43	22	18	19	16	55	87	129	193	93	80
6	42	39	23	18	19	18	51	81	142	170	95	76
7	49	51	23	17	19	19	49	82	169	190	97	76
8	47	50	22	17	19	19	50	92	203	191	96	72
9	46	50	20	17	19	20	51	102	225	201	101	63
10	45	50	21	17	19	20	52	124	232	199	100	62
11	46	29	21	17	18	19	58	126	221	198	97	71
12	43	29	20	17	16	19	54	115	221	192	94	74
13	50	29	20	18	16	19	51	120	207	161	94	67
14	51	29	21	18	17	20	52	137	185	174	102	68
15	51	29	22	18	17	20	54	154	205	160	110	70
16	51	29	22	18	18	20	57	154	223	180	111	68
17	52	28	22	18	18	20	55	158	214	192	106	65
18	53	27	21	18	18	22	50	219	201	157	104	67
19	52	24	21	18	19	22	51	207	207	144	102	66
20	52	20	20	18	20	22	53	198	207	136	102	67
21	51	20	20	18	20	23	57	190	198	138	102	68
22	50	21	20	18	20	24	52	202	200	131	101	71
23	50	23	21	18	20	23	49	212	200	123	97	73
24	50	23	21	18	20	24	52	227	211	114	94	72
25	48	23	20	18	20	23	56	224	219	112	93	69
26	48	23	20	19	20	25	73	219	219	115	92	68
27	47	23	20	19	18	29	81	213	191	115	92	67
28	47	23	20	19	15	34	77	194	154	114	90	66
29	47	23	20	19	---	40	80	177	200	109	88	70
30	48	23	19	18	---	51	84	157	236	109	88	69
31	45	---	18	17	---	65	---	149	---	106	86	---
TOTAL	1487	872	652	549	517	731	1760	4692	5787	4993	3019	2142
MEAN	48.0	29.1	21.0	17.7	16.5	23.6	56.7	151	193	161	97.4	71.4
MAX	53	44	23	19	20	65	84	227	236	222	111	87
MIN	42	20	18	16	15	13	49	81	129	106	86	62
AC-FT	2950	1730	1290	1090	1030	1450	3490	9310	11480	9900	5990	4250
MEAN †	48.3	29.1	26.5	23.3	23.6	28.6	64.2	194	206	156	54.6	57.5
CFSM †	1.00	.60	.55	.48	.48	.59	1.33	4.01	4.26	3.24	1.13	1.19
IN †	1.16	.67	.63	.55	.50	.68	1.48	4.63	4.75	3.74	1.30	1.33
AC-FT†	2970	1730	1630	1430	1310	1760	3820	11910	12230	9620	3360	3420
OBSERVED												
CAL YR 1977	TOTAL		20,859	MEAN	57.1	MAX	245	MIN	10		AC-FT	41,370
WTR YR 1978	TOTAL		27,201	MEAN	74.5	MAX	236	MIN	13		AC-FT	53,950
ADJUSTED												
CAL YR 1977	TOTAL		21,170	MEAN	58.0	CFSM	1.20	IN	16.33		AC-FT	41,990
WTR YR 1978	TOTAL		27,825	MEAN	76.2	CFSM	1.58	IN	21.42		AC-FT	55,190

† Adjusted for change in contents in Middle Creek Reservoir.

06052500 GALLATIN RIVER AT LOGAN, MT

LOCATION.--Lat 45°53'07", long 111°26'15", in NE¼ sec.35, T.2 N., R.2 E., Gallatin County, Hydrologic Unit 10020008, on right bank at former county road bridge site, 0.5 mi (0.8 km) west of Logan and 6 mi (10 km) upstream from mouth.

DRAINAGE AREA.--1,795 mi² (4,649 km²).

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 (1,245.541 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 10, 1928, nonrecording gages at several sites within 0.5 mi (0.8 km) of present site at various datums. Aug. 10, 1928, to Oct. 7, 1941, nonrecording gage at present site and datum.

REMARKS.--Records good. Some regulation by Middle Creek Reservoir (see p. 607). Diversions for irrigation of about 110,000 acres (445 km²) above station.

AVERAGE DISCHARGE.--62 years, 1,057 ft³/s (29.93 m³/s), 765,800 acre-ft/yr (944 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 9,840 ft³/s (279 m³/s) June 21, 1899, gage height, 6.25 ft (1.905 m), site and datum then in use; maximum gage height, 11.88 ft (3.621 m) Feb. 5, 1963, from floodmark (backwater from ice); minimum discharge observed, 130 ft³/s (3.68 m³/s) July 19, 1939, gage height, 2.04 ft (0.622 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,700 ft³/s (76.5 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 3	2145	Ice Jam	*7.15 2.179	June 10	1345	*4,970 141	7.05 2.149
May 24	1615	3,470 98.3	6.15 1.875				

Minimum discharge, 430 ft³/s (12.2 m³/s) Aug. 12, 13, gage height, 3.32 ft (1.012 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1050	874	842	660	700	707	1690	1560	2230	3500	600	602
2	981	866	839	640	720	690	1670	1650	1960	3420	552	585
3	894	874	878	720	750	630	1500	1720	1930	3310	535	567
4	649	867	878	780	727	720	1370	1740	2110	3220	515	568
5	831	915	860	820	724	735	1320	1640	2410	3080	510	558
6	825	934	852	650	734	764	1260	1580	2340	2840	511	589
7	884	940	858	800	742	765	1220	1530	3430	2540	502	618
8	971	888	790	790	747	763	1200	1440	3710	2460	465	625
9	938	834	704	783	742	892	1170	1350	4040	2570	477	626
10	943	872	790	775	735	1040	1160	1350	4690	2440	458	625
11	922	911	797	775	721	947	1150	1590	4580	2360	447	759
12	885	914	809	766	724	897	1190	1620	3770	2280	435	1340
13	693	922	809	740	710	639	1170	1470	3330	2070	453	1380
14	905	920	860	741	682	807	1140	1480	3900	1860	495	1140
15	897	921	695	730	744	760	1140	1650	4390	1650	500	1070
16	891	919	931	720	728	744	1150	2760	4390	1530	504	1040
17	690	884	824	730	699	857	1190	2870	3770	1700	562	1040
18	882	692	809	710	696	1370	1170	2760	3520	1500	592	1110
19	881	819	760	700	711	1400	1100	2770	3760	1340	590	1230
20	874	752	750	720	722	1410	1100	2550	3530	1310	592	1170
21	864	649	720	750	711	1450	1190	2410	3320	1360	586	1100
22	863	776	760	760	704	1380	1230	2590	3580	1210	577	1080
23	852	860	801	746	723	1400	1130	2940	3670	1120	573	1120
24	840	861	780	720	758	1400	1080	3280	3790	1070	586	1150
25	834	824	750	730	738	1280	1040	3280	4170	998	582	1170
26	856	897	760	738	734	1210	1080	2910	3970	929	573	1170
27	874	895	740	732	727	1320	1280	2550	3300	813	588	1170
28	655	862	720	713	709	1320	1410	2400	3180	745	618	1170
29	841	857	750	732	---	1320	1470	2510	3380	727	599	1200
30	894	868	760	721	---	1370	1510	2570	3590	692	594	1150
31	903	---	740	710	---	1490	---	2370	---	661	593	---
TOTAL	27567	26067	24816	23004	20262	32927	37480	67100	104260	57355	16764	28722
MEAN	889	869	801	742	724	1062	1249	2165	3475	1850	541	957
MAX	1050	940	931	850	758	1580	1690	3280	4690	3500	618	1380
MIN	825	649	704	640	682	880	1040	1350	1930	661	435	558
AC-FT	54660	51700	49220	45630	40190	65310	74340	133100	206800	113800	33250	56470
CAL YR 1977	TOTAL	309665	MEAN	848	MAX	2480	MIN	331	AC-FT	614200		
WTR YR 1978	TOTAL	466324	MEAN	1278	MAX	4690	MIN	435	AC-FT	925000		

06054500 MISSOURI RIVER AT TOSTON, MT

LOCATION.--Lat 46°08'46", long 111°25'18", in SE¼NW¼ sec.36, T.5 N., R.2 E., Broadwater County, Hydrologic Unit 10030101, on left bank 2 mi (3 km) southeast of Toston, 4.8 mi (7.7 km) upstream from Crow Creek, 7.8 mi (12.6 km) downstream from Sixteenmile Creek, and at mile 2,296.1 (3,694.4 km).

DRAINAGE AREA.--14,669 mi² (37,993 km²).

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 (1,190.451 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 20, 1916, nonrecording gages at site 2.5 mi (4.0 km) downstream at different datums.

REMARKS.--Water-discharge records good. Some regulation by six reservoirs on tributaries (see p. 606-607) and Clark Canyon Reservoir (see p. 47). Diversions for irrigation of about 555,400 acres (2,250 km²) of which 12,000 acres (48.6 km²) lies below station.

AVERAGE DISCHARGE.--43 years, 5,378 ft³/s (152.3 m³/s), 3,896,000 acre-ft/yr (4.80 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,000 ft³/s (906 m³/s) June 6, 1948, gage height, 11.77 ft (3.587 m); minimum, 562 ft³/s (15.9 m³/s) Apr. 30, 1941, gage height, 1.68 ft (0.512 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,200 ft³/s (544 m³/s) June 10, gage height, 9.34 ft (2.847 m); minimum daily, 2,000 ft³/s (56.6 m³/s) Aug. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4940	4550	4660	2880	3050	3650	10100	7340	9600	9370	3480	3180
2	5060	4520	4940	2400	3120	3450	10800	7730	9010	9350	3150	3180
3	4750	4650	5020	2210	3540	3150	10800	8650	8480	9420	2970	3140
4	4500	4700	4980	2480	3950	3190	10100	9040	8230	9730	2860	3110
5	4490	4810	4890	3020	3950	3780	8880	8910	8100	10200	2770	3050
6	4570	4900	4450	3740	4050	4050	8110	8730	8870	10600	2680	3090
7	4660	4980	4500	4250	4170	4420	8860	9500	10200	10300	2540	3260
8	4960	4920	3560	4110	4220	4540	7130	8220	12500	9530	2400	3420
9	4800	4830	2610	4050	4270	4680	6900	7700	13600	9080	2340	3530
10	4940	4800	2750	4070	4090	4950	6860	7280	14800	8640	2240	3490
11	4740	4750	3670	4010	3560	4560	6710	7430	15900	8490	2050	3750
12	4680	4900	4680	3960	3220	4350	6770	7950	15600	8060	2000	4620
13	4610	4960	4690	4040	2820	4170	6690	8040	13700	7410	2070	5660
14	4610	4940	4740	4220	2710	4020	6560	7800	13000	6710	2340	5830
15	4640	4910	4920	4330	3020	3800	6250	7900	13200	6200	2310	5370
16	4690	4720	4750	3940	3460	3750	6270	9020	13400	6140	2400	5180
17	4680	4690	4270	3630	3560	4530	6500	10900	12800	5780	2710	5060
18	4610	4670	4090	3700	3680	3750	6660	11400	11800	5790	2830	5110
19	4700	4370	3800	3730	3630	6200	6580	12000	11400	5540	3060	5780
20	4690	3190	3470	3570	3670	6120	6290	11500	11200	5520	3190	5660
21	4640	2700	3040	3810	3890	6280	6310	10800	11200	5900	3230	5620
22	4480	2850	3080	3900	4000	6630	6480	10300	11100	5740	3090	5790
23	4390	3000	3350	3860	4140	6360	6300	10600	11000	5430	3000	5610
24	4400	3810	3350	3670	4310	6310	6020	11500	10800	5190	3000	5540
25	4390	5170	3080	3660	4060	6220	5810	12800	11300	4790	2990	5530
26	4430	5640	3240	3720	4110	6240	5790	12900	11900	4380	2990	5500
27	4440	5680	3610	3750	4050	6670	6070	11900	10900	3930	3030	5520
28	4460	5640	3520	3840	3920	7000	6550	10800	10000	3620	3150	5590
29	4490	5470	3310	3710	---	7320	7130	10200	9540	3820	3200	5650
30	4560	5200	3590	3820	---	7930	7310	10100	9400	3740	3210	5430
31	4570	---	3500	3810	---	9160	---	9880	---	3700	3180	---
TOTAL	143770	138880	122290	113870	104200	163220	215590	297820	342530	212400	86460	140450
MEAN	4638	4479	3945	3673	3372	5265	7166	9607	11420	6852	2789	4682
MAX	5060	5680	5020	4330	4310	9160	10800	12900	15900	10600	3480	5830
MIN	4390	2700	2610	2210	2710	3150	5790	7280	8100	3620	2000	3050
AC-FT	285200	275500	242600	225900	206700	323700	427600	590700	679400	421300	171500	276600

CAL YR 1977 TOTAL 1359030 MEAN 3723 MAX 9770 MIN 1430 AC-FT 2696000
WTR YR 1978 TOTAL 2081480 MEAN 5703 MAX 15900 MIN 2000 AC-FT 4129000

MISSOURI RIVER MAIN STEM

06054500 MISSOURI RIVER AT TOSTON, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

LOCATION.--Samples collected at old bridge on U.S. Highway 287, at Toston, 2.4 mi (3.9 km) downstream from gaging station.

PERIOD OF RECORD.--Water years 1949-53, 1972 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 524 micromhos Mar. 4, 1978; minimum daily, 185 micromhos June 11, 1976.

WATER TEMPERATURES: May 1949 to June 1953, October 1973 to current year.

INSTRUMENTATION.--Temperature recorder since July 6, 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 524 micromhos Mar. 4, 1978; minimum daily, 185 micromhos June 11, 1976.

WATER TEMPERATURES: Maximum, 25.5°C July 25, 1949, July 31, 1951, July 23, 1952; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 524 micromhos Mar. 4; minimum daily, 209 micromhos June 11, 12.

WATER TEMPERATURES: Maximum, 23.0°C Aug. 7, 9, 10; minimum, 0.0°C many days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (ITU)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	
UCT												
1A...	1030	4650	--	380	8.7	15.0	9.0	6	--	11.4	114	
NOV												
25...	0900	5270	3	398	8.1	5.0	.0	7	--	15.0	102	
DEC												
13...	1200	4700	5	403	8.4	6.0	.5	4	--	12.8	102	
JAN												
10...	1030	4060	3	395	8.1	-5.0	.0	6	--	15.2	104	
FEB												
09...	1200	4240	2	405	8.5	2.0	.5	15	--	13.0	104	
MAR												
04...	1030	4710	3	393	8.2	2.0	.5	10	--	12.6	101	
APR												
05...	1000	3970	1	300	8.0	3.0	7.5	25	--	10.7	103	
MAY												
04...	1145	9000	1	273	8.1	9.5	10.0	30	--	10.0	103	
JUN												
14...	1130	12900	1	217	8.1	18.0	14.5	--	10	9.2	105	
JUL												
18...	1230	5770	1	286	8.6	25.0	14.5	--	1.9	9.7	123	
AUG												
15...	1345	2290	1	371	8.5	25.0	16.5	--	2.7	9.6	113	
SEP												
14...	1130	5900	1	411	8.5	18.0	13.0	--	.75	10.7	116	
		COLI- FORM, FECAL, 0.7 JM-4F (COLS./ 100 ML)	STREP- TOCUCCI KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CALCS)	HARD- NESS, NONCAR- BONATE (MG/L AS CALCS)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AO- SODIUM RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
UCT												
18...	117	11	150	14	40	13	24	.8	4.0	170	0	
NOV												
25...	52	93	150	0	39	12	30	1.1	4.5	180	--	
DEC												
13...	43	51	160	8	42	14	25	.9	4.3	180	4	
JAN												
10...	36	48	170	20	44	14	24	.8	4.0	180	0	
FEB												
09...	500	430	150	12	39	13	25	.9	4.2	170	0	
MAR												
07...	90	12600	150	14	40	13	22	.8	4.5	170	0	
APR												
05...	184	184	110	0	29	8.5	20	.8	3.8	130	0	
MAY												
04...	107	76	110	13	50	8.8	16	.7	2.9	120	0	
JUN												
14...	97	120	90	6	26	6.0	9.4	.4	2.2	--	--	
JUL												
18...	51	45	130	6	34	10	11	.4	2.7	--	--	
AUG												
15...	27	79	150	7	39	12	21	.8	3.9	--	--	
SEP												
14...	190	260	170	23	46	14	20	.7	4.7	--	--	

06054500 MISSOURI RIVER AT TOSTON, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ALKALINITY (MG/L AS CACU3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CU2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIU2)	SOLIDS, RESIDUE AT 180 DEG. C SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 18...	140	.5	41	12	1.4	24	236	243	.32	2960	.01
NOV 25...	150	2.3	41	18	1.9	30	253	265	.34	3600	.23
DEC 13...	150	1.2	45	13	1.3	26	249	264	.34	3160	.16
JAN 10...	150	2.3	47	15	1.1	27	259	265	.35	2840	.26
FEB 09...	140	.9	43	14	1.4	26	243	250	.33	2780	.20
MAR 09...	140	1.7	44	16	1.2	21	225	246	.31	2860	.22
APR 05...	110	2.1	31	16	1.2	24	190	197	.26	4600	.10
MAY 04...	98	1.5	26	8.5	.9	21	164	173	.22	3990	.08
JUN 14...	84	--	19	3.9	.5	16	130	134	.18	4530	.07
JUL 18...	120	--	29	4.7	.4	17	182	181	.25	2840	.11
AUG 15...	140	--	34	9.5	.9	23	219	227	.30	1350	.02
SEP 14...	150	--	46	12	.9	24	261	258	.36	4160	.15

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS-SOLVED (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC PENDED TOTAL (MG/L AS C)
OCT 18...	--	.06	--	.15	--	.05	.03	2.9	--	--
NOV 25...	--	.02	--	.16	--	.04	.05	2.4	--	--
DEC 13...	--	.06	--	.56	--	.03	.02	--	1.8	.4
JAN 10...	--	.06	--	--	--	.05	.04	2.0	--	--
FEB 09...	.24	.02	.26	.00	.46	.08	.03	--	2.2	--
MAR 09...	1.1	.04	1.1	.49	1.5	.24	.03	8.4	--	--
APR 05...	.97	.00	.97	.33	1.1	.16	.04	8.8	--	--
MAY 04...	.79	.03	.82	.68	.90	.14	.03	5.9	--	--
JUN 14...	.72	.01	.73	.18	.80	.13	.01	--	5.2	1.0
JUL 18...	.35	.00	.35	.40	.46	.04	.02	3.4	--	--
AUG 15...	.46	.11	.51	.23	.53	.05	.01	3.2	--	--
SEP 14...	.53	.01	.54	.24	.69	.04	.01	--	3.7	.5

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	CHROMIUM, DIS-SOLVED (UG/L AS CR)
DEC 13...	1200	31	31	200	200	0	0	20	0
FEB 09...	1200	55	44	100	200	2	0	10	10
JUN 14...	1130	13	12	200	100	5	1	5	0
SEP 14...	1130	20	25	200	100	2	0	10	0

MISSOURI RIVER MAIN STEM

06054500 MISSOURI RIVER AT TOSTON, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, TOTAL DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, TOTAL DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, TOTAL DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, TOTAL DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)
DEC 13...	0	0	19	2	680	60	12	8	30
FEB 09...	0	0	6	1	1300	20	6	0	70
JUN 14...	2	0	19	6	1800	20	79	0	90
SEP 14...	0	0	7	2	460	70	15	0	30

DATE	MANGA- NESE, TOTAL DIS- SOLVED (UG/L AS MN)	MERCURY, TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY, TOTAL DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, TOTAL DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, TOTAL DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, TOTAL DIS- SOLVED (UG/L AS ZN)
DEC 13...	4	.0	.0	0	0	0	0	30	10
FEB 09...	10	.0	.0	1	0	0	0	20	10
JUN 14...	10	1.5	.0	0	0	0	0	40	10
SEP 14...	0	.0	.0	0	0	0	0	10	10

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	PCB, TOTAL (UG/L)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ARUCLOR 1254 PCB SERIES (UG/L)	ATRA- ZINE, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL (UG/L)
NOV 25...	0900	ND	--	ND	--	--	ND	ND	--	ND
FEB 09...	1200	--	--	ND	--	.0	--	ND	--	ND
MAY 04...	1145	ND	ND	ND	ND	--	ND	ND	ND	ND
AUG 15...	1345	ND	--	ND	--	--	ND	ND	--	ND

DATE	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/L)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- AZINON, TOTAL (UG/L)	DI- AZINON, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN, TOTAL (UG/L)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL (UG/L)
NOV 25...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB 09...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 04...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 15...	--	ND	--	ND	--	ND	--	ND	--	ND

DATE	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ETHION, TOTAL (UG/L)	ETHION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	MALA- THION, TOTAL (UG/L)
NOV 25...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB 09...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 04...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 15...	--	ND	--	ND	--	ND	--	ND	--	ND

06054500 MISSOURI RIVER AT TOSTON, MT--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	MALA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	METH- OXY- CHLOR, TOTAL (UG/L)	METH- OXY- CHLOR, TOT. IN BOTTOM MATL. (UG/KG)	METHYL PARA- THION, TOTAL (UG/L)	METHYL PARA- THION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRI- THION, TOTAL (UG/L)	METHYL TRI- THION, TOT. IN BOTTOM MATL. (UG/KG)	PARA- THION, TOTAL (UG/L)	PARA- THION, TOT. IN BOT- TOM MA- TERIAL (UG/KG)	TOX- APHENE, TOTAL (UG/L)
NOV 25...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB 09...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 04...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 15...	--	ND	--	ND	--	ND	--	ND	--	ND

DATE	TUXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	TRI- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/L)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/L)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SIMA- ZINE TOTAL COUL- SON COND. (UG/L)	SILVEX, TOTAL (UG/L)	SILVEX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
NOV 25...	--	ND	--	--	--	--	--	ND	--	--
FEB 09...	--	ND	--	--	--	--	--	--	--	--
MAY 04...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 15...	--	ND	--	ND	--	ND	--	ND	ND	--

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
15...	1100	350	8.2	21.5	15.5	9.6	112
15...	1200	363	8.6	23.0	16.0	9.7	113
15...	1300	368	8.5	26.0	16.0	9.7	113
15...	1345	371	8.5	25.0	16.5	9.6	113
15...	1400	371	8.5	25.0	16.5	9.6	113
15...	1500	371	8.5	27.0	17.0	9.8	117
15...	1600	366	8.4	23.5	16.5	9.4	112
15...	1700	359	8.4	24.0	16.5	9.2	112
15...	1800	360	8.5	24.0	16.0	9.0	106
15...	1900	360	8.5	23.5	16.0	9.0	106
15...	2000	355	8.5	22.5	16.0	9.0	106
15...	2100	350	8.4	21.5	16.0	8.8	103
15...	2200	350	8.4	21.0	16.0	8.5	100
15...	2300	350	8.4	18.5	16.0	8.5	100
15...	2400	350	8.4	19.0	16.0	8.4	99
16...	0100	350	8.5	20.5	16.0	8.4	99
16...	0200	350	8.5	17.5	16.0	8.4	99
16...	0300	350	8.5	16.5	16.0	8.4	99
16...	0400	350	8.5	15.5	16.0	8.4	99
16...	0500	345	8.5	13.0	16.0	8.4	99
16...	0600	350	8.4	12.5	16.0	8.4	99
16...	0700	350	8.5	13.0	16.0	8.4	99
16...	0800	350	8.5	15.5	16.0	8.4	99
16...	0900	355	8.5	13.5	16.0	8.7	102
16...	1000	360	8.5	16.5	16.0	9.1	107
16...	1100	360	8.5	16.5	16.5	9.4	111

MISSOURI RIVER MAIN STEM

06054500 MISSOURI RIVER AT TOSTON, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	415	412	409	466	438	486	320	300	254	252	331	397
2	438	411	403	451	430	508	312	291	264	242	328	392
3	442	412	401	455	433	501	291	286	263	251	334	394
4	439	413	401	462	435	524	285	292	266	250	340	392
5	436	408	402	460	420	513	308	283	258	250	348	398
6	432	418	407	447	423	495	320	287	252	258	340	401
7	422	407	405	451	420	489	331	292	258	258	351	397
8	463	408	410	421	414	453	333	303	223	261	351	404
9	420	407	439	421	422	454	338	303	219	260	347	406
10	420	408	446	421	412	449	345	307	211	252	345	404
11	420	410	432	422	421	448	339	302	209	267	359	408
12	421	423	436	429	432	475	339	288	209	269	368	401
13	419	412	427	432	433	472	330	288	224	272	370	411
14	421	409	420	414	449	471	316	273	223	274	362	428
15	413	410	405	411	442	474	332	279	214	278	365	424
16	412	410	403	409	441	478	339	288	216	279	389	425
17	413	419	418	408	443	473	341	258	220	280	384	407
18	415	432	413	422	443	452	338	251	235	290	408	403
19	413	420	421	421	452	455	332	243	234	300	413	395
20	412	439	424	439	429	438	333	248	232	302	409	401
21	409	438	422	440	425	432	337	260	233	300	404	404
22	409	456	445	422	412	430	334	257	232	291	399	404
23	412	401	447	421	413	431	334	253	233	301	400	388
24	418	469	449	430	413	442	337	259	235	302	398	386
25	418	441	439	432	420	443	346	243	227	312	399	382
26	417	439	434	424	420	441	346	253	242	316	397	380
27	417	439	431	418	418	438	342	243	244	316	389	377
28	415	424	436	414	422	428	334	243	265	322	442	371
29	418	432	440	414	---	418	320	252	264	309	390	369
30	412	442	441	421	---	402	302	253	259	313	389	372
31	416	---	441	420	---	383	---	243	---	322	393	---
MEAN	420	424	424	430	426	458	329	271	237	282	376	397
WTR YR 1978	MEAN	373	MAX	524	MIN	209						

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.5	10.0	10.0	5.0	4.0	4.5	.5	.0	.0	.0	.0	.0
2	10.0	9.5	9.5	5.0	4.0	4.5	2.0	.5	1.0	.0	.0	.0
3	10.0	10.0	10.0	4.5	3.0	4.0	2.5	2.0	2.5	.0	.0	.0
4	10.0	9.5	10.0	3.5	3.0	3.5	2.5	.5	2.0	.0	.0	.0
5	9.5	9.0	9.5	3.5	3.0	3.0	.5	.0	.0	.0	.0	.0
6	9.0	8.5	9.0	5.0	3.5	4.5	.0	.0	.0	.5	.0	.0
7	9.5	8.5	9.0	4.5	3.5	4.5	.5	.0	.0	.0	.0	.0
8	9.0	8.5	8.5	3.5	2.0	2.5	.0	.0	.0	.0	.0	.0
9	9.0	7.5	8.5	2.0	2.0	2.0	.0	.0	.0	.0	.0	.0
10	7.5	7.0	7.5	3.0	2.0	2.5	.0	.0	.0	.0	.0	.0
11	7.0	7.0	7.0	3.5	3.0	3.0	.5	.0	.0	.0	.0	.0
12	8.0	7.0	7.5	3.5	3.0	3.5	.5	.0	.0	.5	.0	.0
13	8.5	8.0	8.0	3.5	3.0	3.5	.5	.0	.0	.5	.0	.0
14	8.5	7.5	8.0	3.5	3.0	3.5	.5	.0	.0	.0	.0	.0
15	9.0	8.0	8.5	3.5	3.0	3.0	.5	.0	.0	.0	.0	.0
16	9.0	8.5	8.5	3.0	2.0	2.5	.5	.0	.5	.0	.0	.0
17	9.0	8.5	9.0	2.0	1.0	1.5	.5	.0	.0	.0	.0	.0
18	9.0	8.5	8.5	1.0	.0	1.0	.0	.0	.0	.0	.0	.0
19	9.0	8.5	9.0	.0	.0	.0	.5	.0	.0	.0	.0	.0
20	10.0	9.0	9.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	9.5	9.0	9.0	.0	.0	.0	.0	.0	.0	.5	.0	.0
22	9.0	8.5	8.5	.0	.0	.0	.0	.0	.0	.5	.0	.0
23	8.5	8.0	8.5	.0	.0	.0	.5	.0	.0	.5	.0	.0
24	9.0	8.5	8.5	.5	.0	.0	.0	.0	.0	.5	.0	.0
25	9.0	8.5	9.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
26	9.0	8.5	9.0	.5	.0	.0	.0	.0	.0	.5	.0	.0
27	8.5	7.5	8.0	.5	.0	.0	.0	.0	.0	.5	.0	.0
28	8.0	7.5	8.0	.5	.0	.0	.0	.0	.0	.5	.0	.0
29	8.5	8.0	8.5	.5	.0	.0	.0	.0	.0	.5	.0	.0
30	8.0	7.0	8.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
31	7.0	5.5	6.5	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	10.5	5.5	8.5	5.0	.0	2.0	2.5	.0	.0	.5	.0	.0

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY												
1	.0	.0	.0	.5	.0	.0	9.5	8.5	9.0	12.0	10.5	11.0
2	.5	.0	.0	.5	.0	.0	8.5	7.0	7.5	11.5	10.5	11.0
3	.5	.0	.0	.5	.0	.0	7.5	6.5	6.5	11.5	10.5	11.0
4	.5	.0	.0	.5	.0	.0	7.5	6.5	7.0	11.0	9.0	10.0
5	.5	.0	.0	1.0	.0	.5	8.0	7.5	7.5	10.0	8.0	8.5
6	.5	.0	.0	1.0	.0	.5	8.0	6.5	7.0	8.0	7.0	7.5
7	.5	.0	.0	1.0	.0	.5	7.0	6.0	6.5	7.5	7.0	7.5
8	.5	.0	.0	.5	.0	.5	7.5	6.0	6.5	10.0	7.5	8.5
9	.5	.0	.0	1.5	.5	1.0	8.5	7.0	8.0	12.0	10.0	11.0
10	.5	.0	.0	5.0	1.5	2.0	10.0	8.0	9.0	12.5	11.5	12.0
11	.0	.0	.0	4.5	2.5	4.0	10.5	9.5	10.0	12.0	11.0	11.5
12	.0	.0	.0	4.5	4.0	4.5	9.5	8.0	8.5	11.5	10.0	10.5
13	.0	.0	.0	4.0	3.5	4.0	9.0	8.0	8.5	14.0	11.0	12.0
14	.5	.0	.0	4.0	2.5	3.0	9.0	8.0	8.5	15.0	13.0	14.0
15	.5	.0	.0	2.5	1.5	2.0	9.5	8.0	9.0	15.5	14.0	14.5
16	.5	.0	.0	4.0	2.5	3.0	10.0	9.0	9.5	15.0	12.0	13.5
17	.5	.0	.0	6.0	3.5	5.0	9.5	7.0	8.0	12.0	10.0	10.5
18	.5	.0	.0	6.0	5.5	6.0	8.5	6.5	7.5	10.0	8.5	9.5
19	.5	.0	.5	6.0	5.0	5.5	10.0	8.5	9.0	10.5	8.0	9.0
20	1.0	.0	.5	6.0	5.5	5.5	10.0	9.5	10.0	12.0	9.5	11.0
21	.5	.0	.0	7.5	6.0	6.5	9.5	8.5	9.0	14.5	11.5	12.5
22	1.0	.0	.5	7.5	6.5	7.0	8.5	7.5	7.5	14.0	13.5	14.0
23	1.0	.0	.5	7.5	6.5	6.5	8.5	7.5	8.0	13.5	12.5	13.0
24	.5	.0	.0	7.5	7.0	7.5	9.5	8.0	8.5	13.5	12.0	12.5
25	1.0	.0	.0	7.5	6.0	6.5	11.5	9.5	10.5	13.0	10.5	11.0
26	.5	.0	.0	8.0	6.0	7.0	11.5	11.0	11.5	11.5	9.0	10.5
27	.5	.0	.0	8.5	8.0	8.0	12.0	10.5	11.0	13.5	11.0	12.0
28	.5	.0	.0	9.5	8.0	8.5	12.5	12.0	12.5	14.5	12.5	13.5
29	---	---	---	10.0	9.0	9.5	12.0	11.5	11.5	14.5	12.5	13.5
30	---	---	---	10.0	9.0	9.5	12.0	11.5	11.5	12.5	11.5	12.0
31	---	---	---	10.0	9.0	9.5	---	---	---	12.0	10.0	11.0
MONTH	1.0	.0	.0	10.0	.0	4.5	12.5	6.0	9.0	15.5	7.0	11.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE												
1	12.5	9.5	11.0	18.5	17.0	18.0	22.0	21.0	21.5	18.0	16.5	17.5
2	14.5	12.0	13.0	18.5	17.5	18.0	21.0	18.5	20.0	18.5	17.0	17.5
3	15.5	14.0	14.5	18.0	17.0	17.5	20.5	18.5	19.5	19.5	18.0	18.5
4	16.0	14.5	15.0	17.0	15.5	16.0	21.5	19.5	20.5	18.5	17.5	18.0
5	17.5	15.5	16.5	16.0	15.0	15.0	22.0	20.5	21.0	19.5	18.0	18.5
6	17.5	16.5	17.0	16.5	14.5	15.5	22.0	20.0	21.5	19.0	18.5	18.5
7	16.5	15.5	16.0	18.5	16.0	17.0	23.0	21.0	22.0	18.5	18.0	18.0
8	17.5	15.0	16.0	18.0	17.0	17.5	22.5	21.0	22.0	18.0	16.5	17.5
9	17.5	15.5	16.5	19.0	16.5	18.0	23.0	21.5	22.0	16.5	15.0	15.5
10	17.0	13.0	15.0	19.0	18.5	18.5	23.0	21.5	22.0	16.0	15.0	15.5
11	13.0	11.0	12.0	18.5	17.5	18.0	22.5	20.5	21.5	15.0	13.0	14.0
12	15.0	12.0	13.0	19.0	17.0	18.0	21.5	19.5	20.5	13.0	10.5	11.5
13	16.0	14.0	15.0	19.5	18.5	19.0	19.5	17.5	18.5	10.5	9.5	10.0
14	16.0	14.5	15.0	20.5	19.0	20.0	17.5	16.0	16.5	13.0	10.5	12.0
15	15.0	13.5	14.0	21.0	20.0	20.5	17.0	15.5	16.0	13.0	12.5	13.0
16	15.0	13.0	14.0	20.5	19.5	20.0	16.5	15.5	16.0	13.0	12.5	13.0
17	16.0	13.5	14.5	20.0	18.5	19.0	15.5	13.0	14.0	12.5	12.0	12.5
18	16.0	15.0	15.5	20.0	19.5	19.5	14.0	13.0	13.5	12.0	9.0	11.0
19	15.5	14.0	15.0	19.5	17.5	18.0	16.5	14.0	15.5	9.0	8.5	8.5
20	16.0	13.5	14.5	17.5	16.5	17.0	17.0	15.0	16.0	9.5	8.5	9.0
21	17.0	15.0	16.0	18.0	16.0	16.5	18.0	16.5	17.5	10.5	9.5	10.0
22	17.5	15.5	16.5	19.5	18.0	18.5	19.0	17.5	18.0	11.5	10.5	11.0
23	17.5	16.5	17.0	20.5	19.5	20.0	18.0	16.0	16.5	12.5	11.5	12.0
24	17.5	16.5	17.0	21.0	20.5	21.0	17.5	15.5	16.5	13.5	12.5	13.0
25	16.5	13.5	14.5	21.5	20.5	21.0	18.0	16.5	17.5	14.0	13.5	13.5
26	16.5	13.0	14.5	22.0	21.5	21.5	18.5	17.0	17.5	15.0	14.0	14.5
27	18.0	15.5	16.5	22.5	21.5	22.0	18.5	17.5	18.0	15.0	14.5	15.0
28	19.5	17.0	18.0	22.5	21.5	22.0	18.5	17.0	17.5	14.5	13.5	14.0
29	19.5	18.5	19.0	22.0	20.5	21.5	18.5	17.0	17.5	13.5	13.0	13.0
30	19.0	18.0	18.5	22.0	21.0	21.5	18.5	17.0	18.0	13.5	12.5	13.0
31	---	---	---	22.0	21.0	21.5	18.5	17.5	18.0	---	---	---
MONTH	19.5	9.5	15.5	22.5	14.5	19.0	23.0	13.0	18.5	19.5	8.5	14.0
YEAR	23.0	.0	8.5									

06054500 MISSOURI RIVER AT TOSTON, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 25, 77 0900		MAR 9, 78 1030		MAY 4, 78 1145		JUL 18, 78 1230		AUG 15, 78 1345		SEP 14, 78 1130	
TOTAL CELLS/ML	2400		4600		4200		1200		17000		3400	
DIVERSITY: DIVISION	1.0		0.1		0.7		0.5		0.5		1.4	
...CLASS	1.0		0.1		0.7		0.5		0.5		1.4	
...ORDER	1.9		0.6		1.1		0.8		0.6		2.1	
...FAMILY	3.2		3.0		3.3		2.8		0.6		3.3	
...GENUS	3.4		3.4		3.6		3.1		1.0		3.8	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)												
..CHLOROPHYCEAE												
...CHLOROCOCCALES												
...MICRACITINIACEAE												
...GOLEKNINIA	--	-	--	-	34	1	--	-	--	-	22	1
...UCCYSTACEAE												
...ANKISTRIDESMUS	13	1	--	-	--	-	67	6	*	0	160	5
...UCCYSTIS	--	-	--	-	140	3	--	-	--	-	89	3
...SELENASTRUM	--	-	--	-	66	2	--	-	--	-	--	-
...SCENEDESMACEAE												
...ACTINASTRUM	--	-	--	-	--	-	--	-	130	1	--	-
...SCENEDESMUS	53	2	--	-	140	3	--	-	--	-	--	-
...TETRASTRUM	--	-	--	-	140	3	--	-	--	-	--	-
...VOLVOCALES												
...CHLAMYDOMONADACEAE												
...CARTERIA	--	-	--	-	--	-	--	-	--	-	44	1
...CHLAMYDOMONAS	13	1	*	0	100	2	--	-	*	0	89	3
...VOLVOCAEAL												
...PANDURINA	--	-	--	-	--	-	--	-	360	2	--	-
..ZYGNEMALES												
...DESMIDIACEAE												
...COSMARION	--	-	--	-	--	-	--	-	*	0	--	-
CHRYSOPHYTA												
..BACILLARIOPHYCEAE												
...CENTRALES												
...COSCINOIDISCEAE												
...CYCLOTELLA	610#	25	140	3	340	8	89	8	160	1	89	3
...MELOSIRA	--	-	350	8	--	-	--	-	--	-	180	5
...SKELETONEMA	--	-	--	-	--	-	--	-	*	0	--	-
...PENNALES												
...ACHNANTHACEAE												
...COCCONEIS	130	5	260	6	34	1	67	6	*	0	200	6
...RHODOSPHECIA	40	2	180	4	300	7	--	-	--	-	44	1
...CYMBELLACEAE												
...AMPHURA	--	-	--	-	66	2	--	-	--	-	--	-
...CYMBELLA	53	2	250	5	410	10	89	8	*	0	290	9
...EPITHEMIA	120	5	210	5	270	6	110	10	*	0	180	5
...RHODALDIA	13	1	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE												
...DIAUOMA	160	7	670	15	200	5	360#	31	89	1	180	5
...FRAGILARIACEAE												
...FRAGILARIA	110	4	670	15	--	-	--	-	--	-	160	5
...SYNEURA	--	-	70	2	--	-	--	-	--	-	44	1
...GOMPHONEMACEAE												
...GOMPHONEMA	110	4	350	8	610	15	67	6	--	-	22	1
...NAVICULACEAE												
...CALDWEIS	--	-	--	-	--	-	--	-	--	-	22	1
...NAVICULA	190	8	1100#	23	610#	19	130	12	*	0	270	6
...NETIDIA	13	1	--	-	--	-	--	-	--	-	--	-
...PINNULARIA	--	-	--	-	--	-	22	2	--	-	--	-
...PILZSCHIA												
...PILZSCHIA	--	-	35	1	--	-	--	-	--	-	--	-
...PILZSCHIA	170	7	260	6	440	10	130	12	*	0	220	7
...SURIPELLACEAE												
...SURIPELLA	13	1	--	-	--	-	--	-	--	-	--	-
...SURIPELLA	--	-	35	1	34	1	--	-	--	-	--	-
...TABELLARIACEAE												
...TABELLARIA	--	-	--	-	34	1	--	-	--	-	--	-
..CHRYSOPHYCEAE												
...CHRYSDOMONADALES												
...CHRYSDOMONACEAE												
...CHRYSDOMONAS	--	-	--	-	--	-	--	-	*	0	--	-

06054500 MISSOURI RIVER AT TOSTON, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 25,77 0900	MAR 9,78 1030	MAY 4,78 1145	JUL 18,78 1230	AUG 15,78 1345	SEP 14,78 1130
ORGANISM	CELLS /ML PER- CENT	CELLS /ML PER- CENT	CELLS /ML PER- CENT	CELLS /ML PER- CENT	CELLS /ML PER- CENT	CELLS /ML PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
...CHROCOCCACEAE						
...AGMONELLUM	-- -	-- -	-- -	-- -	-- -	180 5
...ANACYSTIS	110 4	-- -	-- -	-- -	-- -	-- -
...HORMODONALES						
...NOSTOCACEAE						
...ANABAENA	-- -	-- -	-- -	-- -	14000# 85	-- -
...APHANIZOMENON	-- -	-- -	-- -	-- -	1300 8	-- -
...OSCILLATORIACEAE						
...OSCILLATORIA	490# 20	-- -	-- -	-- -	-- -	670# 26
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
...EUGLENA	-- -	-- -	-- -	22 2	-- -	22 1
...PHACUS	-- -	35 1	-- -	-- -	-- -	-- -
...TRACHELOMONAS	-- -	-- -	-- -	-- -	* 0	22 1
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...PERIDINIALES						
...GLENODINIACEAE						
...GLENODINIUM	13 1	-- -	34 1	-- -	* 0	-- -

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

PERIPHYTON

DATE	TIME	LENGTH OF EXPD- SURE (DAYS)	PERI- PHYTON BIOMASS TJIAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS DRY WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2)
JUL 18...	1230	34	6.11	5.28	8.06	.000
AUG 15...	1345	28	11.2	6.19	1.77	.960

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 18...	1030	9.0	4650	16	226	87
NOV 25...	0900	.0	5270	50	711	63
DEC 13...	1200	.5	4700	35	444	50
FEB 09...	1200	.5	4240	198	2270	44
MAR 09...	1030	.5	4710	196	2490	--
APR 05...	1000	7.5	8970	113	2740	81
MAY 04...	1145	10.0	9000	116	2620	75
JUN 14...	1130	14.5	12400	98	3410	78
JUL 18...	1230	19.5	5770	11	171	82
AUG 15...	1345	16.5	2290	11	68	70
SEP 14...	1130	15.0	5900	24	382	94

MISSOURI RIVER MAIN STEM

06058500 CANYON FERRY RESERVOIR NEAR HELENA, MT

LOCATION.--Lat 46°38'57", long 111°43'39", in SE¼SE¼ sec.4, T.10 N., R.1 W., Lewis and Clark County, Hydrologic Unit 10030101, in block 17 of Canyon Ferry Dam, 15 mi (24 km) east of Helena, and at mile 2,252.8 (3,624.8 km).

DRAINAGE AREA.--15,904 mi² (41,191 km²).

PERIOD OF RECORD.--April 1953 to current year (monthend contents only). 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 at mean sea level (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by concrete dam; construction began in 1949, completed in 1953. Storage began in March 1953. Usable capacity, 2,043,000 acre-ft (2.52 km³) between elevation 3,650.00 ft (1,112.520 m), invert of outlet works, and 3,800.00 ft (1,158.240 m), controlled spillway elevation. Dead storage, 8,000 acre-ft (9.86 hm³) below elevation 3,650.00 ft (1,112.520 m). Minimum operating level, 426,500 acre-ft (526 hm³) at elevation 3,728.00 ft (1,136.294 m) 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 (2.52 km³) July 15-29, 31, 1955, July 2, 5, 6, 8, 1956, July 16, 17, 1962, June 23, 1964, elevation, 3,800.0 ft (1,158.24 m); minimum since first filling, 1,017,000 acre-ft (1.25 km³) Apr. 11, 1967, elevation, 3,764.70 ft (1,147.481 m).

EXTREMES FOR CURRENT YEAR.--Maximum daily contents at 2400, 1,971,000 acre-ft (2.43 km³) July 9, elevation, 3,797.93 ft (1,157.609 m); minimum, 1,422,000 acre-ft (1.75 km³) Mar. 17, elevation, 3,780.69 ft (1,152.354 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	3,792.48	1,786,000	-
Oct. 31	3,794.63	1,858,000	+ 72,000
Nov. 30	3,794.56	1,856,000	- 2,000
Dec. 31	3,791.46	1,753,000	-103,000
CAL YR 1977			-134,000
Jan. 31	3,787.42	1,624,000	-129,000
Feb. 28	3,783.04	1,490,000	-134,000
Mar. 31	3,781.63	1,449,000	- 41,000
Apr. 30	3,783.83	1,514,000	+ 65,000
May 31	3,789.94	1,704,000	+190,000
June 30	3,797.02	1,939,000	+235,000
July 31	3,796.35	1,916,000	- 23,000
Aug. 31	3,791.26	1,747,000	-169,000
Sept. 30	3,791.11	1,742,000	- 5,000
WTR YR 1978			- 44,000

06058502 MISSOURI RIVER BELOW CANYON FERRY DAM, NEAR HELENA, MT

LOCATION.--Lat 46°38'58", long 111°43'39", in NW¼SE¼SE¼ sec.4, T.10 N., R.1 W., Lewis and Clark County, Hydrologic Unit 10030101, just downstream from generator outlet at Canyon Ferry Dam, 15 mi (24 km) east of Helena, and at mile 2,242.8 (3,608.7 km).

DRAINAGE AREA.--15,904 mi² (41,191 km²).

PERIOD OF RECORD.--Water years 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

WATER TEMPERATURES: October 1967 to current year.

REMARKS.--Flow completely regulated. Many diversions for irrigation upstream from station.

COOPERATION.--Records of discharge furnished by Canyon Ferry Project Office, Bureau of Reclamation, Helena, Mt.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 442 micromhos Mar. 31, Apr. 13, 1978; minimum daily, 241 micromhos Dec. 16, 1968.

WATER TEMPERATURES: Maximum daily, 20.0°C Aug. 27, 1969; minimum daily, 0.0°C on several days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 442 micromhos Mar. 31, Apr. 13; minimum daily, 297 micromhos Aug. 29.

WATER TEMPERATURES: Maximum daily, 17.5°C Sept. 9, 10, 14, 15; minimum daily, 2.5°C Dec. 21.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLJW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACD3)	HARD- NESS, NONCAR- BONATE (MG/L CACD3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT												
18...	0822	5340	381	12.5	150	6	40	13	20	.7	3.7	160
NOV												
25...	1500	5440	395	8.0	160	12	41	14	22	.8	4.0	180
DEC												
13...	0850	5440	391	4.5	160	15	42	14	21	.7	4.1	180
JAN												
10...	0855	5650	403	3.0	170	26	43	14	21	.7	4.1	170
FEB												
09...	0800	6110	415	3.0	160	4	41	14	22	.8	4.2	190
MAR												
09...	1345	6710	421	3.0	170	17	46	14	22	.7	4.2	190
APR												
05...	0800	6020	418	--	180	20	49	13	24	.8	3.9	190
MAY												
04...	1500	6700	404	6.0	170	25	46	14	22	.7	4.0	180
JUN												
14...	1500	8100	356	11.5	130	2	37	10	21	.8	3.8	160
JUL												
18...	1500	7020	348	13.0	130	10	35	11	19	.7	3.6	150
AUG												
15...	0730	6140	316	15.0	120	4	32	9.5	17	.7	3.1	140
SEP												
14...	0830	5840	303	17.5	120	--	32	9.3	13	.5	3.0	130

MISSOURI RIVER MAIN STEM

06058502 MISSOURI RIVER BELOW CANYON FERRY DAM, NEAR HELENA, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHU, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 13...	40	13	1.0	19	240	.33	3490	.22	.06	.04	20	90
NOV 25...	41	12	1.1	19	244	.33	3580	.19	.07	.02	20	4
DEC 13...	42	10	1.0	19	243	.33	3570	.24	.03	.03	30	0
JAN 10...	46	14	1.0	20	248	.34	3780	.22	.05	.04	30	20
FEB 09...	40	12	1.1	21	250	.34	4120	.23	.04	.03	10	0
MAR 09...	44	12	1.1	18	256	.35	4640	.25	.09	.01	0	30
APR 05...	46	12	1.2	22	266	.36	4320	.25	.02	.02	20	10
MAY 04...	44	15	1.2	22	258	.35	4670	.31	.04	.05	20	0
JUN 14...	37	11	1.2	23	224	.30	4900	.19	.03	.05	20	20
JUL 18...	35	9.9	1.1	24	214	.29	4080	.25	.03	.03	40	20
AUG 15...	30	8.7	.8	18	189	.26	3130	.23	.03	.01	<10	4
SEP 14...	27	7.1	.6	15	--	--	--	.04	.01	--	--	--

SPECIFIC CONDUCTANCE (MICROMH/S/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	386	409	398	408	413	432	430	408	393	353	332	309
2	381	405	397	402	412	433	431	408	387	350	328	301
3	383	402	396	402	408	430	428	411	385	350	324	307
4	388	403	399	405	412	432	428	410	382	334	324	304
5	384	404	398	404	412	433	432	409	382	336	323	309
6	387	411	401	413	415	435	432	412	382	348	312	307
7	386	405	396	403	417	431	434	411	383	342	313	309
8	383	396	394	399	410	428	432	410	374	346	316	306
9	382	392	391	402	407	422	433	409	371	345	313	304
10	382	392	390	399	411	421	431	408	381	342	319	307
11	384	398	391	402	411	425	439	408	370	347	319	310
12	387	406	400	417	416	431	438	409	367	336	324	318
13	389	401	402	410	416	433	442	408	356	340	319	303
14	387	394	399	408	411	427	436	405	372	342	304	302
15	386	395	397	406	413	424	433	402	370	334	312	303
16	383	396	395	408	416	424	431	404	367	347	312	307
17	392	396	397	412	416	427	432	400	361	342	307	304
18	394	401	403	429	422	433	430	400	360	333	307	316
19	402	402	405	411	425	433	436	399	362	332	306	310
20	401	398	400	408	420	430	432	397	360	332	312	306
21	399	392	399	408	425	423	431	394	359	332	300	304
22	397	395	400	410	422	427	428	392	352	336	304	304
23	396	398	399	413	426	428	424	394	367	337	301	308
24	397	402	404	435	428	431	423	396	360	333	302	313
25	401	403	407	417	433	435	432	394	359	328	305	327
26	402	406	405	413	433	431	430	390	364	323	306	334
27	398	401	406	408	430	430	423	383	360	323	301	336
28	399	402	407	412	437	432	423	385	360	327	---	342
29	397	401	407	416	---	435	419	390	356	320	297	342
30	399	409	411	438	---	438	420	389	355	332	298	333
31	404	---	413	439	---	442	---	390	---	338	301	---
MEAN	392	401	400	412	419	430	430	401	369	338	311	313
WTR YR 1978	MEAN	385	MAX	442	MIN	297						

06058502 MISSOURI RIVER BELOW CANYON FERRY DAM, NEAR HELENA, MT--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.5	11.5	7.0	3.0	3.0	3.0	3.5	5.5	9.0	12.0	15.0	17.0
2	14.5	11.5	7.0	3.0	3.0	3.0	3.5	5.5	9.5	12.5	15.0	17.0
3	14.5	11.5	7.0	3.0	3.0	3.0	3.5	5.5	10.0	12.0	15.0	17.0
4	14.5	11.5	7.0	3.0	3.0	3.0	4.0	5.5	10.0	13.0	15.5	17.0
5	14.5	11.0	6.5	3.0	3.0	3.0	4.0	5.5	10.0	14.0	15.5	17.0
6	14.5	11.0	6.5	3.0	3.0	3.0	4.0	5.5	10.5	12.5	15.5	17.0
7	14.5	11.0	6.5	3.0	3.0	3.0	3.5	5.5	10.0	13.0	15.5	17.0
8	14.5	11.0	6.0	3.0	3.0	3.0	4.0	5.5	10.0	12.5	15.5	17.0
9	14.5	11.0	5.5	3.0	3.0	3.0	4.0	6.0	10.5	13.0	15.5	17.5
10	14.5	10.5	5.0	3.0	3.0	3.0	4.0	6.0	10.5	13.0	15.5	17.5
11	14.0	10.5	5.0	3.5	3.0	3.0	4.0	6.0	10.5	13.0	15.5	17.0
12	14.0	10.5	5.0	3.0	3.0	3.0	4.0	6.0	11.0	13.0	15.0	16.5
13	14.0	10.5	4.5	3.0	3.0	3.0	4.0	6.5	13.0	13.0	15.0	16.5
14	14.0	10.5	4.5	3.5	3.0	3.0	4.0	7.0	13.0	13.0	15.5	17.5
15	13.5	10.5	4.0	3.0	3.0	3.0	4.5	7.5	13.0	13.0	15.5	17.5
16	13.5	10.5	4.0	3.0	3.0	3.0	4.5	7.5	13.5	13.0	15.5	17.0
17	13.0	10.5	3.5	3.0	3.0	3.0	4.5	7.0	13.0	13.0	16.0	17.0
18	13.0	10.0	3.5	3.5	3.0	3.0	4.5	7.5	13.0	14.0	16.5	16.5
19	13.0	10.0	3.5	3.5	3.0	3.0	4.5	8.0	13.0	13.5	16.5	16.5
20	12.5	9.5	3.0	3.0	3.0	3.0	4.5	8.0	12.0	14.0	15.5	16.0
21	12.0	9.0	2.5	3.5	3.5	3.0	4.5	8.0	12.5	14.0	16.0	16.5
22	12.0	8.0	3.0	3.5	3.0	3.0	4.5	9.0	13.0	13.5	16.0	16.5
23	12.0	8.0	3.0	3.0	3.0	3.0	4.5	9.0	12.0	13.5	16.0	16.5
24	12.0	8.0	3.0	3.0	3.0	3.0	5.0	8.5	12.0	13.5	16.0	16.5
25	12.5	8.0	3.0	3.0	3.0	3.0	5.0	9.0	12.0	14.0	16.0	16.0
26	12.0	8.0	3.0	3.0	3.0	3.0	5.5	9.0	12.0	14.0	16.0	15.0
27	12.0	8.0	3.0	3.0	3.0	3.0	5.5	9.5	11.5	14.0	16.0	14.5
28	12.0	8.0	3.0	3.0	3.0	3.0	6.0	9.5	12.0	14.0	16.0	14.0
29	12.0	8.0	3.0	3.0	---	3.5	6.0	9.5	11.5	14.5	17.0	14.0
30	12.0	7.5	3.0	3.0	---	3.5	5.5	9.5	12.0	15.0	17.0	14.5
31	12.0	---	3.0	3.0	---	3.5	---	9.5	---	15.0	17.0	---
MEAN	13.5	10.0	4.5	3.0	3.0	3.0	4.5	7.5	11.5	13.5	16.0	16.5
WTR YR 1978	MEAN	9.0		MAX	17.5		MIN	2.5				

PRICKLY PEAR CREEK BASIN

06062500 TENMILE CREEK NEAR RIMINI, MT

LOCATION.--Lat 46°31'27", long 112°15'22", in NW¼SW¼NE¼ 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 picnic grounds, 500 ft (152 m) upstream from Moose Creek and 2.5 mi (4.0 km) north of Rimini.

DRAINAGE AREA.--32.7 mi² (84.7 km²).

PERIOD OF RECORD.--October 1914 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1917, 1921, 1924-25. WSP 1509: 1915, 1916-17(M), 1920(M), 1927(M), 1928-30, 1947(M), 1948, 1950(M). WSP 1559: Drainage area. WSP 1709: 1959.

GAGE.--Water-stage recorder and concrete control since Oct. 20, 1937. Altitude of gage is 4,850 ft (1,478 m), from topographic map. Prior to Dec. 17, 1934, water-stage recorder at site 40 ft (12 m) downstream at different datum and different control.

REMARKS.--Records good except those for winter period, which are poor. Flow regulated by Chessman and Scott Reservoirs on tributaries above station, combined capacity, 2,340 acre-ft (2.89 hm³). Small diversions above station for water supply for city of Helena.

AVERAGE DISCHARGE.--64 years, 17.7 ft³/s (0.501 m³/s), 12,820 acre-ft/yr (15.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 995 ft³/s (28.2 m³/s) June 19, 1975, gage height, 4.89 ft (1.490 m); maximum gage height, 4.98 ft (1.518 m), May 27, 1917, site and datum then in use; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 80 ft³/s (2.27 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 22	2100	*237 6.71	*3.23 0.985	June 6	2200	227 6.43	3.20 0.975

Minimum daily discharge, 0.30 ft³/s (0.008 m³/s) Jan. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.74	.57	.59	.30	.42	.42	24	33	52	19	1.4	.67
2	.50	.54	1.1	.35	.42	.40	21	30	52	15	1.4	.57
3	.52	.50	.90	.40	.43	.40	15	31	42	14	1.3	.51
4	.50	.47	.64	.45	.45	.43	13	32	100	31	1.5	.57
5	.40	.69	.50	.45	.44	.50	14	32	134	41	5.2	.57
6	.47	.50	.50	.45	.43	.50	13	33	131	50	5.4	1.5
7	.50	.51	.45	.45	.42	.50	13	32	165	50	1.0	.51
8	.52	.44	.37	.45	.40	.50	12	33	104	55	1.0	.57
9	.52	.50	.42	.45	.50	.50	12	40	159	47	1.1	.44
10	.53	.43	.43	.45	.50	.50	11	52	134	30	1.6	.53
11	.45	.43	.45	.40	.35	.50	15	40	103	32	1.4	7.7
12	.40	.47	.45	.47	.37	.50	14	70	84	24	2.4	1.7
13	.51	.40	.47	.45	.50	.48	13	60	62	20	2.1	8.8
14	.71	.52	.45	.45	.53	.52	11	97	79	17	2.9	8.8
15	.59	.40	.43	.45	.40	.59	11	124	70	10	1.2	5.4
16	.53	.45	.43	.45	.43	.62	14	124	61	21	1.1	7.7
17	.44	.43	.43	.43	.45	.52	15	100	52	27	1.2	5.5
18	.40	.42	.45	.42	.45	1.1	14	171	40	20	1.2	4.1
19	.40	.42	.42	.40	.45	1.8	13	107	44	17	.43	4.5
20	.40	.55	.45	.59	.45	1.9	15	153	43	10	.60	4.3
21	.40	.34	.45	.42	.45	2.3	15	167	55	14	.70	2.4
22	.40	.37	.45	.44	.45	3.2	14	191	53	12	.73	6.2
23	.40	.40	.41	.45	.45	2.5	14	149	50	11	.73	7.3
24	.43	.45	.42	.45	.45	2.4	14	154	26	5.4	.64	6.6
25	.61	.54	.43	.40	.45	2.3	14	130	24	7.4	.70	5.6
26	3.1	.60	.42	.45	.45	2.4	20	107	25	5.6	.69	4.1
27	2.3	.60	.41	.44	.45	5.1	24	45	19	3.4	1.2	5.5
28	1.6	.67	.39	.44	.44	7.3	20	94	16	2.4	1.1	2.9
29	1.2	.60	.35	.42	---	12	30	90	15	2.5	.77	5.3
30	.75	.60	.35	.59	---	15	31	67	18	1.7	.75	2.5
31	.65	---	.53	.41	---	27	---	44	---	1.5	.72	---
TOTAL	20.55	15.07	14.86	13.34	11.83	45.93	445	2750	2236	613.1	45.57	126.94
MEAN	.73	.50	.48	.43	.42	3.19	10.2	95.4	74.5	14.8	1.47	4.23
MAX	3.1	.69	1.1	.45	.45	27	31	191	165	55	.64	.17
MIN	.43	.54	.33	.30	.30	.40	11	32	15	1.5	.64	.44
AC-FT	45	30	24	20	24	140	902	5000	4440	1220	40	252

CAL YR 1977 TOTAL 1312.63 MEAN 3.00 MAX 26 MIN .20 AC-FT 2000
WTR YR 1978 TOTAL 6639.34 MEAN 18.2 MAX 191 MIN .30 AC-FT 13170

06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT

LOCATION.--Lat 46°59'41", long 112°00'37", in NE4SW4SE4 sec.5, T.14 N., R.3 W., Lewis and Clark County, Hydrologic Unit 10030102, on left bank 0.4 mi (0.6 km) downstream from Holter Dam, 2.8 mi (4.5 km) southeast of Wolf Creek, and at mile 2,211.13 (3,557.7 km).

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,464.11 ft (1,055.861 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated by nine smaller irrigation reservoirs and powerplants (see p. 606-607), Clark Canyon Reservoir (see p. 47), and Canyon Ferry Reservoir (see p. 82). Diversions for irrigation of about 594,400 acres (2,410 km²).

AVERAGE DISCHARGE.--33 years, 5,591 ft³/s (158.3 m³/s), 4,051,000 acre-ft/yr (4.99 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,800 ft³/s (986 m³/s) June 8, 1948, gage height, 11.70 ft (3.566 m); minimum, probably less than 250 ft³/s (7.08 m³/s) during powerplant shutdown July 26, 1968; minimum daily, 747 ft³/s (21.2 m³/s) May 27, 1962.

EXTREMES FOR CURRENT RECORD.--Maximum discharge, 12,700 ft³/s (360 m³/s) July 3, gage height, 6.21 ft (1.893 m); minimum daily, 2,420 ft³/s (68.5 m³/s) Oct. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2790	4340	4960	6040	5970	6670	6600	7350	7570	9230	5880	7050
2	2760	4150	5600	6100	5930	6860	7120	7300	7670	8920	6240	6380
3	2760	4570	6050	5950	5990	6780	7010	6950	7330	8180	5740	6480
4	2420	4780	5980	5710	6210	6780	6670	6860	6980	9030	5720	6560
5	2790	5160	5450	5450	6040	6640	6190	7020	6900	6920	6430	6020
6	3960	5080	5940	5500	6280	6640	6010	7130	5930	8200	6410	5600
7	3720	5160	6650	6180	5820	6630	5720	7100	7080	7860	6240	5560
8	3710	4900	6750	6290	6550	6210	5510	7130	7260	8150	5520	6050
9	3570	4460	6540	6020	6450	6300	6760	7130	7780	9170	4970	7090
10	3620	4410	5720	5910	6420	6540	6850	7290	8480	9450	4950	7170
11	3520	4940	5610	5840	6750	6760	6980	7360	8830	9230	4900	7400
12	4260	5020	5420	5980	6610	6850	7090	7230	8750	9280	5080	7560
13	4760	4890	5040	6160	6550	6730	6440	6970	8560	9230	5520	7260
14	4780	4770	5170	5450	6660	6750	6240	6900	8530	8830	5660	7110
15	4450	5200	5320	6070	6490	6630	6310	6960	8700	9090	5200	6370
16	4360	4950	5560	5710	6310	6750	6720	7010	8890	8890	5160	4800
17	4480	4660	6390	6090	6170	7320	7170	7060	8970	8920	5440	4630
18	4360	4690	6190	6150	6180	7850	7010	7290	6920	7940	5410	4530
19	4240	4620	5850	6060	6310	6730	7030	7320	9000	6290	5160	4270
20	4300	4660	5620	5330	6790	6120	6990	7300	6660	6190	5160	4410
21	4330	4860	5450	6210	6900	6810	6910	7620	8780	5880	5190	4330
22	4040	4840	5640	5970	6760	6710	6720	7800	6610	5810	6080	4450
23	3660	4630	6350	5370	6730	7000	6730	7760	8590	5740	6840	4380
24	3690	4990	6680	5800	6630	7260	6760	7670	8390	5700	6770	4450
25	4020	4940	6240	5980	6700	6760	6710	7620	8610	5720	6580	4460
26	4320	4920	5710	5870	6590	6690	6770	7620	8720	5810	6620	4730
27	4400	5000	5460	6160	6700	6820	7170	7570	9200	5330	6380	4820
28	4330	4940	5460	6190	6800	6820	7340	7440	9990	5910	6290	5050
29	4270	4850	5470	6160	---	5800	7350	7280	10500	6030	6730	5020
30	4350	4520	5770	5440	---	5900	7360	7100	10100	5720	7160	4870
31	4370	---	5620	6040	---	6610	---	7260	---	5200	7060	---
TOTAL	121950	144300	179640	185440	180470	208540	202460	225470	253530	233860	182570	166820
MEAN	3934	4610	5795	5982	6445	6727	6749	7273	8451	7544	5869	5627
MAX	4780	5200	6750	6290	6900	7850	7366	7800	10500	9460	7160	7560
MIN	2420	4130	4960	5450	5820	6800	5510	6660	6900	5200	4900	4270
AC-FI	241900	286200	356300	367800	358000	413600	401600	447200	502900	463900	362100	334900
CAL YR 1977	TOTAL	1463660	MEAN	4010	MAX	6980	MIN	1990	AC-FI	2903000		
WTR YR 1978	TOTAL	2287050	MEAN	6266	MAX	10500	MIN	2420	AC-FI	4535000		

SMITH RIVER BASIN

06076690 SMITH RIVER NEAR FORT LOGAN, MT

LOCATION.--Lat 46°47'45", long 111°10'41", in NE¼SW¼SW¼ sec.13, T.12 N., R.4 E., Meagher County, Hydrologic Unit 10030103, on left bank, 15 ft (5 m) downstream from ranch bridge, 1.0 mi (1.6 km) upstream from Sheep Creek, and 9.0 mi (14.5 km) north of Fort Logan.

DRAINAGE AREA.--846 mi² (2,191 km²).

PERIOD OF RECORD.--October 1977 to September 1979.

GAGE.--Water-stage recorder. Altitude of gage is 4,400 ft (1,340 m), from topographic map.

REMARKS.--Records good except those for winter period, which are poor. Flow slightly regulated by Smith River Reservoir (see p. 608). Diversions for irrigation of about 19,300 acres (78 km²) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,930 ft³/s (54.7 m³/s) Mar 22, 1978, gage height, 5.46 ft (1.664 m); minimum, 39 ft³/s (1.10 m³/s) Nov. 19, 1977, gage height, 2.17 ft (0.661 m), result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 900 ft³/s (25.5 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 22	0500	*1,930 54.7	*5.46 1.664	Mar. 28	0900	1,020 28.9	4.46 1.359

Minimum discharge, 39 ft³/s (1.10 m³/s) Nov. 19, gage height, 2.17 ft (0.661 m), result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	163	106	115	90	95	85	725	425	337	502	171	104
2	153	106	110	90	100	90	659	430	304	478	194	106
3	132	101	110	90	105	80	478	410	269	473	179	99
4	120	101	100	95	120	55	389	425	237	570	168	99
5	113	104	100	100	115	90	356	416	244	719	155	99
6	110	104	90	110	115	90	337	435	277	850	155	106
7	115	101	85	120	120	95	332	435	349	802	137	108
8	120	93	80	110	130	90	337	425	416	712	127	110
9	122	80	100	100	125	90	320	371	463	666	125	104
10	120	90	120	95	120	100	308	371	528	642	122	101
11	115	95	140	90	110	110	296	349	554	549	117	117
12	117	97	140	90	95	110	284	393	502	526	113	174
13	115	101	130	90	90	115	269	364	444	498	115	182
14	115	106	130	95	95	110	264	375	435	449	117	160
15	113	106	125	95	110	110	312	349	473	402	127	145
16	110	90	125	90	120	105	328	402	493	384	122	135
17	108	87	120	90	130	110	345	476	463	425	152	132
18	102	85	110	100	140	130	353	549	430	449	145	137
19	101	80	115	95	140	230	353	502	502	430	142	158
20	99	75	115	95	145	570	345	493	608	407	140	171
21	99	75	105	100	150	1260	362	454	549	389	137	171
22	99	80	100	100	150	1720	366	430	473	345	129	163
23	99	90	100	95	130	870	349	466	463	312	117	158
24	99	100	95	95	100	625	320	513	498	288	117	158
25	99	110	90	100	105	597	312	523	554	273	110	155
26	113	120	90	100	100	670	304	513	750	251	101	158
27	122	140	90	100	95	816	328	459	738	230	106	153
28	115	130	90	95	90	927	358	384	566	208	113	150
29	110	125	90	95	---	843	380	353	498	194	106	150
30	110	120	90	95	---	725	402	341	502	179	104	150
31	110	---	90	90	---	744	---	332	---	171	104	---
TOTAL	3538	2998	3290	2995	3240	12382	10893	13257	13959	13797	4047	4113
MEAN	114	99.9	106	96.6	116	399	363	428	465	445	131	137
MAX	163	140	140	120	150	1720	725	549	750	850	194	182
MIN	99	75	80	90	90	80	269	332	237	171	101	99
AC-FT	7020	5950	6530	5940	6430	24560	21610	26300	27690	27370	8030	8160
WTR YR 1978	TOTAL	88509	MEAN	242	MAX	1720	MIN	75	AC-FT	175600		

06078200 MISSOURI RIVER NEAR ULM, MT

LOCATION.--Lat 47°26'09", long 111°23'07", in NE¼NW¼NW¼ sec.5, T.19 N., R.3 E., Cascade County, Hydrologic Unit 10030102, on left bank 5.6 mi (9.0 km) east of Ulm and 9.1 mi (14.6 km) downstream from Smith River.

DRAINAGE AREA.--20,941 mi² (54,237 km²).

PERIOD OF RECORD.--August 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,313.27 ft (1,009.885 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for winter period, which are poor. No gage-height record Nov. 4 to Dec. 7 and Jan. 8 to Mar. 23. Flow regulated by 10 smaller irrigation reservoirs and powerplants (see p.606-603), Clark Canyon Reservoir (see p. 47), and Canyon Ferry Reservoir (see p. 82). Diversions for irrigation of about 630,400 acres (2,550 km²) above station.

AVERAGE DISCHARGE.--21 years, 6,815 ft³/s (193.0 m³/s), 4,938,000 acre-ft/yr (6.09 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,500 ft³/s (779 m³/s) June 22, 1964, gage height, 14.44 ft (4.401 m); maximum gage height, 14.64 ft (4.462 m) June 22, 1975; minimum daily discharge, 1,700 ft³/s (48.1 m³/s) June 17, 1961.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1953 reached a stage of about 17 ft (5.2 m); discharge, 35,000 ft³/s (990 m³/s). Flood in June 1948 reached a stage of about 16 ft (4.9 m); discharge, 32,000 ft³/s (906 m³/s), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,500 ft³/s (439 m³/s) May 20, gage height, 9.83 ft (2.996 m); minimum daily, 2,760 ft³/s (78.2 m³/s) Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3090	4720	4800	6000	6400	7300	9140	9730	11100	11700	6410	7380
2	3080	4700	5200	6300	6350	7500	9360	9850	11800	11000	6790	7280
3	3010	4460	5950	6300	6500	7500	9370	9940	11600	10500	7090	6840
4	2960	4800	6300	6200	6400	7300	9040	9740	11000	10800	6690	6780
5	2760	5000	6200	6000	6600	7200	8610	9580	10500	12000	6510	6860
6	2950	5350	5800	5800	6500	7200	8060	9880	10400	12800	7030	6540
7	3540	5300	5950	6000	6500	7250	7840	10000	10600	12500	7130	6070
8	3630	5400	6800	6350	6400	7400	7560	10700	10500	12100	6920	5990
9	3380	5200	6950	6600	6600	7350	7280	11000	10600	12100	6350	6260
10	3880	4800	6750	6400	6750	7350	8050	11200	10800	12600	5690	7170
11	3680	4700	6200	6200	6850	7400	8290	11500	11300	12900	5550	7410
12	3850	5150	5850	6100	7100	7400	8300	11800	11300	12300	5480	7400
13	3910	5250	5750	6400	7000	7600	8500	11400	10900	12100	5610	8430
14	3940	5150	5400	6600	7000	7550	8050	10800	10500	11800	6020	6230
15	4010	4950	5400	6350	6950	7000	7720	10800	10300	11200	6220	6020
16	4670	5400	5600	6400	6900	7600	7800	11400	10200	11200	5870	7440
17	4680	5150	6000	6200	6700	7600	8270	11800	10300	11100	5800	6020
18	4750	4900	6600	6400	6600	8400	8770	11900	10200	11100	6150	5570
19	4750	4800	6400	6500	6650	9000	8660	12500	10200	10100	6100	5430
20	4590	4600	6200	6400	6600	10000	8580	14500	10400	5570	5860	5240
21	4590	5000	6000	6350	7300	9840	8610	14200	10200	8180	5820	5260
22	4660	5100	5850	6600	7450	9710	8670	13500	9990	7640	5830	5150
23	4480	5100	6000	6400	7450	9550	8440	13300	9740	7650	6620	5200
24	4230	5100	6600	6200	7450	9160	8370	13100	9620	7420	7230	5100
25	4210	5150	7000	6150	7400	9050	8320	12700	9590	7250	7180	5160
26	4260	5200	6600	6350	7200	8610	8270	12100	9420	7190	7020	5140
27	4560	5150	6200	6300	7000	8650	8450	11600	10100	7150	7030	5320
28	4720	5160	5850	6400	7000	8980	9040	11200	10500	6690	6840	5400
29	4680	5180	5650	6600	---	9140	9410	10800	11200	6950	6740	5590
30	4600	5100	5750	6600	---	9410	9620	10500	11900	7100	7970	5660
31	4650	---	6050	6350	---	8290	---	10300	---	6670	7460	---
TOTAL	125700	151240	167650	195300	192000	253030	254450	353320	317260	310520	200090	189840
MEAN	4055	5041	6053	6316	6857	8162	8482	11400	10560	10020	6455	6328
MAX	4750	5400	7000	6600	7450	10000	9620	14500	11900	12900	7460	8430
MIN	2760	4460	4800	5300	6350	7200	7280	9580	9590	6670	5480	5100
AC-FI	249200	300000	372200	388400	380800	501900	504700	700800	629300	615900	396900	376500

CAL YR 1977 TOTAL 1748450 MEAN 4792 MAX 7800 MIN 2590 AC-FI 3464000
 WTR YR 1978 TOTAL 2730900 MEAN 7482 MAX 14500 MIN 2760 AC-FI 5417000

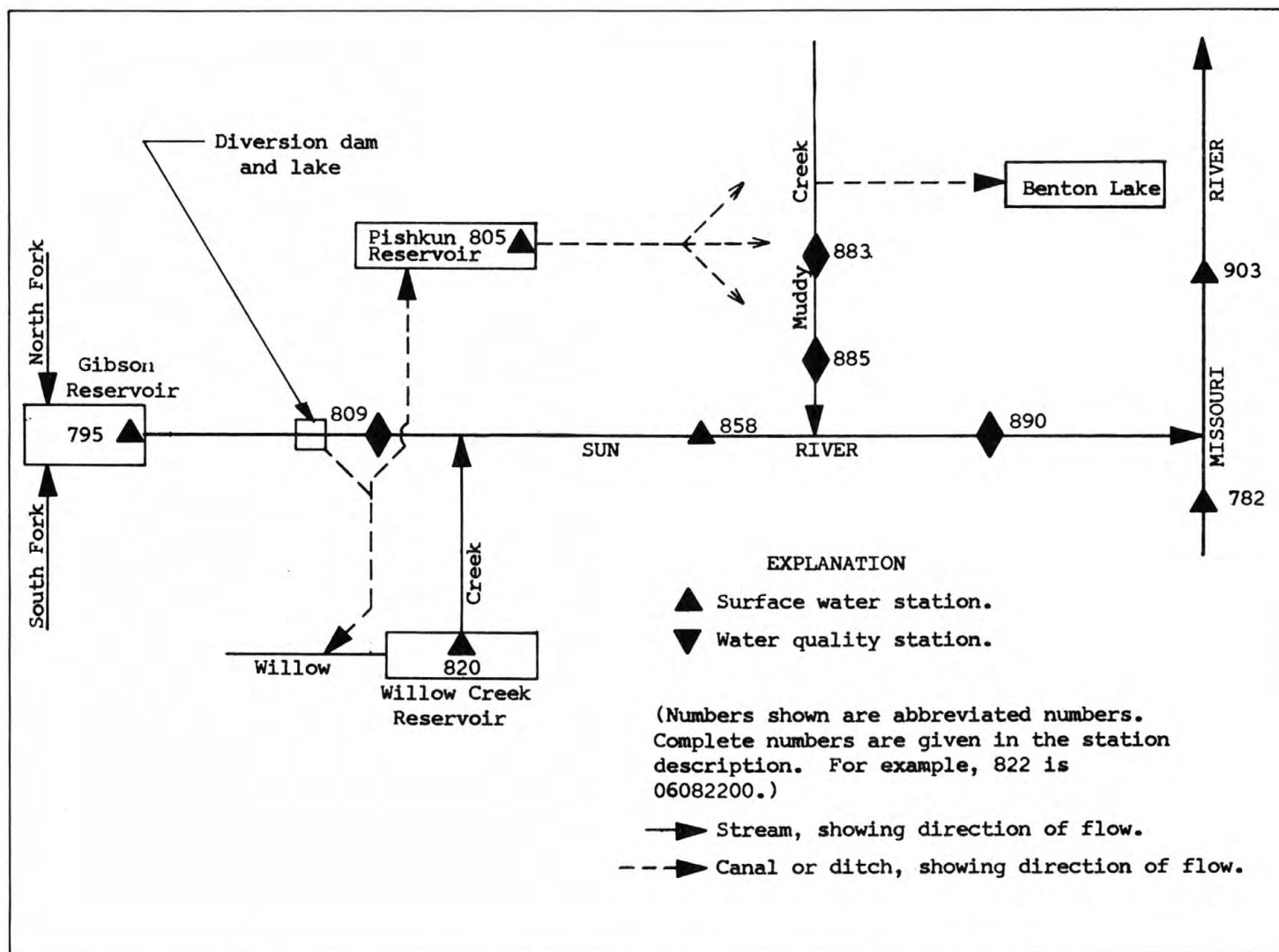


Figure 8. Schematic diagram showing diversions and storage in Sun River basin.

LOCATION. --Lat 47°37'10", long 112°41'28", near center of east line of sec.36, T.22 N., R.9 W., Lewis and Clark County, Hydrologic Unit 10030104, Lewis and Clark National Forest, on road bridge 1.0 mi (1.6 km) downstream from diversion dam, 16.5 mi (26.5 km) northwest of Augusta, and at mile 95.6 (153.8 km).

WATER-DISCHARGE RECORDS

REMARKS.--Water-discharge records good except those for winter period, which are fair. Flow regulated by Gibson Dam (see p. 608). Diversions above station into Pishkun Canal and Willow Creek feeder canal for irrigation of about 91,000 acres (368 km²) below station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge known, 59,700 ft³/s (1,690 m³/s) June 9, 1964, from computation of peak flow over dam 1.0 mi (1.6 km) upstream; gage height, about 24.8 ft (7.56 m), from floodmark, from levels of Aug. 12, 1971.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	59	80	75	80	87	101	501	1950	1500	405	156
2	75	41	86	78	80	78	102	1120	1760	1500	392	158
3	74	59	89	80	85	70	159	1290	1680	1500	380	158
4	75	40	85	80	85	80	180	1290	1700	1650	376	158
5	75	41	80	80	85	80	102	1290	2040	1850	565	158
6	80	42	78	80	85	87	160	1500	5160	2170	356	158
7	61	40	76	85	82	87	161	1640	6110	2060	547	163
8	61	40	74	80	85	90	180	1640	5750	1540	559	157
9	65	40	76	80	85	95	159	1550	5500	1650	529	155
10	65	43	80	84	85	92	161	1490	4650	1770	515	155
11	65	45	89	80	70	92	165	1600	3460	1680	509	155
12	65	43	84	85	75	92	260	1800	2520	1580	505	159
13	66	44	86	85	74	90	475	1780	2050	1200	295	156
14	67	45	87	85	75	90	490	1880	2050	742	289	155
15	67	45	87	85	77	89	364	2020	2210	606	280	154
16	69	44	84	85	78	89	311	2150	2250	797	273	155
17	82	45	85	85	85	92	240	2150	2100	896	267	155
18	95	58	84	82	85	95	196	2320	1710	995	275	156
19	55	79	85	76	85	92	199	2410	1740	1150	277	152
20	47	76	80	85	84	95	202	2420	1580	1150	277	151
21	47	75	80	82	85	102	207	2450	1290	959	271	152
22	47	77	85	82	80	102	205	2490	1350	755	241	107
23	50	84	50	82	87	101	201	2550	1380	541	195	105
24	48	86	80	80	89	103	199	2590	1420	512	201	107
25	51	80	75	85	86	102	201	2600	1610	436	204	106
26	51	84	80	85	87	107	252	2590	2020	345	201	105
27	50	80	80	95	80	114	354	2570	2010	299	199	106
28	51	79	80	85	85	115	460	2570	1680	292	201	104
29	52	82	80	84	---	117	540	2470	1470	292	204	125
30	53	79	78	80	---	138	574	2280	1490	576	205	115
31	45	---	75	86	---	161	---	2120	---	408	181	---
TOTAL	1904	1733	2520	2555	2501	5026	7710	61261	75650	55209	8757	4110
MEAN	61.4	57.8	81.3	81.7	82.2	97.5	257	1976	2455	1071	282	157
MAX	95	86	89	86	89	161	574	2600	6110	2170	408	165
MIN	45	39	74	75	74	76	159	801	1290	292	181	104
AC-FT	5780	5440	5000	5020	4560	6000	15290	121500	146100	65870	17370	8150
CAL YR 1977	TOTAL	56928	MEAN	101	MAX	456	MIN	31	AC-FT	75250		
WTR YR 1978	TOTAL	202714	MEAN	555	MAX	6110	MIN	39	AC-FT	402100		

SUN RIVER BASIN

06080900 SUN RIVER BELOW DIVERSION DAM, NEAR AUGUSTA, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

WATER TEMPERATURES: October 1967 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 504 micromhos Mar. 7, 1977; minimum daily, 170 micromhos on several days in 1972.

WATER TEMPERATURES: Maximum daily, 18.5°C Aug. 1, 1973; minimum daily, 0.0°C on several days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 468 micromhos Dec. 16; minimum daily, 191 micromhos July 7, 8, 10.

WATER TEMPERATURES: Maximum daily, 15.5°C Sept. 3; minimum daily, 0.0°C on several days during November to February.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLJW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCTI- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CAC33)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
DCI												
05...	1245	103	353	7.0	200	54	56	15	1.9	.1	.8	180
NOV												
17...	1315	40	391	2.0	210	66	59	16	2.4	.1	.8	180
JAN												
11...	1100	82	437	1.0	240	97	65	18	2.2	.1	.9	170
FEB												
22...	1115	80	436	3.5	240	89	65	18	2.4	.1	.9	180
MAR												
23...	1300	102	418	5.5	230	82	64	17	2.5	.1	1.0	180
MAY												
09...	1200	1520	282	6.0	160	31	47	11	1.9	.1	.7	160
JUN												
08...	1620	5560	218	9.0	110	4	31	8.0	1.8	.1	.6	130
JUL												
20...	1130	1230	277	9.5	110	14	53	7.2	1.5	.1	.6	120
AUG												
31...	1115	185	278	14.5	150	27	42	11	1.7	.1	.7	150

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLOU- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, PHURJS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHOD, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
DCI												
05...	52	.7	.2	5.1	221	.30	61.5	.04	.00	.01	50	0
NOV												
17...	62	.8	.2	5.3	236	.32	25.6	.05	.00	.01	20	0
JAN												
11...	83	1.0	.4	5.7	261	.36	57.9	.15	.01	.01	30	10
FEB												
22...	84	.9	.3	6.0	267	.36	57.7	.12	.01	.00	10	20
MAR												
23...	74	.2	.3	5.8	254	.35	70.0	.10	.12	.00	20	10
MAY												
09...	28	.6	.1	6.3	175	.24	718	.07	.01	.01	10	0
JUN												
08...	7.5	.5	.1	5.5	119	.16	1790	.06	.00	.01	30	0
JUL												
20...	9.0	.4	.1	5.5	117	.16	389	.04	.00	.00	20	10
AUG												
31...	23	.4	.1	5.3	158	.21	78.9	.02	.01	.00	100	0

06080900 SUN RIVER BELOW DIVERSION DAM, NEAR AUGUSTA, MT--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.5	3.5	1.0	.5	.5	.5	5.5	6.0	6.5	10.5	11.0	13.0
2	9.5	4.0	2.5	.5	.5	.5	4.0	5.5	6.5	10.0	10.5	14.5
3	6.5	3.0	3.0	.5	2.0	.5	4.0	6.0	6.0	10.0	11.0	15.5
4	6.5	4.5	.5	.5	2.0	1.5	3.0	5.5	7.5	9.5	12.0	14.0
5	6.0	3.0	.0	.5	1.5	1.5	3.5	5.0	6.5	10.5	12.0	15.0
6	8.0	5.0	.5	1.0	1.5	2.0	3.5	5.0	9.5	10.0	11.5	15.0
7	7.0	4.5	.5	.5	1.0	1.5	3.0	5.5	8.0	10.0	13.0	15.0
8	7.5	3.0	.0	.5	1.5	3.0	5.5	5.0	8.0	10.0	13.0	14.0
9	6.0	1.5	.0	.5	1.0	3.0	4.5	6.0	9.5	9.5	13.5	14.5
10	4.5	4.0	.5	1.0	.5	2.5	4.0	6.0	8.0	10.0	14.5	14.0
11	4.5	2.5	2.0	.5	.5	1.5	5.5	6.5	8.0	9.0	12.5	12.5
12	6.5	4.5	1.5	.5	.5	1.0	4.0	5.5	7.5	10.0	12.5	12.0
13	7.0	4.0	2.0	1.0	.5	2.0	3.5	6.0	8.5	11.0	10.0	11.5
14	6.5	2.5	2.0	1.0	.0	1.5	4.0	6.5	8.0	10.0	13.0	12.5
15	8.0	3.0	2.5	.5	.5	1.0	3.5	6.5	8.5	12.0	13.0	12.5
16	7.5	2.0	1.5	.5	.5	1.5	4.0	6.5	8.5	10.5	13.0	11.0
17	6.0	2.5	1.0	.5	.5	3.0	5.0	6.5	9.0	10.5	12.5	10.0
18	6.5	.5	1.5	.5	2.0	3.0	3.5	7.0	9.0	11.0	13.5	11.0
19	7.0	.5	.5	.5	1.5	3.0	4.0	6.0	9.0	9.5	13.0	10.0
20	6.0	.0	.5	1.0	4.0	3.5	4.0	7.5	9.0	12.5	13.0	10.5
21	5.0	.5	.5	1.5	2.0	4.0	4.0	7.0	11.0	10.0	13.5	10.0
22	5.5	.5	.5	1.5	2.0	4.0	5.0	7.0	9.0	11.5	13.5	11.0
23	7.0	1.0	.5	.5	2.0	4.5	4.0	7.0	9.5	11.5	13.0	11.0
24	5.0	---	.5	.5	2.0	---	5.0	6.5	11.0	12.0	12.5	10.0
25	7.0	2.5	.5	.5	1.5	---	6.5	6.5	9.0	10.5	13.5	10.5
26	7.0	2.0	.5	1.0	2.0	---	5.0	7.5	9.5	10.5	13.5	11.0
27	4.5	3.0	.0	.5	1.0	6.0	5.0	7.0	10.0	12.5	14.0	10.5
28	5.0	2.0	---	.5	1.0	5.0	5.5	7.0	9.5	10.5	12.5	11.0
29	6.0	3.0	.5	.5	---	5.0	5.0	7.0	11.0	11.0	13.5	10.0
30	5.5	1.5	.5	.5	---	5.0	5.0	6.5	9.5	11.0	12.5	10.0
31	5.5	---	.5	.5	---	5.0	---	6.5	---	11.0	14.0	---
MEAN	6.5	2.5	1.0	.5	1.5	2.5	4.5	6.5	6.5	10.5	12.5	12.0
WTR YR 1978	MEAN	6.0		MAX	15.5		MIN	.0				

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	403	420	432	451	432	432	410	335	230	197	213	291
2	396	408	437	452	434	441	405	332	230	194	213	288
3	397	411	437	442	434	440	405	313	232	194	217	290
4	366	396	462	427	433	429	405	309	230	194	220	290
5	377	399	422	446	442	433	413	308	230	192	219	290
6	388	425	432	449	445	434	410	302	226	194	222	291
7	388	418	366	439	446	440	398	303	223	191	222	287
8	402	398	438	248	424	437	407	293	220	191	222	290
9	401	394	437	441	439	438	400	289	211	192	229	291
10	402	402	427	413	435	431	396	290	208	191	223	290
11	402	406	429	436	437	433	400	291	206	194	232	291
12	409	404	439	439	446	432	399	293	208	194	236	297
13	409	399	452	445	445	429	367	291	199	196	237	298
14	402	401	445	437	442	443	354	284	196	199	240	296
15	410	391	433	434	437	432	351	282	196	204	242	295
16	402	392	468	435	438	438	352	277	196	201	252	293
17	407	391	437	438	442	432	350	276	199	199	253	291
18	407	353	425	442	447	437	354	277	200	200	262	290
19	403	389	422	447	448	437	353	272	197	199	265	302
20	403	412	435	439	442	444	350	262	196	201	265	300
21	409	409	434	437	440	448	347	257	198	203	267	302
22	407	413	427	437	445	443	346	258	200	208	265	302
23	408	425	435	438	447	442	343	252	197	208	266	307
24	412	---	432	442	457	---	339	245	200	208	270	308
25	410	437	440	447	446	---	342	247	198	209	269	304
26	403	439	442	448	446	---	342	249	196	210	270	309
27	413	440	443	445	447	449	337	243	195	212	270	308
28	407	449	---	443	446	412	336	242	197	212	271	308
29	403	461	437	441	---	419	332	242	197	212	273	309
30	404	465	437	447	---	427	334	237	197	210	276	319
31	419	---	439	453	---	421	---	238	---	210	260	---
MEAN	403	413	435	435	442	435	369	277	207	201	247	298
WTR YR 1978	MEAN	345		MAX	468		MIN	191				

SUN RIVER BASIN

06085800 SUN RIVER AT SIMMS, MT

LOCATION.--Lat 47°30'06", long 111°55'56", in NW¼NW¼SE¼ sec.12, T.20 N., R.3 W., Cascade County, Hydrologic Unit 10030104, on left bank 500 ft (152 m) downstream from county bridge, 0.7 mi (1.1 km) north of Simms, and 0.7 mi (1.1 km) downstream from Simms Creek.

DRAINAGE AREA. --1,320 mi² (3,419 km²).

PERIOD OF RECORD.--May to June 1953 (in WSP 1320-B), May to June 1964 (in WSP 1840-B), March 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,546.58 ft (1,080.998 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for winter period, which are poor. Flow regulated by Gibson, Pishkun, Willow Creek, and Nilan Reservoirs (see p.608-609). Diversions for irrigation of about 105,000 acres (425 km²) above station.

AVERAGE DISCHARGE.--12 years, 562 ft³/s (15.92 m³/s), 407,200 acre-ft/yr (502 hm³/yr).

EXTREMES FOR PERIOD OF RECORD:--Maximum discharge, 50,000 ft³/s (1,416 m³/s), June 9, 1964, gage height, about 13.7 ft (4.18 m), from floodmark, from slope-area measurement of peak flow at site 4 mi (6 km) upstream; minimum daily, 19 ft³/s (0.54 m³/s) Sept. 29, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,060 ft³/s (200 m³/s) June 7, gage height, 6.77 ft (2.063 m); minimum daily, 32 ft³/s (0.91 m³/s) Oct. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	96	150	130	130	125	253	714	2240	1530	350	218
2	32	110	150	135	140	120	260	919	2050	1510	360	195
3	43	107	150	140	150	125	250	1320	1620	1590	330	189
4	46	107	145	145	150	130	244	1390	1910	2210	310	179
5	57	105	140	145	150	135	239	1590	1860	2080	290	164
6	62	107	140	150	150	140	235	1510	3690	2090	260	140
7	70	105	140	150	155	150	232	1870	6360	2120	250	138
8	103	103	130	140	150	200	233	1810	6200	1660	245	137
9	105	94	140	140	140	250	229	1630	6230	1690	246	126
10	114	103	150	145	130	300	225	1570	5070	1900	239	135
11	114	114	160	150	125	300	224	1640	5930	1750	229	181
12	112	110	160	150	120	290	220	1770	3090	1770	226	265
13	107	105	160	150	115	260	290	1770	2480	1530	216	320
14	105	105	160	145	115	270	517	1690	2180	1160	215	278
15	105	107	155	140	120	260	506	2000	2190	747	206	250
16	107	103	150	140	120	288	417	2260	2260	776	215	236
17	107	84	150	140	120	452	455	2270	2200	910	218	228
18	107	111	150	140	125	875	355	2490	2060	1050	222	229
19	114	150	145	135	130	502	291	2770	1690	1120	215	225
20	112	140	145	140	135	468	283	2750	1970	1280	212	205
21	103	140	150	145	135	400	343	2720	1470	1150	215	199
22	96	140	160	150	135	315	327	2740	1460	964	243	193
23	94	145	150	150	135	266	267	2720	1460	748	274	186
24	92	140	140	150	135	244	276	2780	1500	619	225	185
25	92	145	130	150	130	233	272	2730	1570	560	212	167
26	90	150	140	150	130	226	267	2680	1850	450	215	186
27	88	150	145	145	130	223	335	2630	1900	400	208	185
28	88	145	145	140	130	224	464	2530	1860	350	196	180
29	86	140	150	135	---	221	574	2470	1600	300	192	173
30	86	150	145	150	---	218	668	2400	1530	290	212	179
31	84	---	125	130	---	223	---	2320	---	310	240	---
TOTAL	2759	3611	4550	4425	3730	8453	9789	64453	77700	36814	7516	5916
MEAN	89.0	120	147	143	133	273	326	2079	2590	1188	242	197
MAX	114	150	160	150	155	875	668	2780	6360	2210	360	320
MIN	32	84	125	130	115	120	220	714	1460	290	192	128
AC-FT	5470	7160	9020	8730	7400	16770	19420	127800	154100	73020	14910	11730
CAL YR 1977	TOTAL	38524	MEAN 106	MAX 247	MIN 32	AC-FT 76410						
WTR YR 1978	TOTAL	229716	MEAN 629	MAX 6360	MIN 32	AC-FT 455600						

06088300 MUDDY CREEK NEAR VAUGHN, MT

LOCATION.--Lat 47°37'30", long 111°38'05", in NW¼NE¼ sec.32, T.22 N., R.1 E., Cascade County, Hydrologic Unit 10030104, on left bank 200 ft (61 m) downstream from bridge on county road and 6.2 mi (10.0 km) northwest of Vaughn.

DRAINAGE AREA.--282 mi² (730 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,450 ft (1,052 m), from topographic map.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Natural flow increased by wastage from Greenfields Irrigation Project. Diversions for irrigation of about 400 acres (1.62 km²) above station. Pumped diversions from Muddy Creek above station in SW¼ sec.2, T.22 N., R.1 W., to supplement water supply for Benton Lake Wildlife Refuge are listed below.

AVERAGE DISCHARGE.--10 years, 123 ft³/s (3.483 m³/s), 89,110 acre-ft/yr (110 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,110 ft³/s (88.1 m³/s) May 7, 1975, gage height, 13.46 ft (4.103 m); minimum daily, 8.0 ft³/s (0.23 m³/s) Dec. 8, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,120 ft³/s (60.0 m³/s) Mar. 20, gage height, 10.57 ft (3.222 m); maximum gage height, 11.04 ft (3.365 m) Mar. 18 (backwater from ice); minimum daily, 23 ft³/s (0.651 m³/s) Jan. 30, Feb. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP				
1	66	50	35	25	24	25	57	47	279	254	255	199
2	58	50	37	28	27	25	58	34	232	240	247	167
3	55	46	34	27	24	24	51	56	205	455	224	150
4	52	50	30	26	27	26	45	57	204	630	225	151
5	50	50	28	27	28	28	46	40	198	605	249	155
6	51	50	27	30	24	31	43	65	165	624	289	170
7	55	49	26	26	30	35	45	274	175	735	311	162
8	54	45	25	27	26	35	42	94	155	552	297	171
9	58	50	27	27	25	34	40	67	125	421	296	164
10	58	53	24	26	25	44	40	61	156	551	255	160
11	55	46	35	29	25	50	39	55	119	580	297	191
12	55	47	37	24	24	58	37	52	151	366	265	347
13	57	46	42	28	25	68	36	51	91	345	246	328
14	56	46	44	27	24	50	37	50	90	515	275	254
15	56	46	45	27	25	110	57	44	77	242	264	165
16	55	40	41	27	25	140	56	52	70	290	319	167
17	54	38	36	27	25	600	46	48	69	512	322	164
18	53	35	32	25	24	1300	48	56	71	456	320	162
19	51	31	31	25	30	815	43	55	95	362	297	162
20	51	29	32	27	35	1570	42	117	85	298	290	156
21	54	31	35	30	35	650	49	125	82	255	262	155
22	55	30	34	29	34	575	44	167	68	206	265	147
23	55	30	35	29	35	174	40	136	105	201	302	148
24	55	30	24	28	35	254	56	165	150	155	500	148
25	53	32	36	27	32	204	57	195	179	171	508	141
26	52	36	31	26	35	165	57	198	202	185	505	156
27	52	40	31	26	30	119	40	196	185	164	296	155
28	55	45	32	25	28	76	37	195	192	200	274	115
29	55	45	25	24	---	67	36	182	205	215	272	114
30	52	41	27	25	---	52	38	207	226	237	251	102
31	51	---	24	24	---	57	---	244	---	279	227	---
TOTAL	1681	1261	1006	835	801	7561	1271	5485	4409	10765	8674	5078
MEAN	54.2	42.0	32.5	26.9	26.6	238	42.4	111	147	347	280	169
MAX	66	55	45	30	36	1570	58	274	736	522	347	347
MIN	50	29	24	23	25	24	36	36	70	154	225	102
AC-FI	3530	2500	2006	1660	1590	14640	2520	6850	8740	21550	17200	10070
(†)	0	0	0	0	0	0	0	0	0	0	0	0
CAL YR 1977	TOTAL	28741	MEAN	78.7	MAX	425	MIN	22	AC-FI	57010		
NRK YR 1978	TOTAL	46602	MEAN	128	MAX	1570	MIN	25	AC-FI	92440		

†Diversions, in acre-feet, to Benton Lake, furnished by Fish and Wildlife Service.

06088300 MUDDY CREEK NEAR VAUGHN, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1968 to current year.

WATER TEMPERATURES: July 1968 to current year.

SUSPENDED-SEDIMENT DISCHARGE: July 1968 to current year.

REMARKS.--Flow affected by ice during most of winter months.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 6,400 micromhos Apr. 29, 1976; minimum daily, 365 micromhos Feb. 20, 1969.

WATER TEMPERATURES: Maximum daily, 27.5°C July 6, 1975; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily, 13,000 mg/L Mar. 18, 1978; minimum daily observed, 11 mg/L Oct. 19, 1968, Oct. 19, 1972, Oct. 30, 1973.

SEDIMENT LOADS: Maximum daily, 48,000 tons (43,500 tonnes) May 7, 1975; minimum daily, 0.84 ton (0.74 tonne) Jan. 8, 1973.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,100 micromhos May 7; minimum daily, 550 micromhos August 27.

WATER TEMPERATURES: Maximum daily, 24.5°C June 28; minimum daily, 0.0°C on many days during November to March.

SEDIMENT CONCENTRATIONS: Maximum daily, 13,000 mg/L Mar. 18; minimum daily, 16 mg/L Oct. 14.

SEDIMENT LOADS: Maximum daily, 47,600 tons (43,200 tonnes) Mar. 18; minimum daily, 2.4 tons (2.2 tonnes) Oct. 14, 22, 29.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCTI- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACU3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACU3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT												
13...	1500	57	1060	11.0	460	150	64	72	78	1.6	2.6	370
NOV												
09...	1515	52	1140	2.0	530	190	70	86	87	1.6	2.4	410
DEC												
20...	1630	33	1360	.0	600	240	61	97	110	2.0	3.1	440
JAN												
25...	1100	27	1100	.0	490	150	68	78	71	1.4	2.1	410
MAR												
01...	1415	26	1340	.0	560	230	77	90	100	1.8	4.5	400
24...	1515	250	1470	5.0	480	340	65	76	160	3.2	7.3	170
APR												
20...	1200	42	2400	10.5	820	500	96	140	240	3.7	4.2	390
MAY												
17...	1230	48	1360	11.5	560	240	69	93	120	2.2	3.4	390
JUN												
19...	1400	106	814	13.5	360	100	55	53	55	1.3	3.2	310
JUL												
10...	1420	357	726	24.0	320	80	43	43	44	1.1	2.2	290
AUG												
07...	1430	328	549	27.0	240	27	42	33	24	.7	2.1	260
SEP												
05...	1430	153	707	19.5	320	55	53	45	36	.9	1.6	320

06088300 MUDDY CREEK NEAR VAUGHN, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLOU- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF COASTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, PO4RJS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, JRTHD, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 13...	290	9.0	1.1	4.6	719	.98	111	3.5	.00	.03	30	0
NOV 09...	310	9.7	1.1	6.9	794	1.08	112	4.3	.00	.00	10	10
DEC 20...	420	10	1.1	9.7	966	1.31	85.1	3.9	.02	.01	40	20
JAN 25...	270	7.8	1.0	9.6	724	.96	52.6	3.3	.02	.00	40	10
MAR 01...	350	17	1.0	8.8	908	1.23	65.7	7.4	.07	.06	20	30
APR 24...	610	16	.5	7.6	1040	1.41	702	3.4	.16	.13	50	60
MAY 20...	880	25	.9	.7	1500	2.16	161	5.8	.01	.00	40	40
JUN 17...	430	14	1.0	2.9	946	1.29	123	4.5	.03	.05	10	20
JUL 19...	180	6.5	.8	5.0	518	.70	148	1.5	.02	.01	60	0
JUL 10...	140	5.2	.7	7.6	447	.61	431	1.8	.02	.01	20	10
AUG 07...	81	2.8	.5	6.8	324	.44	287	.80	.03	.04	<10	4
SEP 03...	130	4.5	.8	6.0	443	.50	183	1.4	.12	.10	20	0

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM
MAR 16...	1720	.5	925	5060	12600	55	51	82	94	95	100
APR 24...	1300	5.0	262	1560	1190	55	70	91	98	100	--
JUL 10...	1430	24.0	359	639	619	55	49	75	68	97	100

SUN RIVER BASIN

06088300 MUDDY CREEK NEAR VAUGHN, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1420	1090	1290	1140	1200	1370	1750	1630	2020	660	622	623
2	1430	1100	1250	1150	1150	1530	1700	1850	1830	663	656	666
3	1230	1120	1290	1220	1100	1360	1890	1850	992	590	662	662
4	1180	1090	1480	1130	1070	1410	1870	1680	766	617	649	720
5	1220	1110	1520	1110	1090	1240	1750	1700	669	572	623	718
6	1180	1080	1560	1100	1090	1280	1670	1700	640	749	627	720
7	1150	1120	1200	1120	1060	1220	1620	4100	616	923	559	708
8	1090	1120	1170	1120	1070	1150	1570	3220	714	713	609	702
9	1070	1170	1160	1230	1090	790	1540	2600	772	736	615	664
10	1160	1080	1150	1120	1130	632	1520	2080	623	732	678	697
11	1170	1090	1130	1120	1130	608	1480	1840	679	730	639	691
12	1120	---	1140	1110	1250	1030	1430	1680	658	753	596	992
13	1050	1100	1200	1100	1220	1320	1430	1520	751	770	660	1130
14	1060	1120	1270	1090	1100	1260	1540	1470	749	650	660	1040
15	1050	1110	1470	1050	1090	1530	1560	1390	818	638	650	1050
16	1050	1260	1480	1100	1090	1610	1350	1400	880	653	630	959
17	1030	1200	1610	1110	1090	919	1480	1380	736	619	634	836
18	1100	1170	1450	1100	1100	854	1630	1390	837	620	652	810
19	1090	1310	1340	1140	1090	872	2230	1550	810	787	643	796
20	1090	1370	1370	1090	1060	777	2450	935	831	612	620	768
21	1070	1310	1280	1080	1090	791	2320	620	847	782	642	773
22	1090	1220	1160	1060	1100	981	2600	631	848	826	633	739
23	1100	1160	1170	1070	1120	1230	2680	701	781	781	608	720
24	1130	1120	1140	1110	891	1110	2620	741	751	771	651	702
25	1100	1080	1190	1120	1190	1490	2490	627	707	787	582	756
26	1110	1120	1140	1090	1200	1480	2190	692	632	657	567	765
27	1090	1250	1120	1110	1220	1660	1930	580	662	732	550	744
28	1090	1230	1140	1120	1260	1690	1830	572	660	658	562	770
29	1070	1220	1210	1140	---	1730	1800	568	656	636	563	808
30	1080	1270	1250	1130	---	1780	1740	581	644	582	572	839
31	1090	---	1180	1080	---	1820	---	725	---	568	603	---
MEAN	1130	1170	1260	1110	1120	1240	1840	1430	819	710	626	788

WTR YR 1978 MEAN 1100 MAX 4100 MIN 550
TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.0	3.0	.0	.0	.0	.0	5.0	10.5	13.5	22.5	16.5	18.5
2	11.5	4.0	.0	.0	.0	.0	8.5	14.5	11.5	16.5	14.0	18.0
3	9.0	3.0	.0	.0	.0	.0	6.5	9.0	18.5	15.5	13.0	16.0
4	5.5	3.5	.0	.0	.0	.0	5.0	11.0	21.0	13.0	14.0	18.5
5	4.5	1.5	.0	.0	.0	.0	9.5	6.5	23.0	13.0	23.0	17.5
6	5.0	5.5	.0	.0	.0	.0	4.5	9.5	18.5	12.5	16.0	18.5
7	9.0	3.5	.0	.0	.0	.0	5.0	9.5	19.5	13.5	16.0	19.5
8	8.0	1.5	.0	.0	.0	.0	6.0	6.5	22.5	15.0	16.5	16.0
9	6.0	.5	.0	.0	.0	1.0	11.0	9.0	20.0	20.5	17.0	15.0
10	2.5	2.0	.0	.0	.0	.5	7.0	10.5	17.5	15.5	16.5	15.5
11	5.5	5.5	.0	.0	.0	1.0	9.0	10.0	16.0	20.0	15.5	12.5
12	11.0	---	.0	.0	.0	.5	5.0	6.0	11.0	13.5	15.0	8.0
13	11.5	5.5	.0	.0	.0	.0	4.0	15.5	14.0	14.5	15.5	10.5
14	9.0	3.5	.0	.0	.0	.5	10.5	12.0	14.5	24.0	14.5	14.5
15	10.0	2.5	.0	.0	.0	.0	8.0	18.5	14.5	16.5	14.0	14.0
16	11.0	1.0	.0	.0	.0	1.0	9.5	12.0	11.0	17.0	15.0	10.0
17	10.0	.5	.0	.0	.0	2.0	5.5	10.0	13.0	15.5	12.0	12.0
18	7.0	.0	.0	.0	.0	.0	4.5	10.5	14.0	13.5	10.0	9.0
19	8.5	.0	.0	.0	.0	3.0	10.5	15.0	11.0	13.0	13.0	8.0
20	8.0	.0	.0	.0	.0	.5	9.0	12.0	10.5	13.0	13.0	10.0
21	8.5	.0	.0	.0	.0	1.5	8.0	17.0	14.0	14.0	13.5	9.5
22	10.0	.0	.0	.0	.0	1.5	10.0	16.5	16.0	15.0	15.0	14.0
23	9.5	.0	.0	.0	.0	2.5	8.0	11.0	20.5	16.0	18.0	14.0
24	7.0	.0	.0	.0	.0	2.5	6.5	9.5	15.5	16.5	18.0	17.0
25	8.5	.0	.0	.0	.0	7.0	9.0	10.5	15.5	16.0	15.0	15.5
26	6.5	.5	.0	.0	.0	7.5	11.0	11.0	20.5	17.0	17.0	15.0
27	5.5	.0	.0	.0	.0	6.0	11.0	13.5	23.0	16.5	17.0	15.0
28	7.5	.0	.0	.0	.0	9.0	11.0	14.0	24.5	16.0	16.0	12.0
29	9.0	.0	.0	.0	---	12.0	12.0	10.5	21.5	16.0	16.0	11.5
30	7.0	.0	.0	.0	---	12.0	12.5	10.0	21.5	16.5	18.0	14.0
31	5.5	---	.0	.0	---	6.5	---	8.5	---	16.5	18.5	---
MEAN	8.0	1.5	.0	.0	.0	2.5	8.0	11.5	17.0	16.0	15.5	14.0

WTR YR 1978 MEAN 8.0 MAX 24.5 MIN .0

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

TOTAL LOAD FOR YEAR: 187782.0 TONS.

06088500 MUDDY CREEK AT VAUGHN, MT

LOCATION.--Lat 47°33'42", long 111°32'33", near center of S½NE¼ sec.24, T.21 N., R.1 E., Cascade County, Hydrologic Unit 10030104, on right bank, 30 ft (9.1 m) upstream from old highway bridge at Vaughn, 1.5 mi (2.4 km) upstream from mouth.

DRAINAGE AREA.--314 mi² (813 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1925 to February 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. Altitude of gage is 3,350 ft (1,020 m), from topographic map. May 21, 1925, to Feb. 8, 1926, nonrecording gage at site 500 ft (152 m) downstream at different datum. Apr. 19, 1925, to Sept. 30, 1955, at present site at datum 1.00 ft (0.305 m) higher. 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 30 ft (9.1 m) downstream at present datum.

REMARKS.--Water-discharge records good except those for winter period, 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 (2.83 km²) above station. Pumped diversions from Muddy Creek above station is SW¼ sec.2, T.22 N., R.1 W., to supplement water supply for Benton Lake Wildlife Refuge are listed below.

AVERAGE DISCHARGE.--40 years (1934-68, 1971-78), 126 ft³/s (3.568 m³/s), 91,290 acre-ft/yr (113 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,600 ft³/s (215 m³/s) June 4, 1953, gage height, 17.7 ft, (5.40 m), present datum, from floodmarks, from rating curve extended above 3,000 ft³/s (85.0 m³/s) on basis of slope-area measurement of peak flow; minimum, 2.0 ft³/s (0.057 m³/s) Mar. 16, 17, 1972, gage height, 1.20 ft (0.366 m), result of ice jams upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1908 reached a stage of about 24 ft (7.3 m), present datum (discharge not determined); flood in June 1932 reached a stage of about 19 ft (5.8 m), present datum (discharge not determined); from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,290 ft³/s (64.9 m³/s) Mar. 20, gage height, 9.50 ft (2.896 m); maximum gage height, 10.3 ft (3.14 m), Mar. 18, from floodmark (backwater from ice); minimum discharge, 23 ft³/s (0.65 m³/s) Nov. 16, gage height, 1.82 ft (0.555 m), result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	110	54	36	29	28	32	61	57	366	283	299	261
2	96	50	39	31	31	29	65	56	330	328	298	221
3	97	53	37	30	33	27	60	45	280	457	267	196
4	95	56	33	29	32	28	53	43	265	690	293	189
5	94	56	31	30	32	29	52	45	257	696	340	201
6	94	56	29	33	34	29	48	77	230	133	369	228
7	90	55	28	30	35	30	50	290	222	637	459	219
8	94	51	26	31	32	38	51	129	192	630	369	221
9	101	52	30	31	30	45	46	66	171	517	411	214
10	102	69	34	32	29	56	47	75	163	455	361	197
11	98	57	37	33	29	64	47	59	159	479	396	237
12	99	55	41	32	28	70	45	65	182	438	408	401
13	99	53	45	31	27	80	46	58	163	406	362	431
14	99	52	48	30	28	100	47	59	153	371	416	335
15	82	53	48	29	29	140	47	56	143	331	417	251
16	72	46	45	30	30	300	47	59	126	307	459	227
17	67	43	42	30	31	800	54	55	131	544	446	221
18	69	40	37	29	32	1600	59	65	131	531	449	219
19	66	35	35	28	33	940	57	75	146	434	427	218
20	65	33	37	31	36	1510	54	115	154	358	414	216
21	67	35	38	33	36	1080	58	137	153	270	403	205
22	64	33	36	33	38	430	59	159	153	240	402	196
23	67	33	35	34	39	221	49	255	166	246	438	193
24	65	34	33	33	39	296	47	261	220	247	440	195
25	65	39	34	33	35	232	45	271	245	218	435	184
26	61	41	34	31	38	167	45	280	279	230	411	170
27	58	44	34	30	36	118	47	284	247	192	398	174
28	59	47	35	29	35	82	46	255	233	232	382	163
29	58	48	33	28	---	72	43	245	252	249	368	157
30	55	43	30	26	---	67	45	277	259	269	336	160
31	53	---	28	28	---	62	---	325	---	323	299	---
TOTAL	2463	1422	1112	947	920	8774	1523	4331	6196	12541	12006	6760
MEAN	79.5	47.4	35.9	30.5	32.9	263	50.8	140	207	405	367	225
MAX	110	69	48	34	39	1600	66	325	386	637	459	461
MIN	73	33	28	26	27	27	43	43	126	192	267	157
AC-FT	4	2820	2210	1880	1820	17400	3020	8590	12290	24680	23810	13410
(+)	0	0	0	0	0	0	0	0	0	0	0	0
CAL YR 1977 TOTAL	37363.4	MEAN 102	MAX 506	MIN 4.8	AC-FT 74110							
WTR YR 1978 TOTAL	58995.0	MEAN 162	MAX 1600	MIN 26	AC-FT 117000							

†Diversions, in acre-feet, to Benton Lake, furnished by Fish and Wildlife Service.

06088500 MUDDY CREEK AT VAUGHN, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968, 1971 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to September 1968, July 1972 to current year.

WATER TEMPERATURES: October 1967 to September 1968, July 1971 to current year.

SUSPENDED SEDIMENT DISCHARGE: July 1971 to current year.

REMARKS.--Flow affected by ice during most of winter months.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 5,400 micromhos Apr. 30, 1976; minimum daily, 470 micromhos June 8, 1974.

WATER TEMPERATURES: Maximum daily, 25.5°C June 18, 1974; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily, 14,300 mg/L Mar. 20, 1978; minimum daily observed, 11 mg/L Oct. 19, 1968, Oct. 19, 1972, Oct. 30, 1973.

SEDIMENT LOADS: Maximum daily, 58,300 tons (52,900 tonnes) Mar. 20, 1978; minimum daily, 0.84 ton (0.76 tonne) Jan. 8, 1973.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,300 micromhos May 8; minimum daily, 552 micromhos May 29, 30.

WATER TEMPERATURES: Maximum daily, 22.5°C August 5; minimum daily, 0.0°C on many days during November to March.

SEDIMENT CONCENTRATIONS: Maximum daily, 14,300 mg/L Mar. 20; minimum daily, 42 mg/L Nov. 5.

SEDIMENT LOADS: Maximum daily, 58,300 tons (52,900 tonnes) Mar. 20; minimum daily, 3.6 tons (3.3 tonnes) Mar. 3.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTANTANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACCS)	HARD- NESS, NONCAR- BONATE (MG/L AS CACCS)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AV- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT 13...	1130	100	1090	10.0	470	200	75	69	86	1.7	2.7	330
NOV 09...	1200	26	1190	1.5	540	220	76	86	95	1.6	2.4	390
DEC 21...	1500	38	1460	.0	630	270	92	98	130	2.2	3.2	440
JAN 24...	1500	33	1150	.0	500	160	75	76	85	1.7	2.2	410
FEB 28...	1630	35	1280	.0	510	210	82	73	97	1.9	0.4	360
MAR 24...	1130	357	1220	4.5	370	260	65	50	120	2.7	5.8	130
APR 19...	1445	56	1770	12.5	670	390	87	110	170	2.9	3.7	340
MAY 16...	1400	58	1470	13.0	570	280	72	95	140	2.6	4.1	360
JUN 22...	1130	143	659	20.5	260	71	43	36	45	1.2	2.4	250
JUL 13...	1230	406	718	18.0	290	76	50	40	47	1.2	2.0	260
AUG 10...	0830	364	647	19.0	280	49	49	38	33	.9	2.2	280
SEP 08...	1045	225	667	18.0	310	75	56	42	39	1.0	1.8	290

06088500 MUDDY CREEK AT VAUGHN, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SULFATE DIS- SOLVED (MG/L AS SU4)	CHLOR- IDE, DIS- SOLVED (MG/L AS CL)	FLUOR- IDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJMS PER AC-FT)	SOLIDS, DIS- SOLVED (TJMS PER DAY)	NITR- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 13...	340	8.5	.9	4.7	760	1.03	205	2.4	.00	.01	30	40
NOV 09...	360	15	1.1	5.9	851	1.16	59.7	4.0	.00	.00	10	20
DEC 21...	500	10	1.1	10	1060	1.47	111	3.8	.01	.01	10	10
JAN 24...	310	8.3	1.0	9.5	783	1.06	69.8	3.2	.02	.01	20	20
FEB 25...	350	18	.9	9.0	843	1.15	79.7	6.5	.15	.13	30	10
MAR 24...	460	9.9	.4	6.9	794	1.08	765	2.7	.10	.01	40	40
APR 19...	630	25	.9	2.1	1240	1.69	187	10	.00	.01	30	10
MAY 15...	510	15	1.0	2.1	1030	1.40	161	4.0	.03	.06	40	20
JUN 22...	140	4.5	.0	3.1	407	.55	157	.60	.02	.02	10	0
JUL 13...	150	4.8	.6	6.4	435	.59	477	1.3	.02	.04	20	0
AUG 10...	120	3.2	.6	7.1	396	.54	389	1.0	.02	.03	30	1
SEP 08...	130	4.2	.6	6.0	427	.56	261	.87	.03	.01	50	10

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1350	1130	1350	1230	1220	1250	1760	1800	1540	664	632	649
2	1330	1140	1300	1190	1240	1320	1900	1920	2270	656	660	660
3	1230	1120	1290	1170	1190	1420	1770	1920	1020	640	664	682
4	1120	1130	1410	1290	1160	1250	1930	1870	779	662	653	727
5	1090	1120	1550	1180	1170	1300	1880	1760	665	591	650	712
6	1100	1150	1560	1170	1160	1280	1810	1920	623	771	620	698
7	1100	1150	1540	1160	1150	1220	1720	4100	610	749	583	724
8	1060	1140	1240	1170	1120	1210	1650	4300	614	773	595	712
9	1020	1190	1250	1210	1120	703	1620	3000	651	703	602	667
10	1060	1140	1240	1300	1140	596	1560	2440	682	699	651	700
11	1120	1140	1190	1190	1170	598	1550	2100	671	726	669	700
12	1120	---	1230	1170	1210	795	1530	1920	668	702	629	672
13	1050	1160	1250	1060	1300	1090	1490	1680	578	773	633	1120
14	1030	1160	1290	1160	1280	1140	1440	1620	608	660	650	931
15	1060	1160	1300	1160	1180	1280	1430	1520	619	632	649	967
16	1070	1190	1530	1130	1170	1530	1420	1490	617	656	617	907
17	1080	1270	1560	1140	1170	830	1440	1510	722	688	640	817
18	1060	1260	1650	1190	1160	697	1560	1450	604	903	641	803
19	1120	1290	1460	1150	1190	1050	1780	1620	681	721	641	779
20	1100	1450	1430	1210	1170	958	2150	1780	711	626	632	721
21	1110	1530	1460	1140	1150	911	2350	972	639	757	630	742
22	1080	1430	1330	1140	1160	930	2320	870	669	769	631	742
23	1140	1300	1270	1120	1190	1160	2580	718	725	740	639	750
24	1150	1240	1250	1140	879	1210	2620	647	725	709	609	736
25	1150	1160	1230	1160	905	1160	2550	630	713	703	599	760
26	1140	1150	1270	1160	1150	1330	2400	586	610	700	580	780
27	1130	1270	1260	1140	1210	1410	2070	558	620	681	580	772
28	1110	1290	1210	1150	1260	1690	1900	569	636	694	566	775
29	1120	1280	1240	1170	---	1670	1800	552	669	648	580	848
30	1120	1310	1320	1190	---	1690	1740	552	647	623	595	802
31	1130	---	1380	1210	---	1720	---	599	---	618	601	---
MEAN	1120	1220	1350	1170	1160	1170	1860	1580	753	704	624	776
WTR YR 1978	MEAN	1120	MAX	4300	MIN	552						

06088500 MUDDY CREEK AT VAUGHN, MT--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.0	3.0	.0	.0	.0	.0	6.0	12.5	14.0	20.5	19.0	19.0
2	11.5	4.0	.0	.0	.0	.0	9.0	15.0	13.0	18.5	15.5	19.5
3	10.0	3.0	.0	.0	.0	.0	7.5	9.5	18.5	18.0	15.0	18.0
4	6.5	4.0	.0	.0	.0	.0	6.0	13.0	20.5	14.0	17.0	19.5
5	6.0	1.0	.0	.0	.0	.0	10.0	7.5	21.0	13.5	22.5	19.0
6	6.0	5.0	.0	.0	.0	.0	4.5	10.0	17.5	13.5	19.0	19.0
7	9.5	3.5	.0	.0	.0	.0	5.0	9.0	18.5	14.5	18.5	18.5
8	8.0	1.0	.0	.0	.0	.0	6.0	7.5	20.5	16.0	16.5	18.0
9	7.0	.5	.0	.0	.0	1.0	12.0	10.0	18.5	18.5	19.0	16.5
10	4.5	3.0	.0	.0	.0	1.0	7.5	12.0	17.0	17.0	19.0	16.5
11	7.0	5.0	.0	.0	.0	1.5	9.0	10.5	15.5	19.0	18.0	13.0
12	11.5	---	.0	.0	.0	.0	5.5	9.0	12.5	15.0	17.0	8.0
13	11.5	5.0	.0	.0	.0	.5	4.5	17.5	14.5	16.5	17.5	10.5
14	10.0	4.0	.0	.0	.0	.0	11.5	12.5	16.0	21.0	15.5	14.0
15	10.5	3.0	.0	.0	.0	.0	9.0	20.0	15.0	18.5	16.0	14.5
16	12.0	1.5	.0	.0	.0	1.0	10.5	13.0	12.0	18.0	16.0	12.0
17	11.0	.5	.0	.0	.0	1.0	6.0	11.0	12.5	16.5	12.0	12.0
18	7.0	.0	.0	.0	.0	1.0	5.5	11.0	14.5	14.5	10.5	8.0
19	6.0	.0	.0	.0	.0	4.0	12.5	14.0	12.0	14.0	14.0	8.0
20	9.0	.0	.0	.0	.0	1.0	10.5	13.5	11.5	14.5	14.0	9.0
21	9.5	.0	.0	.0	.0	2.0	9.0	18.5	14.5	16.0	15.0	10.5
22	9.5	.0	.0	.0	.0	1.5	11.5	18.0	17.0	17.5	16.5	11.5
23	10.5	.0	.0	.0	.0	2.5	9.0	12.0	20.0	17.5	17.0	14.5
24	8.0	.0	.0	.0	.0	5.5	7.5	10.0	17.5	19.0	18.0	16.0
25	9.0	.0	.0	.0	.0	7.0	9.0	11.5	15.5	19.0	18.0	16.0
26	6.0	.0	.0	.0	.0	7.5	11.0	11.5	18.0	19.5	18.0	16.0
27	5.5	.0	.0	.0	.0	6.5	12.0	13.0	21.5	21.0	17.5	16.0
28	8.0	.0	.0	.0	.0	10.5	11.5	14.0	22.0	18.5	17.5	13.0
29	9.0	.0	.0	.0	---	13.0	13.5	12.0	20.0	19.0	18.0	12.5
30	7.0	.0	.0	.0	---	13.5	13.5	11.0	20.5	19.0	19.0	13.5
31	4.5	---	.0	.0	---	7.5	---	9.0	---	19.0	18.5	---
MEAN	8.5	1.5	.0	.0	.0	3.0	9.0	12.0	16.5	17.5	17.0	14.5
AIR YR 1978	MEAN	8.5	MAX	22.5	MIN	.0						

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM
MAR												
13...	1330	.5	1600	12700	54900	34	50	87	97	99	100	--
24...	1100	4.5	296	6910	5520	44	50	83	94	100	--	--
JUL												
13...	1200	18.0	398	1770	1900	27	38	66	85	98	99	100

SUN RIVER BASIN

06088500 MUDDY CREEK AT VAUGHN, MT--Continued
SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
OCTOBER												
1	171	51	52	7.6	94	9.6	119	9.3	74	5.6	64	5.5
2	115	30	64	9.7	94	9.9	122	10	95	8.0	57	4.5
3	75	19	47	6.7	94	9.4	124	10	162	14	49	3.5
4	81	21	48	7.3	101	9.0	91	7.1	146	15	109	8.2
5	50	13	42	6.4	94	7.9	101	8.2	114	9.8	159	11
6	96	24	45	6.8	95	7.5	119	11	138	13	94	7.4
7	103	25	47	7.0	99	7.5	103	8.5	137	13	90	7.3
8	68	22	59	8.1	116	8.9	90	7.5	126	11	103	11
9	161	44	170	24	101	8.2	98	8.2	94	7.6	418	51
10	158	44	243	45	95	8.7	109	9.4	96	7.5	906	137
11	156	41	134	21	90	9.0	94	8.4	103	8.1	1220	211
12	146	39	78	12	97	11	103	8.9	92	7.0	1440	272
13	132	35	88	13	114	14	124	10	188	14	494	107
14	131	35	103	14	118	15	90	7.3	124	9.4	558	97
15	90	20	94	13	115	15	67	5.2	95	7.4	248	94
16	77	15	126	16	129	16	70	5.7	103	8.3	413	335
17	56	10	170	20	111	13	67	5.4	107	9.0	6450	13900
18	51	9.5	162	17	120	12	97	7.6	85	7.5	8750	37860
19	86	15	119	11	150	14	124	9.4	61	5.4	7030	17800
20	77	14	136	12	137	14	133	11	60	5.8	14500	56300
21	51	9.2	198	19	125	13	143	13	70	7.2	13600	39700
22	47	8.1	160	14	122	12	83	7.4	90	9.2	6100	7060
23	65	12	129	11	121	11	104	9.5	116	12	2890	1720
24	73	13	121	11	115	10	125	11	241	25	6010	4800
25	66	12	104	11	149	14	130	12	114	12	4180	2620
26	75	12	107	12	133	12	104	8.7	79	8.1	2560	1150
27	66	10	102	12	103	9.5	112	9.1	99	9.6	1200	562
28	64	10	108	14	69	8.4	136	11	138	13	795	176
29	56	8.8	145	19	137	12	136	10	---	---	556	106
30	53	7.9	127	15	96	7.8	107	7.5	---	---	563	102
31	54	7.7	---	---	92	7.0	125	9.5	---	---	476	80
TOTAL	---	637.2	---	415.6	---	536.1	---	276.6	---	280.3	---	167040.5
APRIL												
1	407	67	262	40	2670	2780	1470	1120	1100	886	816	576
2	412	73	356	54	1940	1730	1830	1620	850	684	614	369
3	320	52	187	23	1660	1250	3470	4410	1040	806	765	405
4	204	29	137	16	1270	909	5910	11000	978	774	869	443
5	231	32	124	15	1240	860	4550	8550	1160	1060	610	331
6	177	23	760	185	1260	782	4310	8530	1320	1390	460	295
7	158	19	5450	4940	1250	749	5740	13000	1450	1720	442	261
8	144	20	1610	682	972	504	3950	6720	1300	1370	651	358
9	190	25	617	147	792	366	2580	3600	1330	1480	589	340
10	202	26	374	77	1030	467	3450	4240	1150	1120	413	220
11	222	28	225	42	873	375	2720	3520	1320	1390	475	304
12	177	22	184	32	774	380	1930	2280	1500	1650	2450	3250
13	144	18	177	28	765	337	1530	1680	1050	1030	1830	2130
14	134	17	151	24	559	231	1670	1670	935	1050	1170	1060
15	112	14	151	23	508	196	1560	1390	1100	1240	605	410
16	104	13	157	25	503	171	1790	1480	1590	1970	499	306
17	147	21	149	22	339	127	3610	5430	1460	1760	412	246
18	224	36	965	196	358	127	2530	3630	1070	1300	353	209
19	205	32	2200	445	451	178	1790	2100	1050	1210	334	197
20	169	25	2560	891	393	163	1700	1640	931	1040	275	160
21	204	32	2190	810	439	181	1260	933	1140	1240	216	121
22	193	31	1710	734	380	157	935	606	1060	1150	210	111
23	117	15	3120	2150	367	164	1140	757	998	1180	239	125
24	91	12	2230	1570	865	514	927	616	941	1120	243	128
25	77	9.4	1720	1260	1450	959	895	526	1050	1230	210	104
26	76	9.2	1940	1470	1420	1070	1080	671	1250	1390	172	79
27	119	15	2010	1540	1120	747	748	386	1180	1270	202	95
28	119	15	1880	1290	1410	887	1040	651	1310	1350	225	99
29	139	16	1420	939	1780	1210	952	640	1240	1230	239	101
30	182	22	1250	935	1460	1030	1140	828	874	793	230	99
31	---	---	1910	1680	---	---	1160	1010	988	798	---	---
TOTAL	---	768.6	---	22285	---	19601	---	95238	---	37683	---	12962
TOTAL LOAD FOR YEAR: 377530.8 TONS.												

06089000 SUN RIVER NEAR VAUGHN, MT

LOCATION.--Lat 47°31'37", long 111°29'05", in NW¼SE¼SW¼ sec.33, T.21 N., R.2 E., Cascade County, Hydrologic Unit 10030104, on right bank 3.7 mi (6.0 km) downstream from Muddy Creek, 3.6 mi (5.8 km) southeast of Vaughn, and at mile 14.6 (23.5 km).

DRAINAGE AREA.--1,854 mi² (4,802 km²).

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 (1,011.058 m) National Geodetic Vertical Datum of 1929. July 11 to Oct. 30, 1897, nonrecording gage at site 0.8 mi (1.3 km) upstream at different datum. Apr. 19 to Aug. 3, 1934, nonrecording gage at present site and datum.

REMARKS.--Water-discharge records fair except those for winter period, which are poor. Flow regulated by Gibson, Pishkun, Willow Creek, and Nilan Reservoirs. Diversions for irrigation of about 110,000 acres (455 km²) above station.

AVERAGE DISCHARGE.--44 years, 737 ft³/s (20.87 m³/s), 534,000 acre-ft/yr (658 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,500 ft³/s (1,520 m³/s) June 9, 1964, 42,200 ft³/s (1,200 m³/s) in main channel, plus 11,300 ft³/s (320 m³/s) in bypass channel, gage height, 23.4 ft (7.13 m), from floodmark; minimum, 20 ft³/s (0.57 m³/s) Apr. 24, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1964 exceeded the stage of the June 1908 flood by about 3 ft (0.9 m) and is the highest since 1908, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,110 ft³/s (173 m³/s) June 8, gage height, 8.83 ft (2.691 m); maximum gage height, 12.42 ft (3.786 m) Mar. 17 (backwater from ice); minimum daily discharge, 145 ft³/s (4.11 m³/s) Feb. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	286	187	195	160	160	240	344	728	2730	1870	610	626
2	267	207	195	170	175	225	385	859	2660	1910	626	566
3	255	211	190	170	185	210	356	1190	2490	2100	625	499
4	245	213	180	175	185	210	338	1330	2540	3010	620	475
5	246	217	175	175	185	250	306	1400	2290	3050	629	481
6	238	217	170	185	185	300	300	1610	2560	3010	672	493
7	242	210	170	180	190	325	300	2140	5250	2650	705	481
8	244	204	160	175	185	350	300	2050	6030	2550	666	493
9	252	200	170	175	170	400	280	1910	5790	2540	673	481
10	264	215	185	180	160	450	274	1840	5480	2540	654	474
11	258	216	200	185	155	500	255	1810	4620	2560	654	543
12	253	214	200	185	150	450	242	1840	3520	2300	668	974
13	248	208	205	185	145	400	255	1900	2500	2100	636	1010
14	246	201	210	175	150	380	435	1960	2110	1780	697	823
15	240	200	205	170	155	450	621	2060	2070	1340	694	681
16	240	185	195	170	160	700	560	2200	2120	1050	695	615
17	236	165	195	170	170	1300	549	2340	2180	1500	800	587
18	233	185	190	170	170	3000	549	2400	2050	1620	858	577
19	230	215	185	165	180	2500	402	2680	1820	1690	777	577
20	240	205	185	175	190	2000	368	2870	1920	1730	759	566
21	234	205	190	180	210	1200	396	2930	1780	1680	754	536
22	225	200	200	185	250	900	458	2920	1500	1460	759	517
23	214	200	185	185	300	542	380	2960	1480	1210	835	493
24	205	200	175	185	380	653	356	3000	1580	1020	765	481
25	206	205	165	185	350	566	338	3060	1720	830	720	458
26	209	210	175	185	310	481	326	3050	1970	706	726	452
27	201	210	180	175	280	435	344	3020	2170	599	737	440
28	204	205	180	170	250	385	458	2880	2150	493	720	424
29	203	200	185	165	---	348	566	2820	2140	493	698	412
30	197	205	175	160	---	338	646	2750	1860	493	676	402
31	194	---	155	160	---	320	---	2690	---	566	676	---
TOTAL	7255	6115	5725	5430	5735	20808	11687	69197	80940	51630	21764	16637
MEAN	234	204	185	175	205	671	390	2232	2698	1665	702	555
MAX	286	217	210	185	380	3000	646	3060	6030	3050	858	1010
MIN	194	165	155	160	145	210	242	728	1480	493	610	402
AC-FT	14390	12130	11360	10770	11380	41270	23180	137300	160500	102400	43170	33000

CAL YR 1977 TOTAL 92138 MEAN 252 MAX 621 MIN 60 AC-FT 182800
WTR YR 1978 TOTAL 302923 MEAN 830 MAX 6030 MIN 145 AC-FT 600800

SUN RIVER BASIN

06089000 SUN RIVER NEAR VAUGHN, MT--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at county bridge 1.8 mi (2.9 km) downstream from gaging station, 4.4 mi (7.1 km) southeast of Vaughn, 5.5 mi (8.8 km) downstream from Muddy Creek, and 7.5 mi (12.1 km) northwest of Great Falls.

PERIOD OF RECORD.--Water years 1969 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to current year.

WATER TEMPERATURES: October 1968 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,610 micromhos Apr. 8, 1977, minimum daily, 214 micromhos June 8, 1970.

WATER TEMPERATURES: Maximum daily, 28.0°C Aug. 11, 1969, Aug. 16, 1977; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,510 micromhos Nov. 7; minimum daily, 288 micromhos June 11.

WATER TEMPERATURES: Maximum daily, 24.5°C Aug. 3; minimum daily, 0.0°C in many days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACCS)	HARD- NESS, NONCAR- BONATE (MG/L AS CACCS)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	
DATE	TIME												
OCT													
11...	1115	255	978	6.0	410	150	72	55	65	1.4	2.5	310	
NOV													
08...	1630	205	917	3.5	410	150	73	55	69	1.5	2.1	310	
DEC													
21...	0900	190	966	.0	440	170	81	57	63	1.3	2.4	320	
JAN													
24...	1430	165	834	.0	390	140	80	45	46	1.0	1.8	300	
MAR													
01...	0830	240	871	.0	370	100	72	47	59	1.3	3.7	260	
24...	0830	675	1050	5.5	390	200	75	48	83	1.8	4.4	220	
APR													
20...	0815	355	927	9.0	380	170	73	49	71	1.6	2.1	260	
MAY													
17...	0815	2330	385	11.5	190	44	47	18	12	.4	1.1	180	
JUN													
21...	1600	1600	382	20.5	170	35	42	17	15	.5	1.2	170	
JUL													
12...	1445	2270	404	17.5	180	45	41	20	17	.5	1.3	170	
AUG													
09...	1430	676	619	25.5	270	52	52	33	31	.6	2.3	260	
SEP													
07...	1530	505	667	21.5	300	89	60	37	39	1.0	2.0	260	
DATE		SULFATE DIS- SOLVED (MG/L AS SO4)	CHLOR- IDE, DIS- SOLVED (MG/L AS CL)	FLUOR- IDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, PHOSPH- ORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHOP- HOSPH- ORUS, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT													
11...	280	7.1	.6	5.4	647	.86	445	1.3	.00	.01		40	20
NOV													
08...	270	--	.6	5.5	--	.86	353	1.4	.01	.01		20	10
DEC													
21...	300	6.2	.5	7.8	681	.93	349	1.2	.00	.01		10	0
JAN													
24...	200	4.2	.5	7.5	537	.73	239	.98	.01	.03		0	10
MAR													
01...	250	7.2	.3	7.1	579	.79	375	1.1	.03	.02		30	10
24...	350	9.4	.4	6.5	695	.95	1270	2.2	.07	.04		70	20
APR													
20...	270	7.4	.4	3.0	510	.83	506	1.4	.01	.01		10	20
MAY													
17...	54	1.4	.2	5.6	229	.31	1440	.20	.03	.06		170	0
JUN													
21...	59	1.7	.2	4.1	225	.31	972	.13	.01	.01		10	0
JUL													
12...	67	1.7	.3	4.6	238	.32	1460	.28	.01	--		40	0
AUG													
09...	120	2.6	.4	5.4	377	.51	688	.39	.00	.01		<10	4
SEP													
07...	140	4.1	.5	5.6	418	.57	570	.38	.01	.01		20	10

06089000 SUN RIVER NEAR VAUGHN, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1020	985	999	839	---	883	970	722	640	647	632	628
2	1010	981	1080	856	791	931	1060	647	639	403	635	611
3	1720	996	985	876	835	937	1060	523	388	403	650	848
4	1000	995	985	837	---	1020	954	523	400	486	620	664
5	1010	952	1090	841	---	927	957	492	387	417	633	693
6	1010	965	1090	849	---	957	880	492	324	535	631	688
7	1030	2510	1010	839	---	909	878	686	320	589	631	699
8	931	936	1170	838	---	872	861	681	342	440	651	689
9	988	936	911	836	808	868	859	557	294	447	652	679
10	969	1010	978	838	827	695	833	497	331	423	656	673
11	965	948	907	845	812	689	839	458	288	424	650	652
12	1010	946	999	---	816	727	836	402	304	408	634	914
13	1010	936	890	---	---	726	763	402	316	421	648	939
14	975	918	999	---	---	883	617	380	335	431	657	819
15	962	946	983	---	---	911	620	375	310	402	657	811
16	935	956	972	---	---	995	619	373	332	512	648	781
17	948	947	979	---	817	917	1050	378	333	526	648	795
18	953	999	995	---	824	922	1050	358	333	542	641	757
19	967	902	997	---	819	775	951	358	385	495	639	713
20	985	900	912	---	816	772	948	356	390	446	633	684
21	958	905	---	---	806	854	948	378	394	449	638	692
22	935	1190	871	---	806	851	1090	378	401	483	627	682
23	971	1190	870	---	788	839	1090	360	394	495	622	722
24	976	1030	---	---	844	1120	989	358	390	562	622	680
25	985	1190	---	845	870	1190	908	341	396	594	630	682
26	965	898	876	886	835	1110	852	348	410	571	620	731
27	---	898	876	840	885	1160	855	334	417	---	600	700
28	972	896	916	838	870	1160	812	334	358	---	608	768
29	943	1010	879	841	---	1130	822	541	438	632	601	756
30	946	1010	879	845	---	1030	821	525	403	643	618	832
31	985	---	---	848	---	1040	---	567	---	639	635	---
MEAN	1000	1030	967	846	826	929	880	456	360	499	634	732

WTR YR 1978 MEAN 758 MAX 2510 MIN 288
TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	5.0	.5	.0	.0	.0	9.0	11.0	9.0	21.0	20.5	20.0
2	---	5.0	.0	.0	.0	.5	10.0	13.0	11.0	20.5	22.0	20.5
3	---	4.5	.0	.0	.0	.5	11.0	13.0	15.0	19.0	24.5	20.5
4	---	4.5	.0	.0	.0	.5	10.0	10.0	18.0	15.0	22.0	21.0
5	---	5.0	.0	.0	.0	1.0	8.0	8.5	16.0	15.0	19.0	20.0
6	---	5.0	.0	.0	.0	.5	7.5	8.0	12.5	16.0	20.0	22.0
7	---	4.5	.0	.0	.0	.5	9.0	10.0	12.0	19.0	19.0	21.5
8	---	5.0	.0	.0	.0	1.0	9.5	13.0	14.0	16.0	24.0	21.0
9	---	5.0	.0	.0	.0	1.5	10.0	11.0	14.0	18.5	22.0	20.0
10	---	5.5	.0	.0	.0	2.0	10.0	13.5	15.0	19.0	19.0	18.0
11	---	9.0	.5	.0	.0	2.5	10.0	12.0	13.5	19.5	22.0	17.0
12	---	7.0	.5	.0	.0	2.0	8.0	13.5	13.0	19.5	19.0	16.0
13	---	5.0	.0	.0	.0	1.5	12.0	14.5	14.0	20.0	19.5	12.0
14	---	4.5	.5	.0	.0	1.0	10.0	16.0	14.0	20.5	17.0	14.0
15	---	2.5	.5	.0	.0	1.0	10.0	16.5	14.0	20.5	19.5	16.5
16	---	1.5	.5	.0	.0	.5	10.5	14.0	13.5	21.0	18.0	12.5
17	---	2.5	.5	.0	.0	2.0	7.5	13.5	15.0	19.0	14.0	12.0
18	---	1.0	.5	.0	.0	1.5	7.0	12.0	17.0	17.0	15.0	10.0
19	---	3.5	.5	.0	.0	2.5	10.0	13.0	15.0	17.0	17.0	8.0
20	---	.5	.0	.0	.0	3.0	11.0	13.5	18.0	18.5	16.0	10.0
21	10.0	.0	---	.0	.0	3.5	10.0	14.0	17.0	20.5	20.0	13.0
22	10.0	.5	.0	.0	.0	4.0	9.0	14.5	---	21.5	18.5	13.0
23	9.5	.5	.5	.0	.0	3.5	8.5	11.0	---	20.5	18.0	12.0
24	9.5	.5	---	.0	.0	6.0	14.0	10.5	---	21.0	20.0	16.0
25	10.5	.0	---	.0	.0	8.0	14.5	9.5	---	20.5	20.5	18.5
26	9.5	.5	.5	.0	.0	8.5	13.5	13.0	16.0	23.0	21.0	18.0
27	---	1.0	.0	.0	.0	9.5	12.5	12.5	18.0	18.5	20.0	17.0
28	6.5	.5	.0	.0	.0	12.0	15.5	12.0	21.0	---	19.5	14.5
29	9.5	1.0	.0	.0	---	13.5	14.0	12.5	21.0	23.0	19.0	14.5
30	8.0	.5	.0	.0	---	15.0	13.0	11.0	19.0	19.0	14.5	14.0
31	5.0	---	---	.0	---	14.5	---	9.0	---	20.0	20.0	---
MEAN	9.0	3.0	.0	.0	.0	4.0	10.5	12.0	15.0	19.5	19.5	16.0

WTR YR 1978 MEAN 9.0 MAX 24.5 MIN .0

MISSOURI RIVER MAIN STEM

60609300 MISSOURI RIVER NEAR GREAT FALLS, MT

LOCATION.--Lat 47°34'55", long 111°03'35", in NE¼NW¼ sec.14, T.21 N., R.5 E., Cascade County, Hydrologic Unit 10030102, on left bank 100 ft (30 m) downstream from Morony Dam, 12.6 mi (20.3 km) northeast of Great Falls, and at mile 2,105.6 (3,387.9 km).

DRAINAGE AREA.--23,292 mi² (60,326 km²).

PERIOD OF RECORD.--May to July 1953 (in WSP 1320-B), October 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,809.21 ft (856.247 m), revised, National Geodetic Vertical Datum of 1929. Since July 27, 1977, nonrecording gage at site 700 ft (213 m) downstream at same datum. October 1971 to July 27, 1977, discharges were obtained from the Montana Power Company at Rainbow Dam 7.05 mi (11.3 km) 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 National Geodetic Vertical Datum of 1929 (levels by Montana Power Company).

REMARKS.--Records fair. Flow regulated by 18 smaller irrigation reservoirs and powerplants (see p. 606-608), Clark Canyon Reservoir (see p. 47), and Canyon Ferry Reservoir (see p. 82). Diversions for irrigation of about 750,400 acres (3,040 km²) above station.

AVERAGE DISCHARGE.--22 years, 7,972 ft³/s (225.8 m³/s), 5,776,000 acre-ft/yr (7.12 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 72,000 ft³/s (2,040 m³/s) June 10, 1964 (from hydrographic comparison with nearby stations); minimum, about 1.0 ft³/s (0.028 m³/s) Apr. 16, 1962, powerplant shutdown; minimum daily, 1,760 ft³/s (49.8 m³/s) Apr. 16, 1961. Flood of June 10, 1964, is the highest since 1908.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,700 ft³/s (671 m³/s) May 20, gage height, 7.06 ft (2.152 m); minimum daily, 2,210 ft³/s (62.6 m³/s) Oct. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3900	4710	5700	6160	6700	8100	9560	10400	14300	14400	6000	8730
2	3980	4920	5680	5400	6540	7790	9850	10700	15600	13500	7540	8340
3	3860	4940	6250	5430	6810	7250	9860	11000	15400	13300	8080	8230
4	3500	4930	6730	6120	6660	7150	9810	11200	12900	13400	8030	7580
5	3860	5230	6780	6430	7080	7280	9300	11000	9350	16000	7560	7560
6	2210	5670	4060	6740	7330	8130	8660	11300	13100	17300	7820	7960
7	4360	5620	3460	6270	7520	8440	8700	13000	16800	17200	8860	7030
8	4350	5750	4900	6680	7760	8420	7980	14000	18900	16600	8270	6840
9	4480	5730	5210	6970	7380	9870	7730	13400	18500	15500	7610	6800
10	4610	5650	6130	6920	7730	10300	7970	13400	17500	15400	7290	7720
11	4540	5420	5490	6660	7440	11600	8850	14200	17800	16200	6950	8510
12	4830	5330	5190	6680	7160	12500	8600	15100	16600	15300	6720	9150
13	4180	5840	7990	6920	7010	10900	8990	14900	14900	14800	6830	9920
14	5410	5910	8090	7150	7000	9190	8760	14100	13200	14200	7150	9480
15	5700	5650	7400	7210	6960	8770	8510	13800	13200	13300	7560	9420
16	5310	5810	7310	7030	7620	8620	8490	14700	12700	12900	7680	8850
17	4930	6080	7480	6970	7980	9240	8630	15700	12500	13000	7150	7490
18	5330	5730	7470	6690	7510	13500	9280	15900	12400	13400	7260	6580
19	5640	5320	7460	6920	7760	13800	9240	17800	12300	13100	7630	6440
20	3900	4320	6980	7090	7700	14000	8980	20100	12300	11100	7460	6000
21	5010	3900	5830	6920	7960	11700	9130	18900	12500	9660	7280	6120
22	5260	4990	5110	7030	8150	10800	9110	18000	11600	9660	7260	6130
23	4860	5490	5740	7210	8520	11100	8970	17800	11600	9280	7330	5780
24	4930	5930	6120	7330	8770	10300	8810	17700	11500	9630	8540	6870
25	4630	5580	5800	7050	9160	10200	8630	17400	11600	8520	8780	5720
26	4800	6400	6260	6940	9130	9650	8700	16700	11900	8080	8390	5390
27	4410	7180	7030	6910	8380	9290	8770	16300	12400	7890	8400	5520
28	5160	7350	6770	6950	8300	9460	9240	15800	12900	7800	8050	5730
29	4930	6090	6540	6980	---	9690	9750	14500	13400	7400	8080	5920
30	5270	6040	6520	7060	---	9510	10200	14100	14200	8280	7790	6290
31	5270	---	6440	6890	---	8670	---	14100	---	7960	8610	---
TOTAL	143410	167790	193920	209910	214200	305220	269260	457000	413850	383860	237960	218100
MEAN	4626	5593	6255	6771	7650	9846	8975	14740	13800	12380	7676	7270
MAX	5700	7350	8090	7330	9160	14000	10200	20100	18900	17300	8860	9920
MIN	2210	3900	3460	5400	6540	7150	7730	10400	9350	7400	6000	5390
AC-FT	284500	332800	384600	416400	424900	605400	534100	906500	820900	761400	472000	432600
CAL YR 1977	TOTAL	1925150	MEAN	5274	MAX	8180	MIN	2040	AC-FT	3819000		
WTR YR 1978	TOTAL	3214480	MEAN	8807	MAX	20100	MIN	2210	AC-FT	6376000		

LOCATION.--Lat 47°12'27", long 110°55'53", in NW¼SE¼NW¼ sec.26, T.17 N., R.6 E., Cascade County, Hydrologic Unit 10030105, on left bank 0.4 mi (0.6 km) south of Riceville and 8.9 mi (14.3 km) northwest of Monarch.

WATER-DISCHARGE RECORDS

REMARKS.--Water-discharge records good except those for winter period, which are poor. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,000 ft³/s (312 m³/s) June 4, 1953, gage height, 10.12 ft (3.085 m), from rating curve extended above 4,100 ft³/s (116 m³/s) on basis of slope-area measurement of peak flow; no flow Feb. 21, Dec. 24, 1962, caused by ice jams upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1908 was several feet lower than in 1953, from information by local residents.

Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)	Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)
May 3	0100	780	22.1	3.44	1.049	June 7	0100	1500	42.5	4.56	1.390
May 19	0100	*2150	60.9	*5.38	1.640	July 4	2000	791	22.4	3.44	1.049

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	63	48	27	32	38	340	657	984	448	190	90
2	79	60	51	28	35	33	292	730	998	459	196	87
3	73	59	51	31	43	27	251	774	1050	478	183	84
4	71	58	50	35	44	29	222	730	1160	578	171	82
5	68	62	48	40	43	30	214	677	1290	666	161	82
6	65	60	45	39	43	31	201	608	1420	678	154	90
7	65	59	42	37	41	32	185	570	1460	706	148	87
8	72	59	38	35	40	33	173	537	1410	695	141	88
9	71	51	37	36	32	32	178	574	1380	645	139	85
10	72	50	39	39	35	31	159	825	1330	604	137	81
11	67	57	56	41	32	31	166	1050	1190	564	131	101
12	65	57	54	42	30	31	178	971	1010	541	125	316
13	65	55	54	41	29	29	168	876	833	478	125	219
14	69	57	54	39	30	29	168	917	894	436	129	211
15	71	55	52	38	31	26	173	1240	870	408	125	239
16	69	52	49	37	32	24	185	1580	820	392	119	269
17	71	48	47	38	33	48	225	1480	750	412	135	242
18	69	47	45	36	35	43	225	1840	691	373	152	222
19	68	47	43	35	37	40	206	2050	769	348	125	214
20	68	43	44	36	40	43	203	1910	676	333	118	193
21	68	44	46	38	41	51	219	1790	624	330	116	188
22	67	45	45	40	43	55	211	1830	587	305	108	203
23	65	46	43	39	45	57	206	1890	563	282	105	228
24	65	47	41	37	43	59	195	1780	540	266	101	257
25	64	47	40	35	42	63	198	1620	568	260	98	279
26	67	47	42	33	41	67	251	1400	610	239	95	305
27	69	49	39	32	41	78	392	1210	556	228	103	319
28	67	54	35	31	40	119	483	1080	526	219	103	319
29	65	52	32	31	---	175	570	1040	494	211	95	305
30	65	49	28	31	---	251	622	999	479	201	93	285
31	64	---	26	31	---	400	---	1020	---	195	91	---
TOTAL	2129	1579	1364	1108	1060	2035	7459	36255	26532	12980	4014	5771
MEAN	68.7	52.6	44.0	35.7	37.9	65.6	249	1170	884	419	129	192
MAX	85	63	56	42	45	400	622	2050	1460	708	198	319
MIN	64	43	26	27	29	24	159	537	479	195	91	81
AC-FT	4220	3130	2710	2200	2100	4040	14790	71910	52630	25750	7960	11450
CAL YR 1977	TOTAL	54242	MEAN 149	MAX 1100	MIN 24	AC-FT 107600						
WTR YR 1978	TOTAL	102286	MEAN 280	MAX 2050	MIN 24	AC-FT 202900						

BELT CREEK BASIN

06090500 BELT CREEK NEAR MONARCH, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: July 1977 to current year.

INSTRUMENTATION.--Temperature recorder since July 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 20.0°C July 22, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 17.5°C July 24, 27, Aug. 7-9; minimum, 0.0°C on many days during November to March.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8.0	7.5	7.5	4.0	2.5	3.5	1.5	.5	1.0	.0	.0	.0
2	9.0	6.0	7.5	5.0	3.5	4.0	3.0	1.5	2.0	.0	.0	.0
3	8.0	6.0	6.5	3.5	2.0	3.0	3.0	2.0	2.5	.0	.0	.0
4	6.5	5.5	6.0	4.0	2.5	3.5	2.0	.0	.5	.0	.0	.0
5	7.0	4.0	5.5	5.0	2.5	3.5	.0	.0	.0	.0	.0	.0
6	8.0	5.0	6.5	5.0	4.0	4.5	.0	.0	.0	.0	.0	.0
7	8.0	6.5	7.0	4.5	3.0	3.5	.0	.0	.0	.0	.0	.0
8	7.5	5.0	6.5	3.0	1.5	2.0	.0	.0	.0	.0	.0	.0
9	7.0	5.0	5.5	2.0	.5	1.0	.0	.0	.0	.0	.0	.0
10	5.5	3.0	4.5	4.5	2.0	3.0	.0	.0	.0	.0	.0	.0
11	6.0	2.5	4.5	4.5	3.0	4.0	.0	.0	.0	.0	.0	.0
12	6.0	4.0	6.0	4.5	3.0	3.5	.0	.0	.0	.0	.0	.0
13	8.0	6.0	7.5	4.0	2.5	3.5	.0	.0	.0	.0	.0	.0
14	7.5	5.5	6.5	3.5	2.5	3.0	.0	.0	.0	.0	.0	.0
15	8.0	4.5	6.0	3.5	2.5	2.5	.0	.0	.0	.0	.0	.0
16	8.5	6.0	7.0	2.5	1.0	1.5	.0	.0	.0	.0	.0	.0
17	7.5	5.0	6.5	1.5	1.0	1.5	.5	.0	.0	.0	.0	.0
18	8.0	5.0	6.5	1.5	.0	.5	.5	.0	.5	.0	.0	.0
19	8.0	5.0	7.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	8.0	6.0	7.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	7.0	4.5	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	7.0	4.0	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	7.5	4.5	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	7.5	5.5	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	7.5	6.5	7.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	7.0	5.5	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	6.0	3.5	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	7.0	4.5	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	7.0	5.0	6.0	2.5	.0	1.0	.0	.0	.0	.0	.0	.0
30	7.0	5.0	5.5	2.0	1.0	1.0	.0	.0	.0	.0	.0	.0
31	5.0	3.0	4.0	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	9.0	2.5	6.0	5.0	.0	2.0	3.0	.0	.0	.0	.0	.0

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	.0	.0	.0	.0	.0	.0	4.5	2.5	3.5	8.0	4.5	6.5
2	.0	.0	.0	.0	.0	.0	5.5	3.0	4.0	7.0	4.0	5.5
3	.0	.0	.0	.0	.0	.0	5.0	2.0	3.5	6.5	4.0	5.0
4	.0	.0	.0	.0	.0	.0	6.5	2.5	4.5	5.5	3.0	4.5
5	.0	.0	.0	.0	.0	.0	6.5	4.0	5.5	4.5	2.0	3.0
6	.0	.0	.0	.0	.0	.0	4.5	3.0	4.0	5.5	3.0	4.0
7	.0	.0	.0	.0	.0	.0	4.0	3.0	3.5	4.5	4.0	4.0
8	.0	.0	.0	.0	.0	.0	7.0	3.0	5.0	8.5	3.0	5.5
9	.0	.0	.0	.0	.0	.0	6.0	3.5	4.5	9.0	4.0	6.5
10	.0	.0	.0	1.5	.0	.5	8.0	3.5	6.0	8.5	5.0	7.0
11	.0	.0	.0	4.0	1.5	2.5	6.5	4.5	6.0	7.0	4.5	5.5
12	.0	.0	.0	2.5	1.0	1.5	5.0	3.0	4.0	7.5	3.5	5.5
13	.0	.0	.0	2.5	.5	1.5	6.0	2.0	4.0	9.5	4.5	7.0
14	.0	.0	.0	2.0	1.0	1.5	6.5	2.5	4.5	10.0	5.0	7.5
15	.0	.0	.0	2.5	.5	1.0	6.0	4.5	5.0	10.0	5.0	7.5
16	.0	.0	.0	3.5	.5	1.5	7.5	4.0	5.5	6.5	4.5	5.5
17	.0	.0	.0	3.5	1.0	2.5	6.0	3.5	5.0	5.5	4.5	5.0
18	.0	.0	.0	5.0	2.5	3.0	4.0	3.0	3.5	5.0	4.5	4.5
19	.0	.0	.0	4.0	2.5	3.0	6.0	3.0	4.5	8.0	4.5	6.0
20	.0	.0	.0	5.0	2.5	4.0	7.5	4.0	5.5	9.0	4.0	6.5
21	.0	.0	.0	5.0	3.5	4.5	6.0	4.0	5.0	9.5	5.0	7.0
22	.0	.0	.0	4.5	3.0	3.5	7.0	3.0	5.0	8.0	5.0	6.5
23	.0	.0	.0	5.0	2.0	3.5	6.0	3.5	4.5	7.5	5.0	6.0
24	.0	.0	.0	5.0	3.0	4.0	8.0	3.0	5.5	8.5	5.0	6.5
25	.0	.0	.0	6.0	2.0	4.0	9.0	5.5	7.5	7.0	4.0	5.5
26	.0	.0	.0	5.5	3.5	4.5	8.0	6.5	7.0	8.5	3.5	6.0
27	.0	.0	.0	6.5	3.5	5.0	7.5	5.5	6.5	8.0	4.5	6.0
28	.0	.0	.0	7.0	3.0	4.5	7.5	5.5	6.5	9.5	5.0	7.0
29	---	---	---	6.5	2.5	4.5	7.0	5.0	6.0	8.0	5.5	7.0
30	---	---	---	6.5	3.0	4.5	7.0	4.5	6.0	7.0	4.5	5.5
31	---	---	---	5.0	2.5	3.5	---	---	---	6.0	4.0	4.5
MONTH	.0	.0	.0	7.0	.0	2.0	9.0	2.0	5.0	10.0	2.0	6.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	8.5	4.0	6.0	15.0	9.5	12.0	15.0	11.5	13.5	---	---	---
2	10.5	4.0	7.5	13.5	11.0	12.0	13.0	11.0	11.5	---	---	---
3	11.0	5.0	8.0	12.0	9.5	10.5	15.0	8.5	11.5	---	---	---
4	11.0	5.5	8.5	10.0	8.5	9.0	16.0	10.0	13.0	---	---	---
5	11.5	5.5	8.5	10.0	8.5	9.0	16.0	11.5	13.5	---	---	---
6	10.0	6.5	8.0	11.5	8.0	9.5	17.0	12.0	14.5	---	---	---
7	10.5	6.0	8.0	13.0	7.5	10.0	17.5	12.0	14.5	---	---	---
8	11.5	5.5	8.5	12.0	9.0	10.0	17.5	12.5	15.0	---	---	---
9	11.0	6.5	8.5	12.5	9.0	10.5	17.5	12.5	15.0	---	---	---
10	8.5	6.5	7.5	12.5	9.0	11.0	17.0	12.0	14.5	---	---	---
11	8.5	5.5	7.0	14.5	9.0	11.5	16.5	12.0	14.5	---	---	---
12	11.0	5.0	7.5	13.5	8.5	11.0	16.0	12.0	14.0	---	---	---
13	12.0	7.0	9.5	15.0	9.0	12.0	14.0	12.0	12.5	---	---	---
14	11.0	7.0	9.5	15.0	9.5	12.5	14.5	10.5	12.5	---	---	---
15	11.5	7.5	9.5	16.0	10.5	13.5	15.0	10.5	12.5	---	---	---
16	9.5	6.0	7.5	15.0	12.0	13.5	13.5	11.5	12.5	---	---	---
17	12.5	6.5	9.0	13.0	10.5	11.0	11.0	8.5	9.5	---	---	---
18	12.0	7.5	10.0	12.5	9.0	10.5	12.0	7.0	9.5	---	---	---
19	10.0	7.0	8.0	11.5	9.5	10.5	12.0	9.0	10.5	6.5	---	---
20	12.0	5.0	8.5	11.5	9.0	10.5	15.0	10.0	12.5	8.0	4.5	6.0
21	13.0	7.0	10.0	14.0	8.5	11.0	15.5	10.5	13.0	9.0	5.0	7.0
22	13.0	8.5	10.5	15.5	9.5	12.5	15.5	12.0	13.5	9.5	6.5	8.0
23	13.5	8.5	11.0	16.0	10.5	13.5	14.5	10.5	12.5	10.5	7.5	9.0
24	12.5	9.5	11.0	17.5	12.0	14.5	---	10.5	---	10.5	7.0	9.0
25	10.5	8.0	8.5	17.0	12.0	14.5	---	---	---	11.0	7.5	9.5
26	12.0	7.0	9.0	17.0	11.5	14.5	---	---	---	11.0	8.0	9.5
27	13.5	7.5	10.5	17.5	12.5	15.0	---	---	---	11.0	7.5	9.5
28	15.0	8.5	11.5	15.5	12.0	14.0	---	---	---	10.0	7.5	8.5
29	14.5	10.5	12.5	17.0	12.5	14.5	---	---	---	9.5	7.0	8.0
30	13.5	10.5	12.0	17.0	12.0	14.5	---	---	---	9.5	6.5	8.0
31	---	---	---	17.0	12.0	14.5	---	---	---	---	---	---
MONTH	15.0	4.0	9.0	17.5	7.5	12.0	17.5	7.0	13.0	11.0	4.5	8.5
YEAR	17.5	.0	5.0									

MISSOURI RIVER MAIN STEM

06090800 MISSOURI RIVER AT FORT BENTON, MT

LOCATION.--Lat 47°49'03", long 110°39'59", in SE¼SE¼ sec.23, T.24 N., R.8 E., Chouteau County, Hydrologic Unit 10030102, on left bank at downstream side of abandoned highway bridge at Fort Benton, 3.8 mi (6.1 km) upstream from Shonkin Creek, and at mile 2,073.2 (3,335.8 km).

DRAINAGE AREA.--24,749 mi² (64,100 km²).

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 (796.762 m), National Geodetic Vertical Datum of 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 (0.305 m) higher.

REMARKS.--Records good except those for the winter period, which are fair. Flow regulated by 18 smaller irrigation reservoirs and powerplants (see p. 606), Clark Canyon Reservoir (see p. 47), and Canyon Ferry Reservoir (see p. 82). Diversions for irrigation of about 750,400 acres (3,040 km²) above station. Extreme diurnal fluctuation caused by powerplant at Morony Dam.

AVERAGE DISCHARGE.--88 years, 7,779 ft³/s (220.3 m³/s), 5,636,000 acre-ft/yr (6.95 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, about 140,000 ft³/s (3,960 m³/s) June 6, 1908, gage height, 18.5 ft (5.64 m), present datum, from rating curve extended above 63,000 ft³/s (1,780 m³/s); minimum, 320 ft³/s (9.06 m³/s) July 5, 1936, gage height, -0.50 ft (-0.15 m); minimum daily, 627 ft³/s (17.8 m³/s) July 5, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,500 ft³/s (666 m³/s) May 20, gage height, 6.52 ft (1.987 m); minimum daily, 3,710 ft³/s (105 m³/s) Oct. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4220	5310	6060	6520	7200	8700	10300	11800	15800	15300	7090	8690
2	4320	5530	5560	6200	7000	8590	10700	12100	16700	14600	7300	8500
3	4190	5400	6160	5700	6800	7900	10700	12400	16400	14300	8070	8470
4	3800	5530	6560	5600	7100	7600	10500	12700	15600	14200	8250	7690
5	4020	5340	7360	6400	7400	7500	10000	12500	15200	17100	7780	7790
6	3710	5820	5920	6800	7600	7800	9450	13000	14900	17700	7640	8140
7	3980	6200	4500	7100	7800	8600	9060	14100	17000	17800	8350	7450
8	4680	6130	5000	6700	8000	9000	8840	16000	19500	17300	8800	7040
9	4820	6130	5300	7000	8200	9200	8300	15300	19100	16400	7230	6990
10	4970	6160	5600	7300	7800	11000	8150	14800	18200	16200	7370	7360
11	4890	5530	6200	7200	8200	13000	9330	15600	18300	17100	6490	8750
12	4880	5530	5600	6900	7800	13600	9030	16100	17400	16500	6470	10500
13	4800	5960	5400	7200	7600	11900	9450	15900	16100	15800	6510	12200
14	5240	6270	8200	7300	7400	9770	9450	15000	14600	15200	6980	11000
15	5820	5920	8040	7500	7400	9120	8880	14700	14100	14400	7040	10200
16	6070	5850	7540	7500	7400	8650	8910	15600	13900	13600	7420	9660
17	5630	6130	7660	7400	7900	10300	9220	16800	14000	13500	7180	8460
18	5690	6060	7510	7200	8400	15300	9960	17500	13700	14100	6990	7370
19	5760	5720	7540	7000	7900	17300	10200	19500	13900	13700	7620	6690
20	5150	4970	7850	7200	8100	18400	9840	21500	13500	12500	7370	6750
21	5340	4580	6750	7400	8100	16200	10100	21100	13700	11000	7220	6440
22	5760	5280	5340	7200	8300	13500	10200	19800	12900	10100	7100	6490
23	5560	6820	5470	7300	8700	13000	10000	19500	12500	9960	7160	6510
24	5180	7430	6560	7500	9000	12000	9560	19300	12300	9540	8210	6320
25	5340	7510	6380	7600	9400	11500	9560	19000	12600	8730	8750	7080
26	5280	7090	7200	7400	9600	11100	9220	18200	13100	8700	8500	5460
27	4370	7580	7300	7300	9600	10200	9850	17300	13400	8530	8450	6450
28	5470	7510	7400	7200	9000	10200	10100	16600	13900	7970	8220	6570
29	5560	6600	7100	7200	---	10600	11000	15800	14300	7630	8120	6720
30	5660	6160	6900	7300	---	10500	11500	15400	15000	8190	7940	6840
31	5310	---	6820	7500	---	9510	---	15400	---	8820	8510	---
TOTAL	155470	182050	202780	218620	224700	341450	291360	500300	451600	406270	236130	234780
MEAN	5015	6068	6541	7052	8025	11010	9712	16140	15050	13110	7617	7826
MAX	6070	7580	8200	7600	9600	18400	11500	21500	19500	17800	8800	12200
MIN	3710	4580	4500	5600	6800	7500	8150	11800	12300	7630	6470	5460
AC-FT	308400	361100	402200	433600	445700	677300	577900	992300	895700	805800	466400	465700
CAL YR 1977 TOTAL	2005640	MEAN	5495	MAX	8280	MIN	2230	AC-FT.	3978000			
WTR YR 1978 TOTAL	3445510	MEAN	9440	MAX	21500	MIN	3710	AC-FT	6834000			

06091700 TWO MEDICINE RIVER BELOW SOUTH FORK, NEAR BROWNING, MT

LOCATION.--Lat 48°25'36", long 112°59'17", in SE¼SE¼SE¼ sec. 23, T.31 N., R.11 W., Glacier County, Hydrologic Unit 10030201, on right bank 93 ft (28 m) downstream from bridge on Blackfoot Secondary Highway No. 1, 9.7 mi (15.6 km) south of Browning, 12.3 mi (19.8 km) northwest of Heart Butte.

DRAINAGE AREA.--250 mi² (648 km²)

PERIOD OF RECORD.--May 1977 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,180 ft (1,274 m), from topographic map.

REMARKS.--Records good except those for May 1 to Sept. 30, which are fair, and those for winter period, which are poor. Flow regulated by Lower Two Medicine Lake (see p. 609). Diversions for irrigation of about 64.0 acres (259,000 m²) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,690 ft³/s (76.2 m³/s) May 21, 1978, gage height, 5.33 ft (1.625 m); minimum daily, 18 ft³/s (0.51 m³/s) Dec. 8, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 100,000 ft³/s (2,830 m³/s) June 8, 1964, as determined at Two Medicine River near Browning (06092000) located about 10 mi (16 km) downstream. Stage not determined at this site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,690 ft³/s (76.2 m³/s) May 21, gage height, 5.33 ft (1.625 m); minimum daily, 18 ft³/s (0.51 m³/s) Dec. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	47	40	48	41	58	578	1720	1770	722	191	131
2	55	72	40	50	44	57	491	1780	1410	690	194	131
3	53	64	35	49	48	50	419	1760	1470	724	177	129
4	52	59	30	48	45	52	426	1480	1620	843	164	128
5	50	57	22	51	47	52	452	1230	1900	1120	151	127
6	50	55	20	54	50	54	402	1130	2250	1030	140	130
7	46	53	19	50	47	57	353	1000	2130	974	137	182
8	47	34	16	47	45	60	330	884	2060	854	149	225
9	56	35	19	47	42	60	318	1050	2060	732	152	174
10	55	40	25	48	40	59	328	1480	1900	665	141	159
11	51	50	50	49	38	58	485	1520	1520	587	138	165
12	48	53	56	50	36	55	426	1450	1250	520	138	238
13	50	50	60	49	35	50	367	1350	1130	462	142	200
14	51	47	60	47	38	50	352	1720	1160	416	145	186
15	49	35	60	45	40	50	323	2060	1150	402	137	186
16	46	30	58	44	43	70	313	2140	1030	394	140	223
17	46	29	56	43	42	118	327	1890	895	389	145	227
18	44	26	54	42	45	229	283	1780	889	407	142	227
19	44	24	54	42	49	167	283	1730	1020	432	138	220
20	45	22	56	45	52	186	310	1910	929	387	144	210
21	44	21	58	48	54	255	365	2180	847	338	146	193
22	42	20	56	48	60	192	328	2510	843	304	152	189
23	41	20	54	47	64	158	303	2380	902	276	184	178
24	40	25	52	46	62	179	296	2000	916	251	157	165
25	46	40	50	45	60	185	346	1570	912	241	148	163
26	53	41	50	45	60	264	503	1240	860	233	143	160
27	51	42	52	43	60	396	934	1050	787	228	142	157
28	48	45	54	42	59	458	1230	1140	751	220	143	156
29	47	43	53	40	---	556	1390	1220	760	216	140	157
30	48	41	52	39	---	685	1250	1230	744	205	138	152
31	48	---	50	38	---	894	---	1640	---	202	135	---
TOTAL	1508	1220	1413	1429	1346	5814	14511	49224	37865	15464	4633	5268
MEAN	48.6	40.7	45.6	46.1	48.1	188	484	1588	1262	499	149	176
MAX	60	72	60	54	64	894	1390	2510	2250	1120	194	238
MIN	40	20	18	38	35	50	283	884	744	202	135	127
AC-FT	2990	2420	2800	2830	2670	11530	28780	97640	75110	30670	9190	10450
(†)	304	0	0	0	0	0	0	345	5,460	7,390	6,860	2,110
WTR YR 1978	TOTAL	139695	MEAN	383	MAX	2510	MIN	18	AC-FT	277100	(†)	22470

† Flows, in acre-feet, in Two Medicine Canal.

06093200 BADGER CREEK BELOW FOUR HORNS CANAL, NEAR BROWNING, MT

LOCATION.--Lat 48°22'12", long 112°48'07", in NW¼SW¼SE¼ sec.8, T.30 N., R.9 W., Glacier County, Hydrologic Unit 10030201, on left bank, 3.4 mi (5.5 km) downstream from point of diversions to Four Horns Canal, 11.6 mi (18.7 km) upstream from mouth, and 15.5 mi (24.9 km) southeast of Browning.

DRAINAGE AREA.--152 mi² (394 km²).

PERIOD OF RECORD.--October 1973 to current year. If monthly figures of diversion to Four Horns Canal are added to records at this site, records equivalent to those published as Badger Creek near Browning (1951-73) can be obtained.

GAGE.--Water-stage recorder. Altitude of gage is 4,140 ft (1,262 m), from topographic map. May 1951 to September 1973, water-stage recorder at site 3.4 mi (5.5 km) upstream at datum 4,179.26 ft (1,273.838 m) National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark).

REMARKS.--Records good except those for winter period, which are poor. Four Horns Canal diverts water from right bank in NE¼ sec.24, T.30 N., R.10 W., at diversion dam 3.4 mi (5.5 km) upstream for irrigation of about 6,000 acres (24.3 km²) below station. Recorded diversions from Badger Creek above station for the current year are listed in daily table below.

AVERAGE DISCHARGE.--27 years (1951-78), 231 ft³/s (6.542 m³/s), 20.63 in/yr (524 mm/yr), 167,400 acre-ft/yr (206 hm³/yr), adjusted for diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,700 ft³/s (1,410 m³/s) June 8, 1964, gage height, 10.37 ft (3.161 m), from rating curve extended above 2,000 ft³/s (56.6 m³/s) on basis of slope-area measurement of peak flow (site and datum then in use); minimum daily, 7.4 ft³/s (0.210 m³/s) Oct. 31, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,330 ft³/s (37.7 m³/s) June 6, gage height, 6.20 ft (1.890 m); minimum daily, 7.4 ft³/s (0.210 m³/s) Oct. 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	17	83	63	60	62	199	395	583	334	177	115
2	11	70	76	66	64	60	179	483	589	314	186	113
3	11	73	83	64	66	55	164	489	663	355	169	112
4	12	73	75	60	65	60	152	436	814	399	164	109
5	11	73	65	65	64	65	146	381	1020	607	156	109
6	11	71	60	70	66	68	139	359	1270	619	151	111
7	10	72	55	68	67	72	132	326	1100	577	144	127
8	10	71	50	64	66	82	127	294	1070	583	142	176
9	10	68	50	66	64	91	124	306	1100	505	141	141
10	9.8	70	60	68	62	85	121	453	912	463	138	125
11	9.7	67	70	70	60	79	132	489	743	423	135	127
12	9.7	66	75	70	58	75	136	433	625	368	133	182
13	8.9	67	77	70	58	69	133	366	613	314	136	163
14	8.9	68	78	70	62	72	134	505	669	272	136	156
15	8.9	68	78	68	64	65	129	729	632	258	132	154
16	8.5	79	69	66	66	68	129	778	554	244	135	165
17	8.9	79	64	64	66	82	130	650	505	251	139	158
18	8.9	60	64	62	68	96	125	563	532	279	139	152
19	8.9	55	64	60	68	83	123	589	607	287	133	145
20	8.9	50	64	65	70	83	127	702	521	265	141	140
21	8.5	47	67	70	70	86	144	836	499	248	139	136
22	8.1	45	71	70	70	85	139	985	510	251	154	133
23	7.7	45	71	70	75	81	133	851	510	238	176	129
24	7.7	60	68	70	73	82	127	682	499	225	146	130
25	7.7	65	65	70	70	84	130	537	494	212	134	127
26	7.7	70	68	69	68	88	142	453	463	206	128	125
27	8.1	79	70	68	66	99	188	390	409	200	125	124
28	7.7	75	70	66	64	110	273	404	368	194	121	123
29	7.7	79	69	65	---	122	339	494	386	191	119	123
30	7.7	86	67	64	---	149	339	483	359	189	118	121
31	7.4	---	60	62	---	201	---	554	---	183	116	---
TOTAL	283.0	1968	2106	2063	1842	2659	4735	16437	19619	10054	4403	4051
MEAN	9.13	65.6	67.9	66.5	65.8	85.8	158	530	654	324	142	135
MAX	12	86	83	70	75	201	339	985	1270	619	186	182
MIN	7.4	17	50	60	58	55	121	294	359	183	116	109
CFSM	.06	.43	.45	.44	.43	.56	1.04	3.49	4.30	2.13	.93	.89
IN.	.07	.48	.52	.50	.45	.65	1.16	4.02	4.80	2.46	1.08	.99
AC-FT	561	3900	4180	4090	3650	5270	9390	32600	38910	19940	8730	8040
(†)	4070	77	0	0	0	0	0	660	3620	3170	1620	1390
CAL YR 1977	TOTAL	20451.0	MEAN	56.0	MAX	339	MIN	7.4	CFSM	.37	IN	5.01
WTR YR 1978	TOTAL	70220.0	MEAN	192	MAX	1270	MIN	7.4	CFSM	1.26	IN	17.19
									AC-FT	40560	(†)	62,160
									AC-FT	139300	(†)	14,610

† Diversions, in acre-feet, by Four Horns Canal.

06098100 BIRCH CREEK NEAR VALIER, MT

LOCATION.--Lat 48°21'29", long 112°20'13", in SW¼NE¼SE¼ sec.14, T.30 N., R.6 W., Pondera County, Hydrologic Unit 10030201, Blackfoot Indian Reservation, on left bank, 240 ft (73 m) downstream from bridge on State Highway 358, 4.2 mi (6.8 km) downstream from Dupuyer Creek, 5.5 mi (8.8 km) northwest of Valier, and 12.7 mi (20.4 km) upstream from mouth.

DRAINAGE AREA.--471 mi² (1,220 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to September 1978.

GAGE.--Water-stage recorder. Altitude of gage is 3,600 ft (1,100 m), from topographic map.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Flow regulated by Swift Reservoir (see p. 610). Numerous diversions for irrigation above station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Outstanding flood occurred June 8, 1964; caused by failure of Swift Dam following extremely heavy rainfall. A discharge of 881,000 ft³/s (24,900 m³/s) was determined at the Birch Creek near Dupuyer gage (06095000), about 24 mi (45 km) upstream. The discharge would have been less by the time it reached this gage site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,530 ft³/s (43.3 m³/s), Mar. 19, gage height, 5.43 ft. (1.655 m); maximum gage height, 8.18 ft (2.493 m) Mar. 18 (backwater from ice); minimum daily discharge, 17 ft³/s (0.48 m³/s) Aug. 11.

DISCHARGE, IN CUBIC FEET PER SEC'D, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	31	36	30	30	45	57	52	154	69	106	50
2	34	31	37	31	31	42	67	54	151	48	97	48
3	27	31	38	32	33	40	65	52	77	60	82	46
4	25	56	34	33	35	41	51	49	51	181	60	46
5	24	54	25	33	34	45	46	39	38	213	48	44
6	24	39	27	32	36	60	79	48	29	227	39	44
7	24	35	27	31	37	66	47	99	25	448	33	64
8	23	30	26	30	40	70	39	89	30	375	30	87
9	25	28	26	34	37	66	36	64	31	288	30	90
10	28	36	30	39	35	62	34	52	33	163	26	63
11	29	40	35	40	31	60	33	49	37	131	17	57
12	29	38	40	39	25	58	29	44	41	95	25	153
13	26	35	50	37	26	58	28	38	37	65	30	228
14	24	35	52	36	29	90	27	34	33	47	33	143
15	22	52	52	35	32	120	27	33	34	38	40	105
16	22	54	50	37	32	200	29	36	33	37	38	91
17	20	50	48	40	32	450	39	35	36	35	46	81
18	20	37	47	38	31	1300	52	37	44	40	61	75
19	21	22	45	37	31	850	54	41	55	66	47	74
20	27	21	44	37	32	761	41	40	61	69	47	72
21	28	18	46	38	40	447	54	39	61	59	49	64
22	34	21	47	38	45	213	73	34	62	48	52	49
23	39	25	46	38	50	126	46	27	58	45	128	44
24	43	30	40	37	52	112	37	34	59	41	118	42
25	44	35	34	35	54	122	33	33	65	40	76	42
26	41	36	35	36	56	86	31	31	59	39	65	39
27	35	34	35	37	54	83	36	31	55	37	65	39
28	32	37	35	36	50	75	42	24	56	39	65	38
29	32	36	35	34	---	73	38	22	50	37	65	38
30	32	35	34	33	---	65	45	31	54	37	60	37
31	32	---	32	31	---	61	---	51	---	56	54	---
TOTAL	910	1062	1188	1094	1050	5947	1315	1342	1609	3173	1732	2093
MEAN	29.4	35.4	38.3	35.3	37.5	192	43.8	43.3	53.6	102	55.9	69.8
MAX	44	56	52	40	56	1300	79	99	154	448	128	228
MIN	20	18	25	30	25	40	27	22	25	35	17	37
AC-FT	1800	2110	2360	2170	2080	11800	2610	2660	3190	6290	3440	4150
WTR YR 1978	TOTAL	22515	MEAN	61.7	MAX	1300	MIN	17	AC-FT	44660		

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1977 to September 1978.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to September 1978.

WATER TEMPERATURES: October 1977 to September 1978.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,260 micromhos May 29; minimum daily, 372 micromhos Mar. 19.

WATER TEMPERATURES: Maximum daily, 28.0°C Aug. 9; minimum daily, 0.0°C on many days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACJ3)	HARD- NESS, NONCAR- BONATE (MG/L CACJ3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCJ3)
OCT												
07...	1235	22	708	7.5	270	8	59	30	67	1.0	2.5	320
NOV												
15...	1525	55	675	1.0	260	32	57	29	54	1.5	1.7	280
DEC												
28...	1545	36	703	.0	290	35	68	29	49	1.3	1.8	310
FEB												
06...	1445	38	677	.0	250	0	57	27	45	1.2	1.6	310
MAR												
15...	1045	123	525	.5	200	5	48	20	39	1.2	4.3	240
22...	1520	192	494	3.0	170	0	38	18	49	1.6	2.8	210
MAY												
05...	1020	52	818	10.0	290	8	62	34	100	2.5	2.7	350
30...	1640	30	729	11.5	230	0	45	28	83	2.4	2.5	290
JUL												
05...	1630	245	582	18.5	190	0	43	20	55	1.7	2.6	260
AUG												
07...	1700	34	632	26.0	230	13	46	27	59	1.7	2.4	260
SEP												
05...	1430	46	483	17.5	220	11	42	27	42	1.2	2.0	250

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJVS PER AC-FT)	SOLIDS, DIS- SOLVED (TJVS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, JMTU, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT												
07...	140	4.3	.4	12	473	.64	28.5	.11	.00	.00	10	0
NOV												
15...	150	5.5	.4	4.2	420	.57	62.4	.14	.01	.00	20	10
DEC												
28...	150	3.3	.5	5.7	462	.63	44.9	.33	.01	.01	30	10
FEB												
06...	100	3.0	.4	5.7	394	.54	41.4	.30	.01	.01	20	0
MAR												
15...	72	4.0	.2	6.7	315	.43	105	.46	.25	.21	60	10
22...	86	4.1	.2	6.5	311	.42	161	.40	.18	.04	910	20
MAY												
03...	210	5.7	.4	2.8	590	.80	82.8	.06	.00	.01	10	0
30...	150	5.5	.4	1.4	459	.62	37.2	.08	.00	.00	20	10
JUL												
05...	84	3.1	.3	5.1	342	.47	226	.18	.01	.02	40	0
AUG												
07...	120	3.9	.4	2.8	390	.53	36.0	.04	.00	.02	20	0
SEP												
05...	74	6.0	.4	2.4	319	.43	59.6	.05	.01	.01	20	0

06098100 BIRCH CREEK NEAR VALIER, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	765	669	732	679	680	628	770	850	643	614	674	609
2	822	665	756	691	662	637	868	890	606	611	570	611
3	844	681	701	687	657	624	866	880	647	587	570	618
4	635	674	695	671	671	651	873	770	687	569	572	621
5	601	712	737	673	668	642	844	770	682	589	603	618
6	776	646	756	668	677	644	665	780	728	537	630	618
7	736	664	763	683	664	639	769	900	728	541	631	632
8	744	654	763	672	659	604	771	950	717	482	633	624
9	732	669	756	697	653	603	792	800	609	613	638	620
10	725	657	766	672	648	548	815	750	673	611	635	680
11	711	650	716	692	669	443	798	720	653	630	655	693
12	707	641	716	670	672	402	810	710	624	630	662	637
13	724	661	717	675	676	445	820	700	643	639	689	729
14	751	674	686	672	683	493	801	710	632	641	647	722
15	739	683	687	656	679	528	801	720	627	658	649	709
16	730	665	704	667	678	563	809	720	603	658	640	709
17	726	729	718	662	668	524	817	790	620	679	630	696
18	706	691	734	662	646	478	877	740	559	669	651	700
19	715	711	717	679	641	372	1160	750	596	673	647	672
20	709	755	753	677	646	452	1140	710	584	688	640	634
21	693	784	754	668	655	434	1070	700	503	720	450	652
22	672	836	711	671	634	511	1130	700	502	716	450	652
23	653	831	697	667	626	619	1050	700	568	682	610	671
24	649	817	692	666	577	652	1050	700	565	682	607	693
25	638	758	711	676	616	509	940	730	591	652	641	692
26	627	740	703	671	532	749	880	730	643	652	632	699
27	636	731	716	675	517	750	831	1080	608	652	633	708
28	649	739	702	677	522	773	868	1090	610	650	622	710
29	671	672	698	675	---	778	907	1260	612	630	620	703
30	671	711	664	676	---	784	846	750	610	628	609	715
31	683	---	667	673	---	787	---	750	---	669	613	---
MEAN	718	706	719	674	642	589	881	802	637	635	618	668

WTR YR 1978 MEAN 691 MAX 1250 MIN 372
TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	1.5	1.0	.0	.0	.0	5.0	11.5	11.0	22.0	19.5	19.5
2	8.5	3.5	.5	.0	.0	.0	6.0	12.0	15.0	24.0	21.0	20.0
3	7.0	1.0	.5	.0	.0	.0	6.5	12.5	14.5	20.0	22.0	21.0
4	6.5	.5	.0	.0	.0	.0	5.5	10.5	16.0	17.0	18.0	19.0
5	6.5	1.0	.0	.0	.0	.0	7.5	8.0	18.0	16.0	26.0	16.0
6	7.5	2.5	.0	.0	.0	.0	4.5	7.5	16.5	18.0	24.0	18.0
7	7.5	2.0	.0	.0	.0	.0	6.5	9.0	18.0	18.0	25.0	19.0
8	7.5	.5	.0	.0	.0	.0	8.0	12.0	19.0	15.0	27.0	16.0
9	5.0	1.0	.0	.0	.0	.0	6.0	14.0	12.0	12.0	28.0	18.0
10	3.0	1.0	.0	.0	.0	.0	6.0	13.0	14.0	19.0	20.0	19.0
11	7.0	1.0	.0	.0	.0	.0	7.5	13.0	15.0	20.0	22.0	13.0
12	5.5	2.5	1.0	.0	.0	.0	5.5	10.0	18.5	16.0	23.0	8.0
13	9.0	1.5	1.0	.0	.0	.0	6.0	9.5	18.5	20.0	16.0	12.5
14	7.0	1.0	1.5	.0	.0	.0	6.5	13.0	20.0	22.0	18.0	12.5
15	7.0	1.0	1.0	.0	.0	.0	6.0	14.5	16.0	22.0	19.0	11.0
16	9.0	1.0	1.0	.0	.0	.0	6.0	13.0	15.0	25.0	17.0	12.0
17	7.0	.5	1.0	.0	.0	---	3.5	12.0	17.0	16.0	12.0	9.0
18	7.5	.5	.0	.0	.0	---	4.5	12.0	21.0	19.0	12.5	8.0
19	8.0	.5	.0	.0	.0	---	9.0	9.0	11.0	17.0	14.5	11.0
20	7.0	.0	.0	.0	.0	---	8.0	18.0	21.5	20.0	17.0	12.0
21	5.0	.5	1.0	.0	.0	---	5.0	18.0	19.0	17.0	18.0	11.0
22	6.0	.0	1.0	.0	.0	---	6.0	13.0	18.0	18.0	16.0	9.5
23	7.0	.0	.0	.0	.0	5.0	5.0	10.0	18.5	20.0	16.5	13.0
24	6.5	.5	.0	.0	.0	6.5	6.0	9.0	16.5	19.0	16.0	14.0
25	7.0	.5	.0	.0	.0	4.0	11.0	14.5	16.0	20.0	19.0	12.5
26	5.5	1.0	.0	.0	.0	5.5	12.0	12.5	20.0	23.0	18.0	12.0
27	3.0	1.0	.0	.0	.0	5.0	11.5	10.0	24.0	22.0	19.0	11.5
28	6.0	1.5	1.0	.0	.0	7.5	12.0	15.5	25.0	19.0	20.0	10.5
29	5.0	1.5	1.0	.0	---	7.0	10.0	13.5	22.0	25.0	21.0	9.0
30	5.0	1.0	.0	.0	---	9.0	11.0	12.0	19.0	20.0	22.0	9.0
31	3.5	---	.0	.0	---	6.0	---	8.5	---	22.0	20.5	---
MEAN	6.5	1.0	.5	.0	.0	2.0	7.0	12.0	17.5	19.5	19.5	13.5

WTR YR 1978 MEAN 8.5 MAX 28.0 MIN .0

06099500 MARIAS RIVER NEAR SHELBY, MT

LOCATION.--Lat 48°25'38", long 111°53'20", in E½NW¼SE¼ sec.20, T.31 N., R.2 W., Toole County, Hydrologic Unit 10030203, on left bank 20 ft (6 m) downstream from bridge on U.S. Highway 91, 5.1 mi (8.2 km) south of Shelby, 24 mi (39 km) downstream from Cut Bank Creek, and at mile 168 (270 km).

DRAINAGE AREA.--3,242 mi² (8,397 km²), of which 518 mi² (1,342 km²) 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 (941.137 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 23, 1947, nonrecording gage or water-stage recorder at several sites within 1,000 ft (305 m) of present site at approximately the same datum. Dec. 23, 1947 to Apr. 6, 1976, water-stage recorder at site 150 ft (46 m) downstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Some regulation by Lower Two Medicine Lake, Four Horns Reservoir, Swift Reservoir and Lake Frances (see p.609-610),having a combined capacity of 172,630 acre-ft (213 km³). Diversions for irrigation of about 50,000 acres (202 km²) above station and about 15,000 acres (60.7 km²) below.

AVERAGE DISCHARGE.--70 years, (1902-4, 1905-6, 1911-78), 953 ft³/s (26.99 m³/s), 690,400 acre-ft/yr (851 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 241,000 ft³/s (6,830 m³/s) June 9, 1964, largely due to failure of Swift Dam, gage height, 23.64 ft (7.205 m), from floodmark, from rating curve extended above 34,000 ft³/s (963 m³/s) on basis of slope-area measurement of peak flow; minimum observed, 10 ft³/s (0.28 m³/s) Aug. 20, 1919.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,470 ft³/s (183 m³/s) Mar. 22, gage height, 7.08 ft (2.158 m); maximum gage height, 7.65 ft (2.332 m) Mar. 18 (backwater from ice); minimum daily discharge, 100 ft³/s (2.83 m³/s) Dec. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	313	177	250	180	160	220	1900	2130	2970	1550	679	468
2	320	177	250	170	180	210	1580	2790	3060	1450	689	452
3	261	172	240	180	190	200	1340	2830	2750	1480	683	433
4	232	193	220	190	200	240	1150	2850	2760	1730	612	422
5	215	243	200	190	210	240	1060	2590	3090	2120	520	403
6	209	274	180	200	220	250	1030	2350	3580	2600	459	391
7	203	255	150	190	210	250	990	2270	4170	2670	419	585
8	215	232	130	200	200	290	885	2120	4150	3100	394	612
9	220	182	100	200	190	300	823	1890	3960	2660	381	1480
10	232	220	140	200	180	350	761	1960	3880	2180	376	949
11	237	255	180	210	175	370	753	2370	3610	1930	348	720
12	243	274	200	210	170	370	884	2470	3090	1510	323	928
13	232	261	220	200	170	360	888	2340	2640	1310	329	1550
14	215	243	250	200	160	330	821	2170	2430	1130	352	1350
15	209	232	300	200	150	320	794	2600	2480	976	361	940
16	203	215	320	190	160	330	775	3200	2410	862	363	712
17	198	172	300	190	180	500	842	3390	2250	908	393	718
18	182	160	270	190	200	800	900	3180	2040	910	513	720
19	172	150	250	180	210	2500	859	2950	2070	1010	514	708
20	167	130	220	190	220	4000	795	2870	2280	1090	466	698
21	167	110	240	200	230	6000	849	3030	2160	1010	440	671
22	172	120	260	220	250	4670	1020	3450	1990	910	446	636
23	172	120	230	210	280	2040	956	3810	1960	840	1010	610
24	177	130	180	200	290	2010	847	3820	2000	761	1560	582
25	177	150	200	200	280	3040	770	3360	2020	696	986	552
26	167	180	220	200	270	2630	747	2770	1930	638	740	533
27	162	210	210	200	250	3030	894	2320	1770	563	633	509
28	167	250	190	190	230	2230	1450	2050	1600	536	584	513
29	177	260	170	170	---	1950	1920	2050	1450	569	554	500
30	177	260	160	160	---	1680	2120	2210	1500	547	530	502
31	172	---	190	150	---	1760	---	2320	---	570	497	---
TOTAL	6365	6007	6640	5960	5815	43470	31423	82510	78050	40816	17154	20849
MEAN	205	200	214	192	208	1402	1047	2662	2602	1317	553	695
MAX	320	274	320	220	290	6000	2120	3820	4170	3100	1560	1550
MIN	162	110	100	150	150	200	747	1890	1450	536	323	391
AC-FT	12620	11910	13170	11820	11530	86220	62330	163700	154800	80960	34020	41350
CAL YR 1977	TOTAL	104626	MEAN	287	MAX	1100	MIN	97	AC-FT	207500		
WTR YR 1978	TOTAL	345059	MEAN	945	MAX	6000	MIN	100	AC-FT	684400		

06101200 WILLOW CREEK NEAR GALATA, MT

LOCATION.--Lat 48°26'55", long 111°20'40", in SW¼NE¼NE¼ sec. 16, T.31 N., R.3 E., Toole County, Hydrologic Unit 10030204, on right bank at bridge on Bootlegger Trail Road, 0.5 mi (0.8 km) downstream from mouth of West Fork Willow Creek, 1.2 mi (1.9 km) south of U.S. Highway 2, and 1.7 mi (2.7 km) south of Galata, MT.

DRAINAGE AREA.--839 mi² (2,173 km²)

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,040 ft (927 m), from topographic map.

REMARKS.--Records excellent except those for period of flow Mar. 24 to Sept. 30, which are fair. Regulation by small irrigation reservoirs upstream. Diversions for irrigation of about 4,150 acres (16.8 km²).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,180 ft³/s (33.4 m³/s) Mar. 27, 1978, gage height, 10.23 ft (3.118 m); no flow many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,180 ft³/s (33.4 m³/s) Mar. 27, gage height 10.23 ft (3.118 m); no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	561	32	13	15	24	9.7
2	.00	.00	.00	.00	.00	.00	479	61	13	15	23	9.7
3	.00	.00	.00	.00	.00	.00	229	63	13	16	23	9.7
4	.00	.00	.00	.00	.00	.00	158	65	13	17	22	9.7
5	.00	.00	.00	.00	.00	.00	166	73	13	17	22	9.7
6	.00	.00	.00	.00	.00	.00	190	74	14	19	21	9.7
7	.00	.00	.00	.00	.00	.00	180	74	14	20	20	9.7
8	.00	.00	.00	.00	.00	.00	140	77	14	20	20	9.0
9	.00	.00	.00	.00	.00	.00	140	88	14	20	20	8.7
10	.00	.00	.00	.00	.00	.00	150	88	14	41	20	9.0
11	.00	.00	.00	.00	.00	.00	180	87	14	37	19	9.4
12	.00	.00	.00	.00	.00	.00	170	87	14	23	19	10
13	.00	.00	.00	.00	.00	.00	50	87	14	20	19	9.0
14	.00	.00	.00	.00	.00	.00	9.0	87	14	20	18	8.7
15	.00	.00	.00	.00	.00	.00	7.9	78	14	19	13	9.4
16	.00	.00	.00	.00	.00	.00	7.6	77	14	19	11	9.0
17	.00	.00	.00	.00	.00	.00	16	76	14	19	10	8.7
18	.00	.00	.00	.00	.00	.00	53	77	14	19	9.7	9.4
19	.00	.00	.00	.00	.00	.00	62	74	14	19	9.7	8.5
20	.00	.00	.00	.00	.00	.00	45	17	14	18	9.7	8.7
21	.00	.00	.00	.00	.00	.00	38	15	14	19	9.7	9.7
22	.00	.00	.00	.00	.00	.00	35	13	14	18	9.7	9.7
23	.00	.00	.00	.00	.00	.00	29	12	15	18	9.7	10
24	.00	.00	.00	.00	.00	.05	33	12	15	18	9.7	10
25	.00	.00	.00	.00	.00	4.0	35	12	15	17	9.7	10
26	.00	.00	.00	.00	.00	331	31	12	15	18	9.7	10
27	.00	.00	.00	.00	.00	1110	28	13	15	18	9.7	10
28	.00	.00	.00	.00	.00	1040	27	13	15	17	9.7	10
29	.00	.00	.00	.00	.00	947	26	13	15	23	9.7	10
30	.00	.00	.00	.00	.00	818	26	14	15	24	9.7	9.7
31	.00	---	.00	.00	---	965	---	13	---	24	9.7	---
TOTAL	.00	.00	.00	.00	.00	5215.05	3301.5	1584	423	627	459.8	284.5
MEAN	.000	.000	.000	.000	.000	168	110	51.1	14.1	20.2	14.8	9.48
MAX	.00	.00	.00	.00	.00	1110	561	88	15	41	24	10
MIN	.00	.00	.00	.00	.00	.00	7.6	12	13	15	9.7	8.5
AC-FT	.00	.00	.00	.00	.00	10340	6550	3140	839	1240	912	564

CAL YR 1977 TOTAL 0.89 MEAN .002 MAX .11 MIN .00 AC-FT 1
WTR YR 1978 TOTAL 11894.85 MEAN 32.6 MAX 1110 MIN .00 AC-FT 23590

06101300 LAKE ELWELL NEAR CHESTER, MT

LOCATION.--Lat 48°19'06", long 111°05'27", in NW¼ sec.33, T.30 N., R.5 E., Liberty County, Hydrologic Unit 10030203, in control house of river outlet tunnel at Tiber Dam on Marias River, 15 mi (24 km) southwest of Chester.

DRAINAGE AREA.--4,923 mi² (12,751 km²), of which 518 mi² (1,342 km²) is probably noncontributing.

PERIOD OF RECORD.--October 1955 to current year (monthend contents only). Daily elevations and contents May to June 1964, published in WSP 1840-B. Prior to October 1975, published as Tiber Reservoir near Chester.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Nonrecording gages read once daily except weekends and holidays. Datum of gage is at mean sea level (levels by Bureau of Reclamation). Records of daily elevations on file in Helena district office.

REMARKS.--Reservoir is formed by rolled earthfill dam with concrete spillway chute; construction began in September 1952; completed in March 1956. Storage began Oct. 28, 1955. Usable capacity, 1,347,000 acre-ft (1.66 km³) between elevation 2,870.00 ft (874.776 m), trashrack sill, and 3,012.50 ft (918.210 m), top of flood control. Dead storage, 21,580 acre-ft (26.6 hm³) below elevation, 2,870.00 ft (874.776 m). Prior to Oct. 1, 1963, usable capacity was 1,313,000 acre-ft (1.62 km³) and dead storage was 24,000 acre-ft (29.6 hm³) at same elevations. Figures given herein represent usable contents. Water is presently used for recreation and flood control.

COOPERATION.--Elevations and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 1,193,000 acre-ft (1.47 km³) July 12, 13, 1965 (elevation, 3,005.59 ft or 916.104 m); minimum observed since normal operation began, 442,100 acre-ft (520 hm³) Apr. 1, 1968 (elevation, 2,953.81 ft or 900.321 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 685,400 acre-ft (845 hm³) July 21-24, elevation, 2,976.55 ft (907.252 m); minimum observed, 516,100 acre-ft (636 hm³) Feb. 25, elevation, 2,962.90 ft (903.092 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	2,964.37	532,600	-
Oct. 31	2,964.03	528,700	- 3,900
Nov. 30	2,963.33	520,900	- 7,800
Dec. 31	2,963.22	519,700	- 1,200
CAL YR 1977			+ 6,900
Jan. 31	2,963.10	518,300	- 1,400
Feb. 28	2,963.14	518,800	+ 500
Mar. 31	2,971.57	619,000	+100,200
Apr. 30	2,967.14	564,700	- 54,300
May 31	2,969.95	598,700	+ 34,000
June 30	2,974.02	650,900	+ 52,200
July 31	2,976.02	678,000	+ 27,100
Aug. 31	2,974.06	651,400	- 26,600
Sept. 30	2,972.37	629,300	- 22,100
WTR YR 1978			+ 96,700

06101500 MARIAS RIVER NEAR CHESTER, MT

LOCATION.--Lat 48°18'21", long 111°04'44", in SW¼SW¼ sec.34, T.30 N., R.5 E., Liberty County, Hydrologic Unit 10030203, on left bank 2.0 mi (3.2 km) downstream from Tiber Dam, 4.3 mi (6.9 km) upstream from Pondera Coulee, and 15 mi (24 m) southwest of Chester.

DRAINAGE AREA.--4,927 mi² (12,761 km²), of which 518 mi² (1,342 km²) 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 (857.716 m) National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Prior to Oct. 1, 1921, nonrecording gage at bridge 2.5 mi (4.0 km) downstream at different datum. Oct. 4, 1945, to Sept. 30, 1946, nonrecording gage at site 3 mi (5 km) downstream at different datum.

REMARKS.--Records good. Flow completely regulated by Lake Elwell since Oct. 28, 1955 (see preceding page).

AVERAGE DISCHARGE.--25 years (1945-47, 1955-78), 909 ft³/s (25.74 m³/s), 658,600 acre-ft/yr (812 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge not determined, occurred about Mar. 20, 1947; minimum, probably less than 0.2 ft³/s (0.006 m³/s) during period of no gage-height record Oct. 29 to Nov. 10, 1955, when gates at dam were closed.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1948 reached a stage of 16 ft (4.9 m), present datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,000 ft³/s (85.0 m³/s) Apr. 1, gage height, 5.97 ft (1.820 m); minimum daily, 190 ft³/s (5.38 m³/s) Oct. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	195	252	246	249	252	249	2900	1120	2270	981	1050	1050
2	194	250	249	249	252	249	2890	1230	2270	987	1050	1050
3	194	252	248	249	252	247	2890	1600	2270	989	1060	1050
4	194	252	247	249	252	249	2860	2100	2260	981	1070	1050
5	195	252	247	249	252	249	2870	2240	2260	981	1070	1040
6	194	251	246	249	252	249	2870	2240	2270	982	1070	1040
7	194	249	246	252	252	249	2660	2250	2280	980	1070	1040
8	193	251	245	254	252	245	2570	2250	2280	974	1070	1030
9	193	252	245	255	251	245	2560	2260	2280	974	1080	1030
10	193	252	245	253	251	245	2560	2260	2280	966	1080	1030
11	194	252	241	252	251	245	2560	2260	2290	958	1080	1020
12	193	251	245	252	252	245	2550	2260	2290	958	1080	1020
13	192	249	244	252	252	245	2540	2260	2300	958	1080	1020
14	191	249	244	252	252	265	2360	2260	2300	957	1080	1020
15	191	249	245	252	252	295	2250	2260	2310	959	1070	1020
16	190	250	243	255	252	293	2250	2260	2050	960	1070	1010
17	193	249	243	252	252	326	2260	2260	1660	955	1070	1010
18	220	247	244	254	252	349	2250	2260	1390	960	1070	1000
19	246	246	244	252	252	350	2250	2260	1180	963	1070	1000
20	249	249	245	252	252	400	2250	2260	966	962	1070	1010
21	251	249	247	252	251	546	2240	2260	969	959	1070	1080
22	250	249	247	251	252	842	2230	2260	966	976	1070	1120
23	251	246	246	252	249	1340	2220	2260	970	984	1050	1120
24	252	246	245	251	249	1950	2030	2270	975	976	1060	1120
25	251	249	245	254	249	2260	1920	2270	978	977	1050	1120
26	251	247	245	252	249	2430	1770	2270	981	990	1050	1120
27	252	246	245	252	249	2540	1460	2270	981	1000	1050	1120
28	252	249	245	252	249	2720	1230	2260	979	1000	1050	1120
29	252	246	248	252	---	2820	1120	2260	981	1020	1050	1110
30	252	246	248	252	---	2720	1120	2260	984	1020	1050	1110
31	252	---	249	252	---	2830	---	2260	---	1020	1050	---
TOTAL	6766	7485	7614	7805	7034	28538	68530	67050	51220	30317	33010	31680
MEAN	218	250	246	252	251	921	2284	2163	1707	978	1065	1056
MAX	252	252	249	255	252	2840	2900	2270	2310	1020	1080	1120
MIN	190	246	241	249	249	245	1120	1120	966	955	1050	1000
AC-FT	13420	14850	15100	15480	13950	56610	135900	133000	101600	60130	65480	62840

CAL YR 1977 TOTAL 91024 MEAN 249 MAX 383 MIN 177 AC-FT 180500
WTR YR 1978 TOTAL 347049 MEAN 951 MAX 2900 MIN 190 AC-FT 688400

MARIAS RIVER BASIN

06101500 MARIAS RIVER NEAR CHESTER, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-72, December 1977 to September 1978.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1964 to September 1972, January to September 1978.

WATER TEMPERATURES: October 1964 to September 1972, January to September 1978.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 771 micromhos Mar. 18, 1978; minimum daily, 388 micromhos Aug. 17, 18, 21, 1972.

WATER TEMPERATURES: Maximum daily, 22.0°C Aug. 20, 1972; minimum daily, 1.0°C on several days during January to March 1978.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 771 micromhos Mar. 18; minimum daily, 544 micromhos Sept. 19.

WATER TEMPERATURES: Maximum daily, 16.5°C July 23, 29; minimum daily, 1.0°C on several days during January to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCTI- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (PER- CENT)	OXYGEN, DIS- SOLVED (MG/L)	SATUR- ATION
DEC												
22...	1000	249	1	648	8.2	-5.0	2.5	2	--	12.6	102	
JAN												
18...	1145	252	2	696	8.1	-16.0	2.0	1	--	13.4	107	
FEB												
22...	1130	252	1	681	8.1	2.0	3.0	3	--	14.1	117	
MAR												
22...	1145	841	3	719	8.2	6.5	3.0	4	--	13.3	110	
APR												
12...	1145	2540	1	622	8.1	7.0	3.0	4	--	13.4	111	
JUN												
06...	1145	2270	1	611	8.4	18.0	13.5	1	--	11.2	119	
20...	1100	956	0	607	8.4	20.0	12.0	--	1.5	13.3	136	
JUL												
11...	1045	956	0	637	8.0	19.0	12.0	--	1.1	11.9	122	
AUG												
09...	1100	1080	0	608	8.1	26.0	12.5	--	1.4	11.8	122	
SEP												
06...	1030	1040	64	538	8.1	20.0	14.5	--	1.2	9.6	103	

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCUCCL FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SILICA- BONATE (MG/L AS HCO3)	CAL- CIUM NONCAR- BONATE (MG/L AS CACO3)
DEC											
22...	K4	60	280	130	60	32	44	1.1	2.5	190	0
JAN											
18...	K10	73	320	140	67	36	49	1.2	2.4	210	0
FEB											
22...	K13	K4	300	120	63	34	49	1.2	2.7	220	0
MAR											
22...	<1	31	300	130	65	34	46	1.2	2.5	210	0
APR											
12...	<1	47	270	120	58	31	41	1.1	2.7	190	0
JUN											
06...	<1	K2	240	110	53	27	43	1.2	2.8	160	2
20...	K2	<1	240	97	52	26	42	1.2	2.8	--	--
JUL											
11...	K2	K1	230	92	50	26	41	1.2	2.8	--	--
AUG											
09...	<1	K6	230	96	51	24	35	1.0	2.7	--	--
SEP											
06...	K1	57	220	98	51	22	37	1.1	2.4	--	--

06101500 MARIAS RIVER NEAR CHESTER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ALKALINITY (MG/L AS CaCO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED PER AC-F1)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITROGEN, TOTAL (MG/L AS N)
DEC 22...	150	1.9	210	4.6	.3	2.1	446	449	.61	300	.14
JAN 10...	170	2.7	220	5.5	.3	2.2	495	486	.67	337	.18
FEB 22...	180	2.0	210	5.2	.3	2.3	471	475	.64	320	.24
MAR 22...	170	2.1	200	4.9	.3	2.4	462	460	.63	1050	.22
APR 12...	160	2.4	190	4.3	.2	3.3	416	424	.57	2850	.24
JUN 05...	130	1.0	160	4.4	.2	2.7	396	374	.54	2430	.26
JUN 20...	140	--	180	4.2	.2	2.8	405	374	.55	1060	.26
JUL 11...	140	--	180	4.2	.2	3.3	393	372	.53	1020	.29
AUG 04...	130	--	170	3.1	.2	2.7	380	357	.52	1110	.31
SEP 06...	120	--	170	3.0	.2	3.7	364	362	.50	1020	.29

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS- SOLVED (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
DEC 22...	--	.03	--	.33	--	.01	.02	--	3.2	.2
JAN 18...	--	.14	--	.42	--	.02	.01	2.1	--	--
FEB 22...	.19	.01	.20	.10	.44	.02	.02	2.5	--	--
MAR 22...	.60	.03	.63	.03	.63	.12	.12	--	2.6	.4
APR 12...	.43	.03	.46	.34	.70	.04	.00	3.1	--	--
JUN 06...	.38	.05	.43	.29	.69	.00	.00	3.1	--	--
JUN 20...	1.9	.00	1.9	.27	2.2	.00	.00	--	4.2	.4
JUL 11...	.42	.03	.45	.35	.74	.01	.00	3.5	--	--
AUG 04...	.34	.00	.34	.38	.65	.00	.00	3.3	--	--
SEP 06...	.26	.01	.27	.27	.50	.02	.02	--	2.6	.4

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHROMIUM, DIS- SOLVED (UG/L AS CR)
DEC 22...	1000	1	1	100	0	1	0	0	0
MAR 22...	1145	2	0	200	300	0	1	0	0
JUN 20...	1100	1	1	200	200	3	1	0	0
SEP 06...	1030	2	1	300	100	0	0	10	0

MARIAS RIVER BASIN

06101500 MARIAS RIVER NEAR CHESTER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	
DEC 22...		0	0	13	3	100	30	10	3	0
MAR 22...		0	0	4	2	420	70	2	2	10
JUN 20...		2	0	37	9	240	20	28	1	20
SEP 06...		0	0	7	2	70	20	3	0	10

	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 22...	10	.0	.0	--	2	0	0	20	10
MAR 22...	10	.0	.0	3	2	0	0	0	10
JUN 20...	0	.1	.0	2	1	0	0	40	5
SEP 06...	0	.0	.0	1	1	0	0	50	10

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
09...	1000	608	8.2	25.5	12.5	11.5	119
09...	1100	608	8.1	26.0	12.5	11.8	122
09...	1200	610	8.1	29.0	12.5	11.8	122
09...	1300	608	8.2	30.0	12.5	11.9	123
09...	1400	609	8.3	31.5	13.0	12.1	126
09...	1500	615	8.2	33.0	13.0	12.2	127
09...	1600	612	8.2	34.5	13.0	12.0	126
09...	1700	608	8.3	35.0	12.5	11.9	124
09...	1800	610	8.1	32.0	12.5	11.7	122
09...	1900	611	8.1	29.5	12.0	10.4	107
09...	2000	612	8.0	25.0	12.0	10.4	107
09...	2100	613	7.9	20.5	12.0	10.0	103
09...	2200	610	7.9	19.0	12.0	9.9	102
09...	2300	613	7.8	19.5	12.0	9.8	101
09...	2400	610	7.8	20.0	12.0	9.8	101
10...	0100	611	7.7	20.0	12.0	9.8	101
10...	0200	608	7.7	21.0	12.0	9.7	100
10...	0300	608	7.7	21.0	12.0	9.7	100
10...	0400	611	7.7	21.5	12.0	9.7	100
10...	0500	613	7.7	18.0	12.0	9.7	100
10...	0600	612	7.7	16.0	12.0	9.6	99
10...	0700	607	7.8	15.5	12.0	9.8	101
10...	0800	612	7.8	19.5	12.0	10.1	104
10...	0900	614	8.0	21.5	12.0	10.8	111
10...	1000	610	8.0	25.0	12.0	11.4	118

06101500 MARIAS RIVER NEAR CHESTER, MT--Continued
TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				1.0	1.5	1.5	3.0	7.5	13.0	14.5	13.0	14.0
2				1.0	1.5	1.0	3.0	5.5	12.0	14.0	14.0	13.5
3				1.5	1.5	1.5	3.0	6.5	12.5	13.5	12.5	14.0
4				2.0	2.0	2.0	3.5	6.0	13.5	13.5	13.0	13.5
5				2.0	2.0	1.5	3.5	6.0	15.0	14.0	13.0	13.5
6				1.5	2.0	1.5	3.5	5.5	14.5	13.0	13.5	14.0
7				1.5	1.0	2.5	3.5	5.5	14.0	15.0	13.5	14.0
8				1.5	1.5	3.0	4.5	6.5	16.0	13.0	13.5	14.0
9				1.5	2.0	4.0	4.0	5.5	14.0	14.5	13.0	14.5
10				1.5	1.5	3.0	4.0	7.5	14.5	15.0	13.0	14.5
11				2.0	2.0	3.5	3.0	8.5	14.5	15.0	13.0	14.5
12				2.5	2.0	3.0	4.0	6.0	15.0	14.5	13.0	14.5
13				2.0	1.0	3.0	4.0	5.5	16.0	15.0	13.0	15.0
14				2.5	2.5	3.0	4.0	6.0	15.0	15.0	13.0	15.0
15				2.0	2.0	3.0	3.5	6.5	14.5	15.0	13.0	15.0
16				1.5	2.0	3.0	3.5	8.5	15.0	15.5	13.5	14.5
17				1.5	2.0	3.0	3.5	9.0	14.5	14.0	13.0	14.5
18				1.5	3.0	4.0	3.5	8.5	15.5	12.0	13.0	15.0
19				1.5	3.5	3.5	4.0	10.0	15.0	14.5	13.0	14.5
20				1.5	3.5	3.5	4.0	11.0	12.0	15.0	13.0	14.5
21				1.5	3.0	3.5	3.5	11.5	14.5	15.0	14.0	14.5
22				2.5	4.5	3.0	3.5	9.0	13.5	15.5	13.5	15.0
23				2.0	4.0	3.0	3.5	9.5	13.5	16.5	13.0	14.5
24				2.0	3.0	3.0	4.5	9.5	14.0	16.0	13.0	14.5
25				1.0	2.0	3.0	4.5	12.0	13.0	16.0	13.5	15.0
26				2.0	2.0	4.0	4.5	12.5	14.0	16.0	13.5	15.0
27				1.0	1.5	3.5	4.5	11.5	14.0	16.0	13.5	15.0
28				2.0	1.5	3.0	4.5	11.0	15.0	15.5	13.0	15.0
29				2.0	---	3.5	5.5	11.0	15.0	16.5	13.5	14.5
30				1.0	---	3.5	6.0	11.5	13.0	16.0	13.5	15.0
31				1.0	---	3.5	---	11.5	---	16.0	14.0	---
MEAN				1.5	2.0	3.0	4.0	8.5	14.0	15.0	13.0	14.5

WTR YR 1978 MEAN 8.5 MAX 16.5 MIN 1.0
SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				702	736	748	660	647	631	632	560	585
2				701	734	748	660	643	633	630	576	584
3				700	732	741	656	643	630	630	575	579
4				703	731	742	658	641	632	628	571	582
5				705	732	741	656	642	632	630	570	586
6				707	729	742	655	641	630	623	572	582
7				707	739	743	655	644	625	631	572	578
8				712	734	741	658	644	624	623	570	568
9				713	729	733	649	642	619	620	571	562
10				707	725	734	643	646	619	619	572	566
11				709	725	738	638	642	618	619	600	564
12				712	724	733	629	643	616	620	591	553
13				712	728	732	619	643	615	617	590	556
14				715	732	737	656	639	616	622	599	560
15				713	732	736	629	650	618	618	593	553
16				722	726	736	629	657	638	616	589	554
17				717	726	739	629	649	636	604	584	550
18				716	727	771	629	651	641	608	598	551
19				718	724	735	638	651	639	602	584	544
20				717	727	731	643	651	632	608	584	547
21				715	733	731	644	649	635	613	584	549
22				720	739	729	642	652	639	609	589	549
23				722	739	709	642	650	633	606	595	548
24				720	734	708	646	645	632	606	567	549
25				717	750	678	646	638	630	609	563	548
26				717	753	679	647	639	630	603	579	549
27				717	746	679	647	636	631	608	582	549
28				716	756	681	649	636	632	613	580	551
29				719	---	680	647	635	626	600	562	552
30				722	---	680	645	635	632	603	580	552
31				717	---	678	---	633	---	601	579	---
MEAN				713	734	724	645	644	629	615	583	560
WTR YR 1978	MEAN	649		MAX	771		MIN	544				

06101500 MARIAS RIVER NEAR CHESTER, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPOSURE (DAYS)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)
JUN						
06...	1145	55	4.00	1.00	1.46	<.020
20...	1100	14	1.10	.866	.040	.000

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC						
22...	1000	2.5	249	5	3.4	80
JAN						
18...	1145	2.0	252	3	2.0	75
FEB						
22...	1130	3.0	252	2	1.4	--
MAR						
22...	1145	3.0	641	26	59	79
APR						
12...	1145	3.0	2540	9	62	78
JUN						
06...	1145	13.5	2270	4	25	74
20...	1100	12.0	966	7	18	73
JUL						
11...	1045	12.0	958	4	10	82
AUG						
09...	1100	12.5	1080	3	8.7	86
SEP						
06...	1030	14.5	1040	4	11	93

06101500 MARIAS RIVER NEAR CHESTER, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON						
DATE	MAR 22, 78		JUN 6, 78		JUN 20, 78	
TIME	1145		1145		1100	
TOTAL CELLS/ML	2500		2600		510	
DIVERSITY: DIVISION	0.5		0.1		0.0	
..CLASS	0.5		0.1		0.0	
...ORDER	0.5		0.1		0.0	
...FAMILY	1.3		0.4		1.7	
....GENUS	1.5		0.4		1.7	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...ZYGNEMATALES						
....DESMIDIACEAE						
....CLUSTERIUM	--	-	15	1	--	-
...ZYGNEMATACEAE						
....MOUGESIIA	180	7	--	-	--	-
CHRYSDOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINODISCEAE						
....CYCLOTELLA	--	-	15	1	--	-
...PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	200	8	--	-	69	14
...COCCONEIS	*	0	15	1	--	-
...CYMBELLACEAE						
....AMPHORA	--	-	15	1	--	-
...CYMBELLA	48	2	--	-	--	-
...DIATOMACEAE						
....DIATOMA	--	-	29	1	46	9
...FRAGILARIACEAE						
....ASTERIONELLA	--	-	2400#	95	140#	27
...FRAGILARIA	1900#	73	--	-	--	-
....SYNEURA	87	3	--	-	--	-
...GOMPHONEMACEAE						
....GOMPHONEMA	58	2	15	1	--	-
...NAVICULACEAE						
....NAVICULA	29	1	15	1	--	-
...TABELLARIACEAE						
....TABELLARIA	--	-	--	-	250#	50
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...HORMOGONALES						
...OSCILLATORIACEAE						
....OSCILLATORIA	58	2	--	-	--	-

06101500 MARIAS RIVER NEAR CHESTER, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON						
DATE TIME	JUL 11, 78 1045	AUG 9, 78 1100	SEP 6, 78 1030			
TOTAL CELLS/ML	180	110	120			
DIVERSITY: DIVISION	0.0	2.0	1.3			
..CLASS	0.0	2.0	1.3			
...ORDER	0.0	2.0	1.5			
...FAMILY	0.0	2.9	1.9			
...GENUS	0.0	3.0	1.9			
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...COELASTHACEAE						
....COELASTRUM	--	-	22# 20		18# 15	
....DUCYSTACEAE						
....ANKISTRODESMS	--	-	3 2		9 8	
...SCENEDESMACEAE						
....SCENEDESMUS	--	-	5 5		4 3	
...VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	--	-	--	-	7 6	
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
...PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	--	-	5 5		--	-
....COCCONEIS	--	-	3 2		--	-
...DIATOMACEAE						
....DIATOMA	180#100		4 4		--	-
...GOMPHONENACEAE						
....GOMPHONENA	--	-	13 12		--	-
...NAVICULACEAE						
....NAVICULA	--	-	--	-	2 2	
...NITZSCHIACEAE						
....NITZSCHIA	--	-	5 5		--	-
...SURIPELLACEAE						
....SURIPELLA	--	-	--	-	2 2	
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
...CRYPTOMONIDAE						
...CRYPTOCHRYSIDACEAE						
....CHROMONAS	--	-	7 6		--	-
...CRYPTOMONADACEAE						
....CRYPTOMONAS	--	-	11 10		--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...HORMOGONIALES						
...OSCILLATORIA						
....OSCILLATORIA	--	-	32# 24		71# 62	
EUGLENOPHYTA (EUGLENIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
....EUGLENA	--	-	--	-	4 3	

NOTE: # = DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* = OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06101560 PONDERA COULEE NEAR CHESTER, MT

LOCATION.--Lat 48°16'14", long 111°08'42", in SE¼SE¼NE¼ sec.13, T.29 N., R.4 E., Liberty County, Hydrologic Unit 10030203, on left bank 75 ft (23 m) upstream from bridge on county road, 8.5 mi (13.7 km) upstream from mouth, and 19.0 mi (30.6 km) southwest of Chester.

DRAINAGE AREA.--598 mi² (1,549 km²).

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,940 ft (896 m), from topographic map.

REMARKS.--Records fair except those for Oct. 1 to Apr. 10, which are poor. Natural flow of stream affected by numerous storage reservoirs upstream and diversions for irrigation of about 1,800 acres (7.3 km²) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,580 ft³/s (101 m³/s) Mar. 26, 1978, gage height, 13.3 ft (4.054 m), from floodmark; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 1,950 ft³/s (55.2 m³/s) June 8, 1964, gage height, 12.10 ft (3.688 m) from contracted-opening measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50 ft³/s (1.42 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 26	unknown	*3,580 101	a*13.3 4.05	Aug. 22	2200	54 1.53	4.33 1.320
July 3	----	unknown	unknown				

a--from floodmark.

No flow most of the winter period.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	.48	.01	.00	.00	.00	545	14	4.7	7.8	4.1	8.7
2	3.1	.48	.01	.00	.00	.00	447	14	4.3	5.6	5.2	7.2
3	3.8	.08	.01	.00	.00	.00	277	11	2.2	11	3.5	6.0
4	6.8	.16	.01	.00	.00	.00	156	11	2.1	62	4.1	5.0
5	7.4	.04	.00	.00	.00	.00	131	10	1.4	41	5.2	4.5
6	8.1	.00	.00	.00	.00	.00	99	12	1.5	49	10	4.5
7	9.7	.00	.00	.00	.00	.00	66	14	3.5	66	4.8	3.3
8	9.0	.00	.00	.00	.00	.00	52	13	9.5	70	7.3	1.9
9	6.5	.00	.00	.00	.00	.00	46	12	11	43	5.5	1.1
10	5.0	.02	.00	.00	.00	.00	41	12	8.6	31	5.2	1.0
11	3.7	.01	.00	.00	.00	.00	30	13	7.4	25	11	1.5
12	2.8	.00	.01	.00	.00	.00	26	14	6.7	19	8.0	6.3
13	2.1	.00	.01	.00	.00	.00	23	12	6.6	14	5.3	7.0
14	4.5	.01	.01	.00	.00	.00	17	11	5.6	13	9.4	7.0
15	9.0	.02	.01	.00	.00	.00	16	9.4	4.3	19	12	7.0
16	4.7	.01	.01	.00	.00	.00	14	9.4	4.1	14	12	7.0
17	5.2	.02	.01	.00	.00	1.0	21	8.1	5.1	14	14	6.7
18	6.0	.02	.00	.00	.00	2.0	28	7.7	3.5	10	17	6.7
19	6.8	.02	.00	.00	.00	4.0	25	8.1	3.6	7.0	19	11
20	7.1	.02	.00	.00	.00	6.0	24	6.7	2.8	5.4	22	10
21	6.8	.01	.00	.00	.00	8.0	29	5.7	1.7	4.9	25	7.7
22	5.5	.01	.00	.00	.00	10	30	5.4	6.9	7.0	33	7.0
23	4.7	.01	.00	.00	.00	100	31	5.7	6.6	12	31	6.0
24	3.8	.01	.00	.00	.00	1120	29	5.2	9.1	8.1	28	4.6
25	1.8	.01	.00	.00	.00	1620	27	4.1	9.8	8.9	25	3.2
26	2.0	.01	.00	.00	.00	3060	25	3.5	9.7	12	23	2.3
27	1.7	.02	.00	.00	.00	3060	22	2.5	4.3	6.9	22	1.7
28	.88	.01	.00	.00	.00	2240	19	2.0	12	7.4	19	1.4
29	.74	.01	.00	.00	---	1940	16	1.8	14	8.9	16	2.6
30	.56	.01	.00	.00	---	1940	15	2.8	10	5.7	12	1.8
31	.48	---	.00	.00	---	1130	---	3.2	---	3.5	10	---
TOTAL	142.66	1.50	.10	.00	.00	16441.00	2379	264.3	185.7	614.3	433.6	151.7
MEAN	4.60	.050	.003	.000	.000	530	79.3	8.53	6.19	19.8	14.0	5.06
MAX	9.7	.48	.01	.00	.00	3060	595	14	14	70	33	11
MIN	.48	.00	.00	.00	.00	.00	14	1.8	1.4	3.5	3.5	1.0
AC-FT	283	3.0	.2	.00	.00	32610	4720	524	368	1220	860	301

CAL YR 1977	TOTAL	251.37	MEAN	.69	MAX	9.7	MIN	.00	AC-FT	499
WTR YR 1978	TOTAL	20613.86	MEAN	56.5	MAX	3060	MIN	.00	AC-FT	40890

06108000 TETON RIVER NEAR DUTTON, MT

LOCATION.--Lat 47°55'45", long 111°33'12", near center of south line of SW¼ sec.12, T.25 N., R.1 E., Teton County, Hydrologic Unit 10030205, on right bank 150 ft (45.7 m) upstream from Kerr Bridge, 0.9 mi (1.4 km) downstream from Hunt Coulee, and 9.5 mi (15.3 km) northeast of Dutton.

DRAINAGE AREA.--1,307 mi² (3,385 km²). Area at site used prior to July 17, 1965, 1,308 mi² (3,388 km²).

PERIOD OF RECORD.--August 1954 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,235 ft (986 m), from topographic map. Prior to July 17, 1965, water-stage recorder at site 1,800 ft (549 m) downstream at datum 1.97 ft (0.600 m) lower.

REMARKS.--Records good except those for winter period and those for July 30-Sept. 6, 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 or 92.5 hm³). Diversions for irrigation of about 44,000 acres (178 km²) above station.

AVERAGE DISCHARGE.--24 years, 167 ft³/s (4.729 m³/s), 121,000 acre-ft/yr (149 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 71,300 ft³/s (2,020 m³/s) June 9, 1964, gage height, 20.48 ft (6.242 m), present site and datum, from floodmark, from slope-area measurement of peak flow; minimum discharge, 4.3 ft³/s (0.122 m³/s) Aug. 3, 4, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,340 ft³/s (123 m³/s) Mar. 20, gage height, 8.30 ft (2.530 m); maximum gage height, 10.00 ft (3.048 m) Mar. 18 (backwater from ice); minimum discharge, 20 ft³/s (0.566 m³/s) Nov. 16, gage height, 0.96 ft (0.293 m), result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	47	45	37	28	30	367	228	452	336	150	125
2	42	49	46	40	37	34	352	256	704	351	160	130
3	45	47	48	38	42	30	359	260	540	381	150	130
4	43	45	40	37	40	35	326	244	402	546	140	130
5	40	44	33	36	38	37	279	235	336	747	130	130
6	38	52	25	42	40	45	255	250	324	652	125	125
7	35	51	25	38	43	52	240	547	431	642	120	129
8	37	51	23	37	40	58	225	732	607	675	115	138
9	38	63	22	36	36	60	212	536	565	654	110	165
10	39	60	35	37	33	50	205	415	466	605	105	168
11	39	70	40	40	32	53	197	346	392	579	100	162
12	38	67	43	45	29	56	184	318	349	547	95	181
13	40	63	47	43	26	54	182	300	303	461	90	213
14	39	55	50	42	26	52	172	270	265	366	43	307
15	37	52	52	41	31	50	164	272	254	326	95	257
16	42	44	54	40	34	100	173	293	222	317	100	206
17	43	43	51	39	37	1000	184	359	214	343	100	175
18	44	40	46	38	40	2700	214	351	203	347	100	163
19	45	35	46	35	45	2500	250	355	198	329	100	155
20	47	30	45	40	50	3510	257	418	208	385	100	151
21	49	25	48	43	53	2740	253	414	217	348	100	146
22	51	27	50	45	55	1770	291	384	208	348	110	143
23	50	28	45	43	60	1170	312	384	195	305	125	141
24	51	32	42	40	58	1020	253	415	206	270	140	157
25	52	40	40	39	50	1060	217	417	246	249	135	132
26	51	45	42	35	46	802	197	385	263	218	125	130
27	49	48	44	38	42	624	194	333	279	193	120	125
28	50	44	46	37	39	521	195	297	258	165	120	119
29	51	50	45	35	---	454	215	269	239	155	120	116
30	51	48	40	33	---	427	216	272	202	150	120	115
31	53	---	35	30	---	392	---	311	---	140	120	---
TOTAL	1374	1405	1500	1202	1137	21532	7165	10846	9833	12160	3613	4644
MEAN	44.3	46.8	41.9	38.8	40.6	695	239	351	328	342	117	155
MAX	53	70	54	45	60	5510	367	732	709	747	160	307
MIN	37	25	22	30	26	30	169	226	195	140	90	115
AC-FT	2730	2790	2580	2390	2200	42710	14210	21590	19500	24120	7170	9210

LOCAL YR 1977 TOTAL 21630.1 MEAN 59.3 MAX 264 MIN 5.0 AC-FT 42900
 WATER YR 1978 TOTAL 76251.0 MEAN 207 MAX 3510 MIN 22 AC-FT 151200

06109500 MISSOURI RIVER AT VIRGELLE, MT

LOCATION.--Lat 48°00'14", long 110°15'19", in SW¼SW¼SE¼ sec.13, T.26 N., R.11 E., Chouteau County, Hydrologic Unit 10040101, on left bank 0.2 mi (0.3 km) upstream from Virgelle ferry, 0.6 mi (1.0 km) southwest of Virgelle, 3.4 mi (5.5 km) downstream from Spring Coulee, and at mile 2,032.6 (3,270.5 km).

DRAINAGE AREA.--34,379 mi² (89,042 km²).

WATER-DISCHARGE RECORDS

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 (764.286 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1953, water-stage recorder at Loma, 18 mi (29 km) upstream, at datum 2,543.40 ft (775.228 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those for winter period, which are fair. Flow regulated by 23 smaller irrigation reservoirs and powerplants (see p.606), Clark Canyon Reservoir (see p. 47), Canyon Ferry Reservoir (see p. 82), and Lake Elwell (see p. 120). Diversions for irrigation of about 850,400 acres (3,440 km²) above station.

AVERAGE DISCHARGE.--43 years, 8,616 ft³/s (244.0 m³/s), 6,242,000 acre-ft/yr (7.70 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 122,000 ft³/s (3,460 m³/s) June 5, 1953; gage height, 23.4 ft (7.13 m), from floodmark, from rating curve for former site at Loma extended above 66,000 ft³/s (1,870 m³/s), adjusted to present site; minimum daily, 638 ft³/s (18.1 m³/s) July 5, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1908 reached a stage about 2 ft (0.6 m) higher than that of June 5, 1953, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 28,700 ft³/s (813 m³/s) Mar. 26, gage height, 9.53 ft (2.905 m); maximum gage height, 17.10 ft (5.212 m) Mar. 21 (backwater from ice); minimum daily discharge, 3,330 ft³/s (94.3 m³/s) Oct. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP			
1	4300	5890	6600	7200	7900	9400	17500	13000	17900	16100	8750	9610			
2	4250	5170	6500	6900	7600	9100	16100	13300	18600	16000	8230	9470			
3	4260	5560	6000	6600	7400	8900	15500	13500	19300	15400	8880	9330			
4	4080	5470	6600	6100	7200	8300	14700	14300	18600	15000	9160	8770			
5	3870	5410	7000	6000	7500	8000	13800	14600	17900	17000	9010	8440			
6	4150	5840	7800	6800	7800	7900	13000	15100	17200	18800	8510	8880			
7	3330	6250	6300	7200	8000	8200	12300	16100	18100	19200	8970	8660			
8	4600	6330	5000	7500	3200	9000	12000	13400	20800	18900	9810	8000			
9	4710	6220	5400	7100	8400	9400	11100	18300	21600	18200	8660	7730			
10	4680	6340	5700	7400	8600	9600	10800	17600	21000	17600	8410	7810			
11	4930	5980	6000	7700	8200	11500	11500	17800	20700	18100	7610	9210			
12	4900	5670	6600	7600	8600	13500	11800	18300	20400	18300	7500	10600			
13	5070	5750	6000	7300	8200	14000	11700	18300	18800	17500	7350	13100			
14	4570	6420	5800	7600	8000	12500	12000	17600	17500	16900	7520	12600			
15	5830	6230	8600	7700	7800	10200	11500	17000	16700	16100	7810	11600			
16	6110	6050	8400	7900	7800	9500	11200	17400	16500	15100	8330	10900			
17	5720	6180	8000	7900	7800	9200	11500	18500	16500	14900	8260	10100			
18	5420	6210	8000	7800	8300	11000	12300	19400	15800	15200	7850	8730			
19	5790	5850	7900	7600	8800	18000	12600	20900	15700	15400	8270	8070			
20	6240	5370	7900	7400	8300	21000	12400	23200	15100	14200	8410	7850			
21	4880	4620	8200	7600	8500	23000	12300	23400	15000	12900	8280	7440			
22	5470	4990	7200	7800	8500	21700	12600	22300	14400	11700	8020	7530			
23	5870	5700	5800	7600	8700	18100	12500	21500	13800	11400	8050	7440			
24	5320	7200	5900	7700	9100	20000	12100	21600	13700	11000	8570	7230			
25	5380	7800	6900	7900	9400	21600	11800	21300	13700	10300	9590	8600			
26	5390	7900	6800	8000	9800	25400	11300	20600	14000	9920	9590	8420			
27	5080	7500	7600	7800	10000	26700	11600	19600	14400	9390	9250	7110			
28	5080	8000	7700	7700	10000	20700	11600	19100	14800	9270	9250	7480			
29	5640	7900	7800	7600	---	18400	12300	18200	15100	8910	9170	7540			
30	5770	7000	7500	7600	---	17800	12600	17800	15800	8790	8930	7710			
31	5490	---	7300	7700	---	17700	---	17500	---	9740	8870	---			
TOTAL	156380	186800	214800	230300	234400	449300	376000	565500	509300	447220	264890	263960			
MEAN	5045	6227	6929	7429	8371	14490	12530	18240	16980	14430	8545	8799			
MAX	6240	8006	8600	8000	10000	26700	17500	23400	21600	19200	9810	13100			
MIN	3330	4620	5000	6000	7200	7900	10800	13000	13700	8790	7350	6420			
CFSM	.15	.18	.20	.22	.24	.42	.36	.53	.49	.42	.25	.26			
IN.	.17	.20	.23	.25	.25	.49	.41	.61	.55	.48	.29	.29			
AC-FT	310200	370500	426100	456800	464900	891200	745800	1122000	1010000	887100	525400	523600			
CAL YR 1977 TOTAL	2104630		MEAN		5766	MAX	8600	MIN	2950	CFSM	.17	IN	2.28	AC-FT	4175000
WTR YR 1978 TOTAL	3898850		MEAN		10680	MAX	26700	MIN	3330	CFSM	.31	IN	4.22	AC-FT	7733000

MISSOURI RIVER MAIN STEM

06109500 MISSOURI RIVER AT VIRGELLE, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to current year.

WATER TEMPERATURES: October 1974 to current year.

INSTRUMENTATION.--Temperature recorder since July 23, 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 658 micromhos May 2, 1976; minimum daily, 112 micromhos Mar. 4, 1975.

WATER TEMPERATURES: Maximum, 27.0°C July 23, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 657 micromhos Apr. 19; minimum daily, 358 micromhos Nov. 29.

WATER TEMPERATURES: Maximum recorded, 22.5°C July 16, 23; minimum, 0.0°C on many days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (AMD CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT											
12...	1030	5690	0	451	8.7	14.5	8.5	5	--	11.8	110
NOV											
08...	1130	6420	0	439	8.4	3.0	4.5	5	--	11.0	98
DEC											
23...	1100	6000	76	432	8.4	-9.5	.0	7	--	12.3	92
JAN											
19...	1130	7600	0	449	8.2	-17.0	.0	4	--	12.3	92
FEB											
23...	1410	8700	3	467	8.3	7.0	.0	4	--	12.7	95
MAR											
23...	1230	17400	1	521	8.1	10.5	4.0	1100	--	11.2	93
APR											
13...	1000	11500	0	533	8.0	7.5	7.0	40	--	10.0	96
JUN											
07...	1045	17100	0	421	8.6	18.5	17.0	30	--	8.6	98
21...	1100	15100	0	419	8.4	27.0	18.0	--	10	8.7	100
JUL											
12...	1040	18300	1	392	8.4	23.0	18.5	--	50	8.3	97
AUG											
08...	1300	10300	0	454	8.6	27.5	22.0	--	15	8.6	106
SEP											
07...	1045	8900	64	426	8.5	22.5	20.5	--	7.5	7.8	95

DATE	COLLI- FORM, FECAL, 0.7 U4-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SILICA- BJNATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT											
12...	K2	28	200	40	49	19	24	.7	3.5	190	3
NOV											
08...	--	K13	200	32	49	18	23	.7	3.3	200	0
DEC											
23...	51	99	200	45	50	18	24	.7	3.9	180	4
JAN											
19...	110	K1200	200	43	50	18	24	.7	4.1	190	0
FEB											
23...	55	100	190	47	50	17	24	.7	3.5	180	0
MAR											
23...	K120	9800	200	83	48	19	34	1.1	1.2	140	0
APR											
13...	K8	K61	230	64	55	22	31	.9	3.8	200	--
JUN											
07...	K16	99	180	42	44	17	20	.6	2.8	160	4
21...	K25	98	180	38	45	16	22	.7	2.9	--	--
JUL											
12...	86	84	170	26	40	16	20	.7	3.0	--	--
AUG											
08...	K13	23	180	40	44	17	22	.7	3.2	--	--
SEP											
07...	K19	350	180	54	49	15	23	.7	3.2	--	--

06109500 MISSOURI RIVER AT VIRGELLE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ALKALINITY (MG/L AS CaCO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 12...	160	.6	85	9.9	.4	14	262	301	.38	4330	.01
NOV 08...	160	1.3	73	9.3	.9	13	284	246	.34	4920	.00
DEC 23...	150	1.2	72	9.6	.9	16	290	297	.34	4700	.18
JAN 19...	160	1.4	76	9.7	.8	18	264	294	.34	5830	.27
FEB 23...	150	1.4	73	15	1.0	17	277	289	.38	6510	.28
MAR 23...	110	1.5	130	7.6	.6	11	320	321	.44	15000	.70
APR 13...	160	3.2	110	9.3	.8	14	324	345	.45	10200	.23
JUN 07...	140	.7	66	6.5	.9	11	253	253	.34	11700	.06
21...	140	--	63	7.7	.6	11	246	253	.33	10000	.07
JUL 12...	140	--	60	7.2	.7	13	237	244	.32	11700	.13
AUG 08...	140	--	67	8.4	.8	9.5	255	256	.35	7090	.01
SEP 07...	130	--	77	8.3	.8	11	256	266	.35	6150	.00

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
OCT 12...	--	.01	--	.23	--	.04	.03	2.7	--	--
NOV 08...	--	.01	--	.12	--	.04	.03	2.4	--	--
DEC 23...	--	.03	--	3.9	--	.04	.05	--	3.9	.3
JAN 19...	--	.24	--	.25	--	.08	.06	2.8	--	--
FEB 23...	.02	.04	.06	.09	.34	.05	.04	2.0	--	--
MAR 23...	.93	.00	.98	.46	1.7	1.8	.06	--	4.6	>5.0
APR 13...	.44	.01	.45	.28	.66	.10	.02	4.1	--	--
JUN 07...	.39	.01	.40	.40	.46	.06	.00	3.4	--	--
21...	.26	.01	.29	.10	.36	.06	.01	--	2.4	.8
JUL 12...	1.3	.07	1.4	1.4	1.5	.13	.04	5.2	--	--
AUG 08...	.85	.00	.85	.24	.86	.05	.00	3.4	--	--
SEP 07...	.88	.01	.89	.93	.89	.06	.02	--	4.7	.7

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	CHROMIUM, DIS- SOLVED (UG/L AS CR)
DEC 23...	1100	20	20	0	0	1	0	0	0
MAR 23...	1230	15	4	500	200	0	1	20	0
JUN 21...	1100	15	13	200	200	6	0	10	0
SEP 07...	1045	17	17	200	200	0	0	0	0

MISSOURI RIVER MAIN STEM

06109500 MISSOURI RIVER AT VIRGELLE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COBALI, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALI, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS Pb)	LEAD, DIS- SOLVED (UG/L AS Pb)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS Mn)
DEC 23...	0	0	11	3	330	30	4	2	10
MAR 23...	13	0	90	5	36000	40	29	0	820
JUN 21...	0	0	41	4	3500	10	50	5	100
SEP 07...	0	0	10	--	750	50	10	0	40

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS Zn)	ZINC, DIS- SOLVED (UG/L AS Zn)
DEC 23...	0	.0	.0	2	0	0	0	20	10
MAR 23...	0	.0	.0	2	1	1	0	220	10
JUN 21...	0	.0	.0	1	1	0	0	60	10
SEP 07...	30	.0	.0	2	0	0	0	50	30

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	PCB, TOTAL (UG/L)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	AROCLOJR TOT. IN BOT MAT 1254 PCB SERIES (UG/KG)	ATRA- ZINE, TOTAL (UG/L)	ATRA- ZINE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CHLDR- DAWE, TOTAL (UG/L)	CHLDR- DAWE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL (UG/L)
NOV 08...	1130	ND	--	ND	ND	2	--	ND	ND	ND	ND
MAR 23...	1230	ND	--	ND	--	--	--	--	ND	--	ND
JUN 07...	1045	ND	ND	ND	ND	--	ND	--	ND	ND	ND
AUG 08...	1300	ND	--	ND	--	--	ND	--	ND	--	ND

DATE	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL (UG/L)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- AZINON, TOTAL (UG/L)	DI- AZINON, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN, TOTAL (UG/L)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
NOV 08...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 23...	--	ND	--	ND	--	ND	--	ND	--	ND	--
JUN 07...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 08...	--	ND	--	ND	--	ND	--	ND	--	ND	--

06109500 MISSOURI RIVER AT VIRGELLE, MT--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ETHION, TOTAL (UG/L)	ETHION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	MALA- THION, TOTAL (UG/L)	MALA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
NOV 08...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 23...	ND	--	ND	--	ND	--	ND	--	ND	--
JUN 07...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 08...	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	METH- OXY- CHLOR, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	METHYL PARA- THION, TOTAL (UG/L)	METHYL PARA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	METHYL TRI- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PARA- THION, TOTAL (UG/L)	PARA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOXA- PHENE, TOTAL (UG/L)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
NOV 08...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR 23...	ND	--	ND	--	ND	--	ND	--	ND	--
JUN 07...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 08...	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	TRI- THION, TOTAL (UG/L)	TRI- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4-D, TOTAL (UG/L)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4,5-T TOTAL (UG/L)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SIMA- ZINE TOTAL (UG/L)	SIMA- ZINE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SILVEX, TOTAL (UG/L)	SILVEX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SIMA- ZINE IN BOTTOM MATERIAL (UG/ KG DRY SOLIDS)
NOV 08...	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND
MAR 23...	ND	--	--	--	--	--	--	--	--	--	--
JUN 07...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--
AUG 08...	ND	--	ND	--	ND	--	ND	ND	--	--	--

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
07...	1600	455	8.6	34.0	22.5	9.0	114
07...	1700	454	8.6	33.0	22.5	9.0	114
07...	1800	452	8.6	31.5	22.5	9.0	114
07...	1900	450	8.6	29.0	22.5	9.0	114
07...	2000	452	8.6	25.0	22.0	8.7	109
07...	2100	455	8.6	23.0	22.0	8.7	109
07...	2200	455	8.4	19.5	22.0	8.1	101
07...	2300	453	8.4	18.0	21.5	8.0	99
07...	2400	450	8.4	15.0	21.5	8.0	99
08...	0100	450	8.4	15.0	21.0	7.9	98
08...	0200	453	8.4	15.0	21.0	7.8	96
08...	0300	452	8.3	17.0	21.0	7.7	94
08...	0400	451	8.2	18.0	21.0	7.6	93
08...	0500	450	8.1	17.0	20.5	7.6	92
08...	0600	449	7.9	16.5	20.5	7.6	92
08...	0700	450	8.3	19.5	20.5	7.7	93
08...	0800	451	8.3	20.5	20.5	7.6	94
08...	0900	457	8.4	22.0	20.5	7.9	95
08...	1000	455	8.5	26.0	21.0	8.0	98
08...	1100	457	8.5	27.0	21.0	8.3	101
08...	1200	454	8.6	27.5	21.5	8.5	105
08...	1300	454	8.6	27.5	22.0	8.6	106
08...	1400	452	8.6	28.0	22.0	8.7	107
08...	1500	453	8.6	29.5	22.5	8.8	110
08...	1600	454	8.6	31.0	22.5	8.9	111

MISSOURI RIVER MAIN STEM

06109500 MISSOURI RIVER AT VIRGELLE, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	494	483	467	474	471	493	528	523	478	439	440	458
2	495	496	468	486	468	500	521	517	---	447	452	452
3	498	488	478	482	461	501	552	499	485	452	452	458
4	497	483	---	467	471	504	538	506	521	447	453	459
5	503	481	466	476	462	504	568	512	498	441	455	452
6	510	485	499	457	453	502	579	488	482	451	457	448
7	512	491	502	477	462	496	594	563	469	469	459	457
8	518	484	522	468	468	496	598	551	446	443	444	446
9	529	478	540	466	---	487	598	618	427	452	447	448
10	519	475	538	492	468	491	596	583	421	446	456	461
11	502	478	543	480	---	521	590	551	418	432	457	450
12	494	476	521	476	460	556	572	510	414	428	459	443
13	497	462	501	478	462	527	572	489	432	422	466	488
14	501	489	482	481	460	498	562	480	439	427	466	448
15	492	484	484	482	473	517	556	480	451	423	461	456
16	490	481	468	468	476	511	563	478	452	423	461	492
17	486	478	471	472	476	528	556	465	454	423	456	470
18	485	471	463	469	469	496	640	451	448	435	462	470
19	478	472	455	463	464	519	657	471	443	423	463	464
20	484	478	459	472	467	623	---	452	457	434	461	472
21	---	504	510	472	462	609	619	446	444	432	465	482
22	---	521	473	472	470	600	627	450	452	448	462	488
23	---	462	472	467	468	570	611	458	451	446	472	483
24	489	509	485	462	469	574	600	446	455	443	459	481
25	489	589	492	463	473	546	597	449	461	440	453	473
26	491	496	500	456	---	498	593	436	462	443	462	478
27	488	478	469	462	---	487	582	439	466	438	453	464
28	501	474	488	455	499	513	563	459	459	438	459	462
29	489	358	486	458	---	540	539	444	447	438	450	475
30	491	460	478	453	---	551	530	444	446	438	454	473
31	485	---	475	472	---	534	---	455	---	433	457	---
MEAN	497	484	489	470	468	526	579	486	454	439	457	465
WTR YR 1978	MEAN	464	MAX	657	MIN	358						

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.5	11.0	11.5	7.5	6.5	7.0	.0	.0	.0	.0	.0	.0
2	12.5	10.0	11.5	7.5	6.5	7.5	.0	.0	.0	.0	.0	.0
3	11.5	10.5	11.0	7.0	6.0	6.5	---	---	---	.0	.0	.0
4	11.0	10.0	10.5	6.5	6.0	6.0	.0	.0	.0	.0	.0	.0
5	10.5	9.0	9.5	6.5	5.5	6.0	.0	.0	.0	.0	.0	.0
6	10.5	8.0	9.0	6.5	5.0	6.0	.0	.0	.0	.0	.0	.0
7	11.0	9.5	10.0	7.5	5.5	6.5	.0	.0	.0	.0	.0	.0
8	10.5	9.5	10.0	7.0	4.5	5.5	.0	.0	.0	.0	.0	.0
9	10.0	7.5	8.5	4.5	3.5	4.0	.0	.0	.0	.0	.0	.0
10	8.5	6.5	7.5	5.0	3.5	4.5	.0	.0	.0	.0	.0	.0
11	9.0	7.0	8.0	5.5	4.5	5.0	.0	.0	.0	.0	.0	.0
12	10.0	8.0	9.0	5.5	4.5	5.0	.0	.0	.0	.0	.0	.0
13	10.5	9.5	10.0	5.0	4.5	4.5	.0	.0	.0	.0	.0	.0
14	10.0	9.0	9.5	5.5	4.5	5.0	.0	.0	.0	.0	.0	.0
15	10.0	8.0	9.0	---	5.0	---	---	---	---	.0	.0	.0
16	11.0	8.5	9.5	---	---	.0	.0	.0	.0	.0	.0	.0
17	11.0	9.0	10.0	---	---	---	.0	.0	.0	.0	.0	.0
18	11.0	9.0	10.0	---	---	---	.0	.0	.0	.0	.0	.0
19	11.0	9.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	11.0	9.5	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	10.5	9.0	9.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	10.5	8.5	9.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	10.5	9.0	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	10.5	9.0	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	10.0	9.0	9.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	9.5	8.5	9.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	10.0	7.0	8.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	10.0	8.0	9.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	10.5	9.5	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	10.0	8.5	9.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	9.0	7.5	8.0	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	12.5	6.5	9.5	7.5	.0	3.0	.0	.0	.0	.0	.0	.0

MISSOURI RIVER MAIN STEM

06109500 MISSOURI RIVER AT VIRGELLE, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT						
12...	1030	8.5	5690	21	323	81
NOV						
08...	1130	4.5	6420	15	260	64
JAN						
19...	1130	.0	7600	8	164	--
FEB						
23...	1410	.0	8700	11	258	--
MAR						
23...	1230	4.0	17400	2460	116000	85
APR						
13...	1000	7.0	11500	184	5710	66
JUN						
07...	1045	17.0	17100	139	6420	61
21...	1100	18.0	15100	82	3340	62
JUL						
12...	1040	18.5	18300	148	7310	82
AUG						
06...	1300	22.0	10300	53	1470	78
SEP						
07...	1045	20.5	8900	48	1150	92

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPOS- URE (DAYS)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SG M	PERI- PHYTON BIOMASS ASH WEIGHT G/SG M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)
JUL						
12...	1040	21	.236	.157	.270	.000
SEP						
07...	1045	30	7.24	2.91	3.73	1.36

06109500 MISSOURI RIVER AT VIRGELLE, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 8,77 1130	MAR 23,78 1230	JUN 7,78 1045	JUN 21,78 1100				
TOTAL CELLS/ML	1900	570	3300	4500				
DIVERSITY: DIVISION	0.5	0.8	0.4	1.2				
..CLASS	0.5	0.8	0.4	1.2				
...ORDER	1.5	0.8	0.8	1.8				
...FAMILY	2.5	1.5	1.0	5.0				
....GENUS	3.1	1.5	1.0	5.9				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...CHARACIACEAE								
....SCHWEDERIA	21	1	--	--	--	--	370	9
...COELASTRACEAE								
....COELASTRUM	--	--	--	--	--	--	210	5
...MICRACIINIACEAE								
....GOLENKINIA	31	2	--	--	--	--	--	--
...MICRACIINIUM	--	--	--	--	--	--	53	1
...DUCYSIACEAE								
....ANKISTRODESMUS	--	--	--	--	--	--	53	1
...CHODATELLA	--	--	--	--	--	--	110	2
...DICTYOSPHAERIUM	82	4	--	--	--	--	--	--
...DUCYSTIS	--	--	--	--	*	0	110	2
...QUADRIGULA	--	--	--	--	*	0	--	--
...SCENEDESMACEAE								
...SCENEDESMUS	--	--	--	--	120	4	210	5
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
...CHLAMYDOMONAS	41	2	--	--	--	--	--	--
...ZYGNEMATALES								
...DESMIDIACEAE								
...CLOSTERIUM	--	--	--	--	73	2	--	--
...COSMARIUM	--	--	140#	25	--	--	--	--
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISACEAE								
...CYCLOITELLA	82	4	--	--	--	--	190	4
...MELOSIRA	740#	39	--	--	2800#	85	610	14
...PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	--	--	--	--	--	53	1
...COCCONEIS	10	1	--	--	*	0	53	1
...RHODOSPHECIA	10	1	--	--	--	--	--	--
...CYMBELLACEAE								
....CYMBELLA	31	2	--	--	44	1	27	1
...EPIHEMIA	31	2	--	--	--	--	80	2
...DIATOMACEAE								
....DIATOMA	210	11	140#	25	--	--	190	4
...FRAGILARIACEAE								
....ASTERIONELLA	170	9	--	--	--	--	27	1
...FRAGILARIA	220	11	--	--	85	3	290	7
...SYNEORA	93	5	--	--	--	--	27	1
...GOMPHONEMACEAE								
....GOMPHONEMA	51	3	--	--	--	--	190	4
...NAVICULACEAE								
....NAVICULA	62	3	280#	50	100	3	450	10
...NITZSCHIACEAE								
....NITZSCHIA	10	1	--	--	--	--	530	12
...SURIPELLACEAE								
....SURIPELLA	--	--	--	--	--	--	53	1
...TABELLARIACEAE								
....TABELLARIA	--	--	--	--	29	1	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCALES								
...CHROCOCCACEAE								
....ANACYSTIS	--	--	--	--	--	--	430	10
EUGLENOPHYTA (EUGLENIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....TRACHELOMONAS	10	1	--	--	--	--	--	--
PYRRHOPHYTA (FIRE ALGAE)								
..PYRRHOPHYCEAE								
...PERIDINIALES								
...PERIDINIACEAE								
....PERIDINIUM	10	1	--	--	--	--	--	--

06109500 MISSOURI RIVER AT VIRGELLE, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUL 12, 78 1040	AUG 8, 78 1300	SEP 7, 78 1045			
TOTAL CELLS/ML	2900	4100	3100			
DIVERSITY: DIVISION	0.7	1.1	1.3			
..CLASS	0.7	1.1	1.3			
..ORDER	1.5	1.9	1.9			
...FAMILY	2.6	2.3	2.6			
....GENJS	3.6	2.7	3.1			
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...CHARACIACEAE						
...SCHROEDERIA	--	-	160	4	96	3
...COELASTRACEAE						
...COELASTRUM	180	6	--	-	--	-
...HYDRODICTYACEAE						
...PEDIASTRUM	--	-	--	-	120	4
...MICRACITINACEAE						
...MICRACITINIUM	--	-	55	1	--	-
...DUCYSTACEAE						
...ANKISTRODES MUS	22	1	--	-	24	1
...DICTYOSPHAERIUM	--	-	73	2	--	-
...KIMCHNERIELLA	22	1	--	-	--	-
...DUCYSTIS	89	3	--	-	--	-
...SCENEDESMACEAE						
...CRUCIGENIA	--	-	--	-	48	2
...SCENEDESMUS	89	3	37	1	170	5
...ZYGNEATALES						
...DESMIDIACEAE						
...CUMMARIUM	--	-	--	-	24	1
CHRYSOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINODISCEACEAE						
...CYCLOTELLA	270	9	180	4	220	7
...MELOSIRA	470#	16	1400#	35	1300#	40
...STEPHANODISCUS	160	5	200	5	*	0
...PENNALES						
...ACHNANTHACEAE						
...COCCONEIS	89	3	--	-	72	2
...RHUICOSPHEA	89	3	--	-	--	-
...CYMBELLACEAE						
...CYMBELLA	67	2	--	-	24	1
...DIATOMACEAE						
...DIATOMA	22	1	--	-	96	3
...FRAGILARIACEAE						
...ASTERIONELLA	490#	17	570	14	--	-
...FRAGILARIA	530#	18	--	-	--	-
...SYNEDRA	22	1	--	-	84	3
...GOMPHONEMACEAE						
...GOMPHONEMA	44	2	--	-	--	-
...NAVICULACEAE						
...NAVICULA	67	2	37	1	130	4
...NITZSCHACEAE						
...NITZSCHIA	160	5	550	13	48	2
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
...CRYPTOMONIDALES						
...CRYPTOMONADACEAE						
...CRYPTOMONAS	22	1	*	0	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
...CHROCOCCACEAE						
...COCCOCHLORIS	--	-	*	0	*	0
...HORMOGONALES						
...NOSTOCACEAE						
...ANABAENA	--	-	770#	19	120	4
...OSCILLATORIACEAE						
...LYNGBYA	--	-	--	-	120	4
...OSCILLATORIA	--	-	--	-	480#	15
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
...TRACHELONAS	22	1	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06109780 MIDDLE FORK JUDITH RIVER NEAR UTICA, MT

LOCATION.--Lat 46°50'56", long 110°16'17", in SE¼NW¼ sec.36, T.13 N., R.11 E., Judith Basin County, Hydrologic Unit 10040103, on left bank 630 ft (192 m) upstream from confluence with South Fork, 67 ft (20 m) downstream from county highway bridge, and 12.8 mi (20.6 km) southwest of Utica.

DRAINAGE AREA.--160 mi² (414 km²).

PERIOD OF RECORD.--July 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,940 ft (1,506 m), from topographic map.

REMARKS.--Records good except those for winter period, which are poor. Diversions for irrigation of about 300 acres (1.21 km²), all of which lies below station.

AVERAGE DISCHARGE.--6 years, 49.9 ft³/s (1.413 m³/s), 36,150 acre-ft/yr (44.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,650 ft³/s (46.7 m³/s) June 20, 1975, gage height, 5.59 ft (1.744 m); maximum gage height, 6.47 ft (1.972 m) Dec. 31, 1973 (backwater from ice); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 110 ft³/s (3.12 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)		Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)	
May 3	1200	126	3.57	2.21	0.674	June 8	1200	440	12.5	3.25	0.991
May 16	1200	400	11.3	3.15	0.960	July 8	0800	208	5.89	2.57	0.783
May 23	1900	*473	13.4	*3.33	1.015						

No flow many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	3.9	2.1	.00	.00	.00	25	100	279	151	70	25
2	4.1	3.9	2.5	.00	.00	.00	24	111	262	148	71	23
3	4.4	3.5	2.1	.00	.00	.00	26	123	254	143	67	23
4	4.4	3.4	1.4	.00	.00	.00	27	124	268	159	61	23
5	4.4	3.3	.60	.00	.00	.00	25	115	311	164	59	22
6	4.4	4.4	.00	.00	.00	.00	23	108	373	161	56	25
7	4.5	4.6	.00	.00	.00	.00	21	97	422	173	53	26
8	4.9	5.2	.20	.00	.00	.00	20	89	431	192	52	28
9	4.7	.13	.40	.00	.00	.00	20	89	433	180	50	24
10	4.6	1.2	.10	.00	.00	.00	18	111	410	174	46	22
11	5.2	2.5	.80	.00	.00	.00	18	154	375	168	44	25
12	4.1	3.6	2.1	.00	.00	.00	18	157	327	158	44	30
13	4.1	4.0	3.0	.00	.00	.00	18	147	292	147	43	32
14	3.7	3.7	3.4	.00	.00	.00	20	156	281	136	43	29
15	3.7	3.0	3.8	.00	.00	.00	19	244	279	127	41	27
16	3.5	2.3	3.3	.00	.00	.00	20	371	269	121	39	26
17	3.2	1.2	2.7	.00	.00	.10	24	345	252	133	44	26
18	3.5	.60	2.0	.00	.00	2.0	25	330	236	119	42	26
19	3.6	.20	1.0	.00	.00	2.5	25	288	239	112	39	27
20	3.5	.00	.50	.00	.00	3.2	23	270	222	110	37	25
21	3.5	.00	.00	.00	.00	4.0	24	286	209	113	35	24
22	3.4	.00	.00	.00	.00	5.0	24	347	197	110	33	24
23	3.4	.00	.20	.00	.00	6.0	23	440	187	102	32	25
24	3.6	.40	.30	.00	.00	8.0	22	446	183	98	31	25
25	3.8	1.0	.10	.00	.00	11	22	442	195	91	30	25
26	4.1	2.5	.00	.00	.00	14	26	406	198	88	29	25
27	4.5	3.0	.00	.00	.00	16	42	364	184	84	34	24
28	4.2	2.7	.00	.00	.00	18	57	328	173	82	31	24
29	4.0	2.3	.00	.00	---	20	74	325	166	78	29	24
30	4.0	1.8	.00	.00	---	22	92	314	160	75	27	23
31	4.0	---	.00	.00	---	24	---	303	---	71	26	---
TOTAL	126.7	68.33	32.60	.00	.00	155.30	845	7530	8067	3968	1338	763
MEAN	4.09	2.28	1.05	.000	.000	5.03	28.2	243	269	128	43.2	25.4
MAX	5.7	5.2	3.8	.00	.00	24	92	446	433	192	71	36
MIN	3.2	.00	.00	.00	.00	.00	18	89	160	71	26	22
AC-FT	251	136	65	.00	.00	509	1680	14940	16000	7870	2650	1510
CAL YR 1977	TOTAL	6397.21	MEAN 17.5	MAX 131	MIN .00	AC-FT 12690						
WTR YR 1978	TOTAL	22894.43	MEAN 62.7	MAX 446	MIN .00	AC-FT 45410						

06109800 SOUTH FORK JUDITH RIVER NEAR UTICA, MT

LOCATION.--Lat 46°45'00", long 110°18'54", in SE¼NE¼SW¼ sec.34, T.12 N., R.11 E., Judith Basin County, Hydrologic Unit 10040103, Lewis and Clark National Forest, on right bank just downstream from Trask Gulch, 8 mi (13 km) upstream from confluence with Middle Fork, and 18 mi (29 km) southwest of Utica.

DRAINAGE AREA.--58.7 mi² (152.0 km²).

PERIOD OF RECORD.--August 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 5,420 ft (1,650 m), from topographic map.

REMARKS.--Records good. Minor diversions for irrigation above station.

AVERAGE DISCHARGE.--20 years, 22.0 ft³/s (0.623 m³/s), 15,940 acre-ft/yr (19.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,340 ft³/s (37.9 m³/s) May 30, 1967, gage height, 6.87 ft (2.094 m), from rating curve extended above 180 ft³/s (5.10 m³/s) on basis of slope-area measurement; minimum daily, 1.0 ft³/s (0.028 m³/s) Nov. 27, 1958.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1967, is the highest since 1927, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 80 ft³/s (2.27 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 1	2300	207 5.86	4.19 1.277	May 18	2145	*311 8.81	*4.63 1.411

Minimum discharge, 1.7 ft³/s (0.048 m³/s) Nov. 3, 8, gage height, 2.15 ft (0.655 m), result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	8.0	4.1	4.1	3.2	3.1	3.2	41	174	102	32	22	10		
2	6.8	5.0	4.3	3.2	3.2	3.1	36	179	92	35	22	10		
3	6.2	3.2	5.0	3.3	3.2	3.0	32	172	86	31	21	9.8		
4	5.9	5.2	4.1	3.5	3.2	3.4	29	142	81	47	20	10		
5	5.7	5.0	4.1	3.5	3.0	3.4	28	125	77	49	19	9.8		
6	5.7	5.0	4.0	3.5	3.4	3.4	27	112	74	44	18	12		
7	5.7	4.3	3.9	3.4	3.2	3.5	25	105	70	42	17	13		
8	5.7	2.7	3.6	3.4	3.2	3.5	25	107	66	46	17	15		
9	5.7	3.2	3.7	3.4	3.0	3.7	25	123	63	42	17	10		
10	5.2	4.7	3.9	3.4	3.0	3.9	25	181	61	44	16	10		
11	5.7	5.0	3.9	3.4	3.0	3.7	29	179	60	50	15	16		
12	5.7	4.5	3.9	3.4	3.2	3.7	26	147	56	43	15	15		
13	5.7	4.3	3.9	3.4	3.2	3.9	24	145	56	39	15	12		
14	5.7	4.3	3.9	3.4	3.2	3.7	20	175	55	36	15	11		
15	5.2	4.1	3.9	3.4	3.2	3.5	25	205	55	35	15	10		
16	5.0	3.5	3.9	3.4	3.2	3.5	40	203	49	35	15	9.4		
17	5.0	3.0	3.5	3.4	3.2	3.7	39	189	45	34	17	9.0		
18	5.0	2.7	3.9	3.4	3.2	3.9	38	272	43	35	15	10		
19	4.7	2.6	3.7	3.4	3.2	4.3	36	270	44	33	14	10		
20	4.7	2.5	3.5	3.4	3.2	4.7	39	260	41	32	13	10		
21	4.7	2.5	3.5	3.4	3.2	5.4	43	253	38	36	13	11		
22	4.5	2.7	3.5	3.2	3.2	5.9	41	239	37	37	12	12		
23	4.5	3.0	3.5	3.4	3.2	6.2	39	228	35	30	12	12		
24	4.5	4.1	3.5	3.2	3.2	5.2	39	222	37	29	12	11		
25	4.5	4.5	3.9	3.2	3.2	6.2	47	187	53	27	11	9.8		
26	5.2	5.0	3.7	3.2	3.2	8.0	76	161	49	25	11	9.4		
27	5.0	4.5	3.7	3.2	3.2	12	99	142	38	25	13	9.0		
28	4.7	4.3	3.7	3.2	3.2	17	122	126	35	24	12	8.7		
29	4.7	4.1	3.7	3.2	---	23	134	122	33	23	11	8.7		
30	4.7	4.1	3.5	3.1	---	35	145	112	32	22	11	8.7		
31	4.5	---	3.3	3.1	---	42	---	110	---	22	10	---		
TOTAL	164.5	117.7	116.4	103.2	88.9	238.6	1396	5369	1663	1089	466	322.3		
MEAN	5.31	3.92	3.82	3.33	3.18	7.70	46.5	173	55.4	35.1	15.0	10.7		
MAX	8.0	5.2	5.0	3.5	3.4	42	145	272	102	50	22	16		
MIN	4.5	2.5	3.3	3.1	3.0	3.0	20	105	32	22	10	8.7		
CFSM	.09	.07	.07	.06	.05	.13	.79	2.95	.94	.60	.26	.18		
IN.	.10	.07	.08	.07	.06	.15	.68	3.40	1.05	.69	.30	.20		
AC-FT	326	233	235	205	176	473	2770	10650	3300	2160	924	639		
CAL YR 1977	TOTAL	3276.0	MEAN	8.98	MAX	56	MIN	2.5	CFSM	.15	IN	2.08	AC-FT	6500
WTR YR 1978	TOTAL	11136.6	MEAN	30.5	MAX	272	MIN	2.5	CFSM	.52	IN	7.06	AC-FT	22090

06115200 MISSOURI RIVER NEAR LANDUSKY, MT

LOCATION.--Lat 47°37'51", long 108°41'13", in NW¼NE¼ sec.31, T.22 N., R.24 E., Fergus County, Hydrologic Unit 10040104, Fort Peck Game Range, on right bank 380 ft (116 m) upstream from bridge on U.S. Highway 191, 0.9 mi (1.4 km) upstream from Armells Creek, 20 mi (32 km) south of Landusky, and at mile 1,921.61 (3,091.87 km).

DRAINAGE AREA.--40,987 mi² (106,156 km²). Area at site used prior to Dec. 13, 1968, 40,763 mi² (105,576 km²).

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 (682.740 m) National Geodetic Vertical Datum of 1929 (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 (26.5 km) upstream at datum 33.06 ft (10.077 m) higher.

REMARKS.--Water-discharge records fair except those for winter period, which are poor. Flow regulated by 24 smaller irrigation reservoirs and powerplants, Clark Canyon Reservoir, Canyon Ferry Reservoir, and Lake Elwell. Diversions for irrigation of about 870,400 acres (3,520 km²) above station.

AVERAGE DISCHARGE.--44 years, 9,351 ft³/s (264.8 m³/s), 6,775,000 acre-ft/yr (8.35 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 137,000 ft³/s (3,880 m³/s) June 6, 1953, gage height, 22.20 ft (6.767 m), from graph based on gage readings, site and datum then in use; maximum gage height, 30.16 ft (9.193 m) Mar. 19, 1947 (ice jam), from floodmark, site and datum then in use; maximum gage height, present site and datum, 34.17 ft (10.418 m) Mar. 26, 1978 (ice jam), from floodmark; minimum discharge, 1,120 ft³/s (31.7 m³/s) July 8, 1936, gage height, 1.92 ft (0.585 m), site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 108,000 ft³/s (3,060 m³/s) Mar. 25 (ice jam); maximum gage height, 34.17 ft (10.418 m) Mar. 26 (backwater from ice); minimum daily discharge, 4,070 ft³/s (115 m³/s) Oct. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5370	5940	8000	5600	7600	8600	28800	15400	20100	17000	10900	8560
2	4920	5630	7000	6400	7600	6200	24300	15400	20900	17000	9920	8980
3	4690	5510	6600	6600	6000	8400	22000	15700	21400	19100	8860	8750
4	4620	5620	6600	6600	6000	9000	19900	15700	21500	22300	9100	8520
5	4490	5520	7200	6600	6200	9500	18700	16400	20800	22400	9650	8420
6	4210	5850	7800	6600	6200	10500	17500	17000	19900	22900	9570	8130
7	4310	5790	6000	6600	6200	11500	15900	19200	22200	22200	9290	8560
8	4400	6340	5000	7000	3200	11000	14700	20400	19700	22200	9220	8790
9	4070	6560	4500	7200	6200	11000	14100	21300	22100	22200	10000	6080
10	4960	6540	5000	7400	6000	11500	13500	21500	22400	20300	9850	7950
11	5100	6620	5400	7400	8000	10500	12800	20200	21600	19200	8620	7820
12	5170	6540	5600	7800	6000	10500	12900	19900	21200	19200	8360	10600
13	5220	5950	6200	7600	7800	10500	13400	20200	20900	19500	7820	12700
14	5200	5910	6600	7600	7800	10500	12900	20400	19600	18400	7770	13500
15	5110	6380	9000	7600	7600	10000	13600	20000	18400	17400	7750	12700
16	5590	6540	9000	8000	7400	9600	13200	19000	17400	16500	8560	11200
17	6210	6230	8600	6000	7400	10000	12700	19200	17000	15900	8650	10700
18	6290	6230	8400	6000	7000	10500	13600	21700	16800	16200	8560	10200
19	5840	6000	8400	7800	8200	15000	14800	24200	17100	16200	8490	9120
20	6010	5800	8400	7200	6600	23000	14700	25400	16600	16500	8450	8630
21	6120	5000	6600	7400	9000	23000	14500	26000	16200	15700	8930	8310
22	5580	5200	8200	8200	9600	22000	13900	26000	16000	14400	8910	8060
23	5510	5800	6800	8000	10000	20000	14600	25900	15800	13200	8840	8040
24	6040	6600	6200	7800	9600	22000	14300	30300	15200	12800	8610	8200
25	5930	9000	6200	7800	9500	30000	12900	27100	15300	12200	8680	8130
26	5760	9000	7000	7800	9400	66000	13700	25300	16100	11700	9600	8560
27	5670	9600	7300	7800	9000	54000	13400	24200	17200	11000	9870	8110
28	5700	10000	8000	7800	9000	46600	13600	22900	17300	10600	9480	7550
29	4980	10000	7800	7400	---	38300	14200	22100	16800	10200	9530	8020
30	5770	9000	7200	7000	---	36100	15400	21100	16600	9990	9190	8150
31	5830	---	6800	7200	---	33300	---	20300	---	10100	8840	---
TOTAL	164670	200700	219600	228000	234100	610600	464300	659200	557100	514490	280070	273260
MEAN	5312	6690	7084	7355	8361	19700	15480	21260	18570	16600	9035	9109
MAX	6290	10000	9000	8200	10000	66000	28800	30300	22400	22900	10900	13500
MIN	4070	5000	4500	5600	7400	8200	12700	15400	15200	9990	7750	7550
AC-FT	326600	398100	435600	452200	464300	1211000	920900	1308000	1105000	1020000	555500	542000
CAL YR 1977 TOTAL	2290560			6276	MAX 11100	MIN 3460	AC-FT 4543000					
WTR YR 1978 TOTAL	4406090		MEAN 12070	MAX 66000	MIN 4070	AC-FT 8739000						

MISSOURI RIVER MAIN STEM

06115200 MISSOURI RIVER NEAR LANDUSKY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED SEDIMENT DISCHARGE: July 1972 to current year.

REMARKS.--Prior to July 1972, sampling and record computations under supervision of Corps of Engineers, U.S. Army. Flow affected by ice during most of winter months. Flow mostly regulated by reservoirs and power-plants.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily, 27,400 mg/L June 22, 1976; minimum daily, 5 mg/L on several days during December 1971 and January 1972.

SEDIMENT LOADS: Maximum daily, 1,680,000 tons (1,520,000 tonnes) June 22, 1976; minimum daily, 82 tons (74 tonnes) Dec. 27, 1971.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily, 14,900 mg/L Sept. 14; minimum daily, 16 mg/L Nov. 18.

SEDIMENT LOADS: Maximum daily, 1,640,000 tons (1,490,000 tonnes) Mar. 26; minimum daily, 269 tons (244 tonnes) Nov. 18.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

			WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACU3)	HARD- NESS, NONCAR- BONATE (MG/L CACU3)	
DATE	TIME	STREAM- FLJA, INSTAN- TANEOUS (CFS)											
OCT													
12...	1200	4680	0	550	8.4	12.0	7.0	10	11.1	99	240	84	
NOV													
16...	1300	6590	1	500	8.4	7.0	3.5	8	11.9	98	220	61	
JAN													
18...	1500	8000	2	525	8.1	-10.0	.0	10	10.9	81	220	45	
FEB													
22...	1530	9600	1	490	8.0	6.5	.0	10	12.1	90	210	44	
MAR													
31...	1430	33800	1	835	7.9	10.0	8.5	2100	8.8	81	260	140	
APR													
26...	1315	13300	1	707	8.4	21.0	12.0	70	9.8	99	280	110	
MAY													
31...	1400	20400	2	555	8.3	12.0	14.0	110	9.5	100	220	71	
JUN													
28...	1345	17300	0	560	8.3	26.0	21.5	420	7.5	91	230	76	
JUL													
26...	1330	11700	0	515	8.6	28.5	23.5	50	7.8	100	200	63	
AUG													
23...	1315	8900	1	550	8.2	25.0	19.5	360	8.1	95	220	76	
SEP													
27...	1300	7970	1	530	8.6	17.0	15.0	15	8.9	95	210	50	
DATE		CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	PJTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT													
12...	54	24	25	.7	3.2	190	2	1.2	130	9.0	.8	8.2	
NOV													
16...	57	20	26	.6	3.3	200	0	1.3	93	9.2	.9	11	
JAN													
18...	54	20	26	.8	3.6	210	0	2.7	87	10	.9	17	
FEB													
22...	52	19	26	.8	3.7	200	0	3.2	83	10	.9	17	
MAR													
31...	60	26	80	2.2	4.7	140	0	2.8	300	6.9	.5	8.6	
APR													
26...	66	28	50	1.3	3.9	210	0	1.3	190	10	.7	13	
MAY													
31...	53	21	36	1.1	3.0	180	0	1.4	130	7.1	.7	11	
JUN													
28...	54	22	37	1.1	3.8	180	0	1.4	140	7.3	.8	11	
JUL													
26...	48	20	30	.9	3.1	170	0	.7	110	7.5	.7	5.6	
AUG													
23...	55	21	40	1.2	3.5	180	0	1.8	140	10	.8	9.4	
SEP													
27...	50	21	29	.9	3.0	180	8	.8	120	7.7	.7	9.7	

06115200 MISSOURI RIVER NEAR LANDUSKY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO ₂ +NO ₃ TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 12...	354	.48	4470	.01	.00	.34	.34	.35	.08	80	20
NOV 10...	319	.43	5680	.01	.02	.15	.17	.18	.02	110	20
JAN 18...	322	.44	6960	.25	.04	.01	.05	.30	.06	110	20
FEB 22...	310	.42	8040	.31	.02	.66	.68	.99	.05	100	10
MAR 31...	556	.76	50700	.50	.08	5.0	5.1	5.6	2.3	130	40
APR 26...	465	.63	16700	.25	.13	.62	.75	1.0	.10	120	30
MAY 31...	353	.48	19400	.13	.04	.64	.66	.81	.30	90	10
JUN 26...	365	.50	17000	.24	.04	1.6	1.6	1.8	.65	100	70
JUL 26...	309	.42	9760	.06	.01	.59	.60	.66	.12	90	20
AUG 23...	369	.50	8870	.08	.04	1.1	1.1	1.2	.35	100	230
SEP 27...	536	.46	7270	.01	.00	.43	.43	.44	.06	110	20

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	CUPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	CUPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)
OCT 12...	1200	13	10	10	5	20	10	10	1	570
JAN 18...	1500	15	15	2	1	10	10	3	3	610
MAR 31...	1430	20	2	2	3	70	0	150	3	110000
JUL 26...	1330	7	8	9	5	0	0	30	8	6000

DATE	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 12...	<100	10	20	10	.0	.0	0	0	10	20
JAN 18...	5	6	10	0	.6	.0	1	1	20	10
MAR 31...	85	2	2000	10	.0	.0	4	1	470	20
JUL 26...	61	29	160	0	.0	.0	1	0	50	0

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINE THAN .004 MM	SED. SUSP. FALL DIAM. % FINE THAN .016 MM	SED. SUSP. FALL DIAM. % FINE THAN .062 MM	SED. SUSP. FALL DIAM. % FINE THAN .125 MM	SED. SUSP. FALL DIAM. % FINE THAN .250 MM	SED. SUSP. FALL DIAM. % FINE THAN .500 MM
MAR, 1978											
28...	1815	--	46000	9180	1160000	47	68	92	99	100	--
31...	1430	8.5	33800	5500	502000	47	69	92	100	--	--
JUN 28...	1345	21.5	17300	1300	60700	47	65	82	95	100	--
AUG 23...	1315	19.5	8900	1040	25000	47	63	71	86	99	100

MISSOURI RIVER MAIN STEM

06115200 MISSOURI RIVER NEAR LANDUSKY, MT--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)	
	LOADS (T/DAY)		LOADS (T/DAY)		LOADS (T/DAY)		LOADS (T/DAY)		LOADS (T/DAY)		LOADS (T/DAY)	
OCTOBER												
1	194	2810	63	1010	175	3780	389	5880	469	9620	116	2740
2	201	2670	58	882	175	3310	322	5560	260	5490	98	2170
3	204	2580	54	803	177	3150	397	7070	155	3550	81	1840
4	198	2470	53	804	173	3080	434	7730	124	2680	73	1770
5	172	2090	58	864	154	2990	420	7480	134	2970	70	1800
6	153	1510	69	1090	128	2700	384	6840	157	3480	65	1840
7	103	1200	76	1190	102	1650	367	7110	177	3920	79	2450
8	78	927	81	1390	83	1120	405	7650	178	3940	118	3500
9	63	692	84	1490	70	850	411	7990	172	3810	167	4960
10	58	777	61	1430	59	796	392	7830	167	3610	223	6920
11	60	826	73	1500	78	1140	386	7710	172	3720	311	8820
12	63	879	62	1090	132	2070	426	8970	178	3840	500	14200
13	73	1030	50	803	276	4620	618	12700	178	3750	898	25500
14	91	1280	44	702	487	8680	866	17800	173	3640	1290	36600
15	117	1610	51	879	644	15600	1120	23000	163	3340	1530	41300
16	141	2130	62	1090	696	16900	1110	24000	148	2960	1610	41700
17	141	2360	48	807	670	15600	800	17300	150	2600	1760	47500
18	126	2140	16	269	615	13900	500	10800	117	2460	2180	61800
19	115	1810	17	275	547	12400	460	9690	114	2520	2300	93200
20	106	1720	31	485	480	10900	508	9880	115	2670	2200	137000
21	97	1600	51	688	430	9980	569	11600	113	2750	2270	141000
22	86	1300	68	955	359	7950	684	15100	98	2540	2560	152000
23	70	1040	77	1210	280	5140	752	16200	88	2390	2840	153000
24	49	799	82	1460	224	3750	780	16400	94	2440	5270	194000
25	39	624	90	2190	232	3880	780	16400	110	2820	5640	457000
26	43	669	125	3040	273	5160	779	16400	131	3320	9210	1640000
27	53	811	161	4170	325	6410	789	16600	140	3400	9810	1430000
28	64	965	172	4640	400	8640	813	17100	133	3230	9280	1170000
29	70	941	175	4720	540	11400	880	17600	---	---	6530	862000
30	70	1090	176	4280	658	12800	859	16200	---	---	7120	694000
31	67	1050	---	---	570	10500	691	13400	---	---	5690	512000
TOTAL	---	44420	---	46006	---	210846	---	385190	---	97240	---	7962610
APRIL												
1	5430	422000	2090	86900	1220	66200	3580	164000	615	18100	760	17600
2	4060	266000	1820	75700	1770	99900	4980	229000	1030	27600	736	17800
3	3360	200000	1580	67000	1230	71100	4270	220000	1040	24900	612	14500
4	6290	338000	1520	64400	1340	77800	12800	791000	841	20700	546	12400
5	3510	177000	1760	77900	860	48300	14500	877000	831	21600	700	15900
6	1570	74200	2470	113000	750	40300	14000	866000	899	23200	1180	25900
7	1630	70000	3600	187000	980	50800	7540	452000	378	22000	1620	37400
8	1590	63100	4180	230000	1370	72900	4520	271000	616	15300	2570	61000
9	1600	60900	2570	148000	2150	128000	5730	343000	640	17300	2150	46900
10	2200	79000	1730	99500	1140	66900	1760	96500	922	24500	1570	33700
11	2890	99900	1280	69300	1180	68500	2050	106000	768	18300	1070	22600
12	1980	69000	1120	60200	1510	86400	2070	107000	605	13700	2420	70600
13	1350	48800	630	34400	1370	77300	2050	108000	606	12800	9300	319000
14	1090	38000	810	44600	950	50300	1300	64600	663	13900	14900	543000
15	940	34500	710	38300	1280	63600	1630	76600	681	14200	10100	346000
16	850	30300	780	40000	1380	64800	2070	92200	604	14000	4000	121000
17	1430	49000	1350	70000	970	44500	2480	106000	570	13300	1440	41600
18	3790	141000	3030	178000	920	41700	2720	119000	646	14900	1010	27800
19	4620	185000	3380	221000	2930	135000	3080	135000	746	17100	862	21200
20	2050	81400	3240	222000	4400	197000	3440	153000	797	18200	695	16200
21	1000	38600	2480	174000	4950	217000	1650	64900	741	17900	593	13300
22	1030	38700	2270	159000	4990	216000	730	16800	689	16800	519	11300
23	1090	43000	2450	171000	2280	97300	712	25400	883	21100	429	9310
24	970	37500	5120	415000	700	28700	645	22300	582	13500	430	9520
25	770	26800	5260	385000	2660	110000	492	16200	447	10500	571	12500
26	780	28900	2270	155000	4080	177000	390	12300	520	13500	626	14500
27	1590	57500	2070	135000	2790	130000	462	14300	736	19600	500	10900
28	1750	64300	2280	141000	1380	64500	593	17000	750	19200	371	7560
29	1830	70200	1790	107000	1030	46700	619	17000	726	18700	889	19300
30	2030	84400	1530	87200	975	43700	608	16400	727	18000	923	20300
31	---	---	1200	65800	---	---	558	15200	738	17600	---	---
TOTAL	---	3017000	---	4122700	---	2684500	---	5631300	---	551800	---	1940590
TOTAL LOAD FOR YEAR: 26695202 TONS.												

06115200 MISSOURI RIVER MEAR LANDUSKY, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM
OCT 12...	1200	36	79	94	100	--	--	--	--
APR 26...	1315	9	38	49	80	90	95	98	100
MAY 31...	1400	57	92	99	100	--	--	--	--
JUN 20...	1345	94	99	100	--	--	--	--	--
JUL 26...	1330	64	98	99	100	--	--	--	--
AUG 23...	1315	2	59	99	100	--	--	--	--
SEP 27...	1300	1	45	100	--	--	--	--	--

MUSSELSHELL RIVER BASIN

06115500 NORTH FORK MUSSELSHELL RIVER NEAR DELPINE, MT

LOCATION.--Lat 46°36'36", long 110°34'30", in SW¼SE¼ sec.22, T.10 N., R.9 E., Meagher County, Hydrologic Unit 10040201, on right bank 0.5 mi (0.8 km) upstream from high-water line of Bair Reservoir at elevation 5,330 ft (1,630 m), 3 mi (5 km) downstream from Lion Creek, and 4 mi (6 km) northwest of Delpine.

DRAINAGE AREA.--31.4 mi² (81.3 km²).

PERIOD OF RECORD.--May 1940 to current year. Seasonal record since 1977 water year.

REVISED RECORDS.--WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 5,380 ft (1,640 m), by barometer.

REMARKS.--Records good. Small diversions for irrigation of hay meadows above station.

AVERAGE DISCHARGE.--36 years (1940-76), 12.2 ft³/s (0.346 m³/s), 8,840 acre-ft/yr (10.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 423 ft³/s (12.0 m³/s) Apr. 1, 1950, gage height, 4.63 ft (1.411 m), from rating curve extended above 150 ft³/s (4.25 m³/s); minimum, 1.6 ft³/s (0.045 m³/s) Aug. 16, 1941, gage height, 0.32 ft (0.098 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50 ft³/s (1.42 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 11	1615	67 1.90	1.74 0.530	May 1	0430	61 1.73	1.69 0.515
Apr. 16	2215	*69 1.95	*1.76 0.536	May 18	0945	62 1.76	1.71 0.521

Minimum daily discharge, 2.6 ft³/s (0.074 m³/s) Oct. 4, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4						39	57	47	23	18	11
2	5.0						40	54	46	24	19	10
3	2.9						40	54	45	23	18	9.9
4	2.8						39	55	44	30	18	10
5	2.8						37	53	44	29	18	10
6	3.9						34	52	44	27	18	12
7	7.0						32	50	45	26	16	12
8	7.2						35	47	45	26	10	12
9	7.0						41	43	46	25	9.7	10
10	7.0						44	46	46	24	10	10
11	6.8						58	44	47	24	11	13
12	7.0						43	41	44	24	11	13
13	7.0						36	42	44	23	11	11
14	7.0						36	43	44	23	11	11
15	6.8						40	44	43	23	11	10
16	6.8						54	49	41	22	11	9.8
17	6.8						47	58	39	22	12	9.9
18	6.8						38	58	39	22	11	10
19	7.0						37	48	41	21	13	11
20	7.0						38	47	38	21	13	10
21	6.8						44	47	37	21	12	9.9
22	6.8						36	48	36	20	12	9.6
23	6.8						34	50	31	20	12	9.7
24	6.8						33	51	26	20	11	9.5
25	7.2						35	51	30	19	11	9.4
26	6.5						44	51	27	19	11	9.3
27	7.4						46	49	24	21	12	9.3
28	7.0						47	48	23	21	11	9.2
29	7.0						51	49	23	20	11	9.4
30	6.6						54	47	23	19	11	9.2
31	6.8						---	48	---	19	11	---
TOTAL	195.9						1232	1524	1152	701	394.7	310.1
MEAN	6.25						41.1	49.2	38.4	22.6	12.7	10.3
MAX	8.5						58	58	47	30	19	13
MIN	2.8						32	41	23	19	9.7	9.2
AC-FT	385						2440	3020	2280	1390	783	615

06118500 SOUTH FORK MUSSELSHELL RIVER ABOVE MARTINSDALE, MT

LOCATION.--Lat 46°27'21", long 110°22'54", in NW¼ sec.17, T.8 N., R.11 E., Meagher County, Hydrologic Unit 10040201, on left bank 2 mi (3 km) downstream from Cottonwood Creek, 3 mi (5 km) west of Martinsdale, and 6 mi (10 km) upstream from confluence with North Fork.

DRAINAGE AREA.--287 mi² (743 km²).

PERIOD OF RECORD.--October 1941 to current year. Monthly discharge only November 1941 to May 1942, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1942(M), 1944(M). WSP 1729: Drainage area. WRD MT-75-1: 1948, 1964(M), 1967.

GAGE.--Water-stage recorder. Altitude of gage is 4,900 ft (1,490 m), by barometer. Prior to May 15, 1942, non-recording gage at same site and datum.

REMARKS.--Records good except those for winter period which are poor. Diversions for irrigation of about 6,600 acres (26.7 km²) of which 250 acres (1.01 km²) is below station.

AVERAGE DISCHARGE.--37 years, 89.7 ft³/s (2.540 m³/s), 64,990 acre-ft³/yr (80.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,240 ft³/s (148 m³/s) June 19, 1975, gage height, 7.27 ft (2.216 m); minimum, 0.1 ft³/s (0.003 m³/s) Aug. 28 to Sept. 2, 1949, Mar. 29, 1950.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 480 ft³/s (13.6 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
May 16	1045	*1,100	31.2	*5.84	1.780	June 26	0530	759	21.5	5.14	1.567
May 24	1430	1,050	29.7	5.78	1.762	July 5	0100	575	16.3	4.67	1.423
June 8	0700	789	22.3	5.21	1.588						

Minimum discharge, 14 ft³/s (0.40 m³/s) Nov. 16, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	24	28	18	18	15	364	407	561	350	64	32
2	33	23	28	17	18	15	260	480	499	320	64	31
3	29	22	30	18	19	16	203	466	462	303	62	31
4	29	21	31	20	19	20	170	424	489	466	59	28
5	26	22	25	21	19	27	170	366	550	493	55	28
6	27	25	22	22	19	33	158	445	663	461	51	36
7	27	24	20	22	19	28	147	455	757	384	46	42
8	29	20	20	22	18	19	131	438	770	349	44	51
9	29	27	20	22	17	19	141	417	743	331	44	36
10	28	20	21	21	17	20	131	466	744	321	41	33
11	27	22	22	21	17	21	170	586	646	333	40	43
12	27	22	23	21	17	22	179	572	506	275	38	64
13	27	22	24	20	18	24	147	494	437	231	40	55
14	27	22	26	19	18	25	147	539	479	202	41	44
15	27	21	28	19	19	25	161	776	543	182	38	41
16	27	19	30	19	19	25	189	1040	490	173	37	40
17	26	18	28	18	20	25	210	967	426	168	43	40
18	25	17	25	17	20	60	164	952	390	159	43	46
19	25	16	23	17	21	176	150	893	447	162	39	50
20	25	16	22	17	21	167	167	752	426	159	37	51
21	26	16	22	17	21	179	199	744	379	158	36	53
22	26	18	22	17	21	147	189	833	395	140	35	57
23	24	19	22	18	19	81	155	948	372	128	34	58
24	22	22	22	18	18	70	139	1030	356	115	32	67
25	22	31	22	18	19	70	158	978	479	109	30	74
26	23	34	22	18	19	93	221	636	640	96	30	77
27	24	26	22	18	17	133	295	713	460	87	34	76
28	25	25	22	18	16	167	304	646	406	80	35	76
29	24	25	22	18	---	189	340	683	382	78	34	75
30	25	27	21	17	---	228	364	670	371	73	33	71
31	26	---	36	17	---	308	---	588	---	66	33	---
TOTAL	826	666	751	585	523	2467	5923	20624	15268	6952	1292	1506
MEAN	26.6	22.2	24.2	18.9	18.7	79.6	197	665	509	224	41.7	50.2
MAX	37	34	36	22	21	308	364	1040	770	493	64	77
MIN	22	16	20	17	16	15	131	386	356	66	30	28
AC-FT	1640	1320	1490	1160	1040	4890	11750	40910	30280	13790	2560	2990
CAL YR 1977	TOTAL	19878	MEAN	54.5	MAX	345	MIN	13	AC-FT	39430		
WIR YR 1978	TOTAL	57383	MEAN	157	MAX	1040	MIN	15	AC-FT	113800		

MUSSELSHELL RIVER BASIN

06120500 MUSSELSHELL RIVER AT HARLOWTON, MT

LOCATION.--Lat 46°25'48", long 109°50'24", in NE¼ sec.28, T.8 N., R.15 E., Wheatland County, Hydrologic Unit 10040201, on left bank 350 ft (107 m) downstream from bridge on U.S. Highway 191, 1 mi (2 km) southwest of Harlowton, and 6 mi (10 km) upstream from American Fork.

DRAINAGE AREA.--1,125 mi² (2,914 km²).

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. Altitude of gage is 4,160 ft (1,270 m), by barometer. Prior to Dec. 8, 1937, non-recording gages at site 1.2 mi (1.9 km) downstream at different datums. Dec. 8, 1937, to Aug. 26, 1955, non-recording gage at bridge 300 ft (90 m) upstream at different datums.

REMARKS.--Records good except those for winter period, which are poor. Some regulation by Bair and Martinsdale Reservoirs. Diversions for irrigation of about 37,000 acres (150 km²) above station, of which about 2,300 acres (9.31 km²) is flood irrigated.

AVERAGE DISCHARGE.--68 years (1907-29, 1930-32, 1934-78), 164 ft³/s (4.644 m³/s) 118,800 acre-ft/yr (146 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 7,270 ft³/s (206 m³/s) June 20, 1975, gage height, 10.01 ft (3.051 m); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,760 ft³/s (49.8 m³/s) May 24, gage height, 5.90 ft (1.798 m); minimum discharge, 42 ft³/s (1.19 m³/s) Nov. 9, gage height, 2.03 ft (0.619 m), result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	117	65	106	70	68	74	719	700	1000	523	114	130
2	101	65	108	68	68	72	719	765	860	543	128	128
3	88	61	106	66	68	70	557	819	760	458	124	127
4	68	62	98	64	65	68	426	825	690	524	102	124
5	58	61	85	62	66	66	362	765	724	735	100	128
6	58	66	73	62	68	66	333	819	791	760	95	130
7	60	67	60	63	68	66	312	900	905	690	84	145
8	61	61	52	64	69	66	296	866	1060	596	72	173
9	68	55	50	65	70	70	266	797	1070	601	71	140
10	74	61	50	64	70	74	266	729	1060	552	66	126
11	74	67	52	64	69	80	251	802	1020	581	67	152
12	70	63	56	64	69	89	286	929	854	533	68	192
13	69	63	76	63	69	103	292	917	611	454	78	189
14	66	62	86	62	69	125	257	819	547	382	93	210
15	63	60	92	62	70	150	257	871	616	333	106	201
16	59	54	92	62	70	175	288	1100	647	289	110	186
17	57	53	92	62	71	235	344	1390	557	292	124	185
18	55	52	90	63	72	438	352	1480	462	276	137	204
19	54	51	86	64	72	685	302	1450	454	309	109	176
20	56	52	83	64	71	854	285	1430	552	323	97	135
21	56	54	81	65	71	995	285	1280	492	354	97	121
22	57	56	78	66	72	983	337	1250	450	311	91	114
23	55	64	75	67	73	506	309	1350	434	279	105	112
24	54	70	72	68	74	348	269	1560	415	251	107	96
25	54	79	70	68	76	312	254	1690	606	236	104	107
26	54	86	70	68	76	400	285	1650	1040	204	102	109
27	56	90	70	68	76	538	393	1370	952	182	105	112
28	56	96	70	68	75	611	479	1140	695	168	116	114
29	49	100	70	68	---	641	519	1060	596	150	116	121
30	51	104	70	68	---	671	596	1130	552	133	114	135
31	61	---	70	68	---	641	---	1050	---	121	118	---
TOTAL	1979	1996	2393	2020	1980	10270	10900	33643	21472	12148	5122	4322
MEAN	63.8	66.5	77.2	65.2	70.7	331	363	1085	716	392	101	144
MAX	117	104	108	70	76	995	719	1690	1070	760	137	210
MIN	49	51	50	62	68	66	251	700	415	121	66	96
AC-FT	3930	3960	4750	4010	3930	20370	21620	66730	42590	24100	6190	6570
CAL YR 1977	TOTAL	30474	MEAN	83.5	MAX	246	MIN	32	AC-FT	60450		
WTR YR 1978	TOTAL	106245	MEAN	291	MAX	1690	MIN	49	AC-FT	210700		

06123500 MUSSELSHELL RIVER NEAR RYEGATE, MT

LOCATION.--Lat 46°18'02", long 109°12'20", in center of S½ sec.3, T.6 N., R.20 E., Golden Valley County, Hydrologic Unit 10040201, on downstream side of county bridge 2 mi (3 km) upstream from Careless Creek and 2 mi (3 km) east of Ryegate.

DRAINAGE AREA.--1,979 mi² (5,126 km²).

PERIOD OF RECORD.--July 1946 to current year. Monthly discharge only for July 1946, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Nonrecording and crest-stage gages. Altitude of gage is 3,600 ft (1,100 m), from topographic map. Prior to June 23, 1967, water-stage recorder at site 1 mi (2 km) downstream at different datum.

REMARKS.--Some regulation by Bair and Martinsdale Reservoirs. Water is diverted on left bank in sec.8, T.7 N., R.17 E., for storage in Deadman's Basin Reservoir, and can be returned to the stream by canal at a point about 9 mi (14 km) above station or through Careless Creek 2 mi (3 km) below station. Diversions for irrigation of about 45,000 acres (182 km²) above station, of which 2,700 acres (10.9 km²) is flood irrigated.

AVERAGE DISCHARGE.--32 years, 184 ft³/s (5.211 m³/s), 133,300 acre-ft/yr (164 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,500 ft³/s (269 m³/s) June 16, 1967, gage height, 11.8 ft (3.60 m), from floodmark at site and datum then in use; maximum gage height, 12.3 ft (3.75 m) June 21, 1975, from floodmark; no flow Aug. 17-28, 1946.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,720 ft³/s (105 m³/s) Mar. 22, gage height, 8.19 ft (2.496 m); minimum daily, 14 ft³/s (0.40 m³/s) Oct. 22-25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	16	37	43	39	45	684	239	940	701	285	135
2	23	17	39	42	40	42	646	425	805	625	243	145
3	23	15	40	42	40	40	590	480	646	620	195	149
4	19	16	41	41	40	39	811	520	600	695	153	149
5	19	18	40	41	40	40	361	580	590	756	131	149
6	18	20	36	40	39	42	206	615	657	850	121	149
7	18	22	32	40	39	44	191	673	878	800	121	157
8	19	18	29	40	38	46	171	706	1050	745	121	149
9	22	21	28	40	38	50	153	822	1190	717	145	138
10	22	23	28	40	37	52	135	866	1310	695	138	160
11	22	63	29	40	38	57	135	866	1210	684	128	179
12	19	64	32	40	38	62	121	890	1130	630	116	239
13	19	66	37	40	38	67	124	1030	976	610	118	210
14	19	48	48	39	39	72	118	962	734	580	121	214
15	18	27	57	39	39	74	118	860	728	535	145	195
16	18	22	58	39	40	74	118	816	778	465	164	157
17	18	24	56	39	41	72	118	948	723	548	157	160
18	19	26	54	39	42	82	118	1380	668	346	145	168
19	16	26	52	38	44	200	121	1630	610	346	149	168
20	16	25	50	38	46	600	121	1610	640	367	157	160
21	16	24	50	38	48	2300	114	1390	640	367	157	164
22	14	24	49	38	50	3350	107	1230	595	362	145	145
23	14	24	48	38	51	2470	107	1200	540	415	164	128
24	14	25	48	38	51	1730	101	1300	540	395	160	116
25	14	27	48	38	50	1190	104	1450	575	381	149	90
26	15	29	47	38	50	1060	98	1580	805	367	131	90
27	15	31	47	38	49	1170	104	1410	1260	298	142	90
28	15	33	47	38	47	1060	153	1240	1090	298	142	90
29	17	35	46	37	---	811	179	1050	778	289	142	93
30	15	36	45	37	---	723	168	1050	728	289	131	96
31	16	---	44	38	---	679	---	1110	---	285	131	---
TOTAL	547	885	1342	1216	1191	18343	6415	50928	24464	15875	4649	4434
MEAN	17.6	29.5	43.3	39.2	42.5	592	214	998	815	512	150	148
MAX	23	64	58	43	51	3350	811	1630	1310	860	285	239
MIN	14	15	28	37	37	39	98	239	540	285	118	90
AC-FT	1080	1760	2660	2410	2360	36380	12720	61350	48520	31490	9220	8790
CAL YR 1977	TOTAL	26050	MEAN	71.4	MAX	171	MIN	14	AC-FT	51670		
WTR YR 1978	TOTAL	110289	MEAN	302	MAX	3350	MIN	14	AC-FT	218800		

MUSSELSHELL RIVER BASIN

06126450 REHDER CREEK NEAR KLEIN, MT

LOCATION.--Lat 46°18'41", long 108°29'03", in NE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.33, T.7 N., R.26 E., Musselshell County,
Hydrologic Unit 10040202, 100 ft (30.5 m) upstream from mouth and 6.5 mi (10.5 km) southeast of Klein.

DRAINAGE AREA.--23.1 mi² (59.8 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

REMARKS.--Flow not present during station visits.

YELLOWSTONE RIVER BASIN

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06126470 HALFBREED CREEK NEAR KLEIN, MT

LOCATION.--Lat 46°23'14", long 108°32'29", in SW¼NE¼SW¼ sec.1, T.7 N., R.25 E., Musselshell County, Hydrologic Unit 10040201, on left bank, 800 ft (240 m) upstream from private road bridge, 3.2 mi (5.2 km) upstream from mouth, and 4.1 mi (6.6 km) south of Roundup.

DRAINAGE AREA.--53.2 mi² (137.8 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to September 1978.

GAGE.--Water-stage recorder. Altitude of gage is 3,330 ft (1,010 m), from topographic map.

REMARKS.--Water-discharge records fair except those for Oct. 1 to June 7, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 345 ft³/s (9.77 m³/s) May 23, 1978, gage height, 7.91 ft (2.411 m), from floodmark, from rating curve extended above 6.2 ft³/s (0.18 m³/s) on basis of slope-area measurement of peak flow; minimum daily, 0.35 ft³/s (0.010 m³/s) Dec. 8, 9, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 345 ft³/s (9.77 m³/s) May 23, gage height, 7.91 ft (2.411 m), from floodmark, from rating curve extended above 6.2 ft³/s (0.18 m³/s) on basis of slope-area measurement of peak flow; minimum daily, 0.35 ft³/s (0.010 m³/s) Dec. 8, 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	.80	.95	.45	.80	.95	1.4	1.2	4.1	1.2	1.3	.74
2	1.1	.74	.95	.50	.85	.95	1.4	1.2	2.6	1.1	1.5	.74
3	1.1	.68	.90	.60	.90	.90	1.3	1.2	2.3	1.2	1.3	.68
4	1.1	.74	.60	.60	1.1	.90	1.2	1.2	2.3	1.4	1.2	1.0
5	1.1	.74	.50	.80	1.1	1.1	1.2	2.7	2.0	1.5	1.0	.74
6	1.2	.74	.40	.90	1.1	1.1	1.2	2.1	4.5	1.3	.93	.68
7	1.3	.74	.40	.90	1.1	1.2	1.2	2.1	2.9	1.3	.93	.68
8	1.3	.74	.35	.80	.95	1.3	1.2	1.9	2.6	2.0	1.0	.63
9	3.0	.80	.35	.80	.90	1.3	1.1	1.2	2.3	1.8	.74	.63
10	.70	.93	.50	.80	.90	1.3	1.0	1.4	2.3	1.3	.80	.68
11	.70	.93	.70	.85	.90	1.3	.86	1.4	2.3	1.2	.80	1.2
12	.70	.80	.93	.85	.85	1.4	.86	1.2	1.8	1.2	.74	6.2
13	.70	.80	1.1	.80	.80	1.5	.80	1.2	1.9	1.1	.80	4.3
14	.70	.80	1.2	.80	.80	1.5	.86	1.1	1.6	1.1	.86	1.6
15	.70	.86	1.4	.80	.80	1.5	.86	1.1	1.5	1.1	.86	1.3
16	.80	.86	1.6	.80	.80	1.6	1.0	.86	1.3	1.0	1.2	.86
17	.80	.80	1.1	.80	.90	1.7	1.0	2.6	1.3	1.1	1.2	1.0
18	.80	.75	1.1	.80	1.0	2.0	.93	6.7	1.3	2.7	.93	2.7
19	.70	.70	1.1	.80	1.3	2.4	.93	2.4	1.2	2.0	.86	4.1
20	.63	.60	.93	.80	2.0	2.4	.93	1.9	1.1	1.5	.93	1.5
21	.68	.40	.93	.95	1.5	2.4	.93	1.4	1.1	1.5	1.1	1.2
22	.74	.40	.88	1.0	1.0	2.3	1.0	1.4	1.2	1.3	.80	1.1
23	.74	.45	.88	1.0	1.0	2.3	.93	24	1.3	1.2	.93	1.0
24	.68	.55	.80	1.0	.95	2.4	.86	66	1.2	1.2	.86	.93
25	.68	.70	.70	.84	.95	2.6	.86	3.7	1.9	1.1	1.3	.93
26	.68	.90	.80	.80	.95	2.1	.86	2.3	2.7	.93	.93	.93
27	.68	1.0	.80	.80	.95	1.9	.93	2.3	1.6	.93	.93	.93
28	.74	1.0	.80	.80	.95	1.6	6.7	2.3	1.2	1.0	1.1	.93
29	.74	.85	.78	.80	---	1.6	2.4	2.3	1.2	1.1	1.1	.93
30	.80	.95	.70	.80	---	1.6	1.6	2.3	1.2	1.3	.86	1.0
31	.80	---	.60	.80	---	1.5	---	6.5	---	1.2	.80	---
TOTAL	28.59	22.75	25.73	24.84	28.10	50.60	38.30	151.16	57.8	40.86	30.59	41.84
MEAN	.92	.76	.83	.80	1.00	1.63	1.28	4.88	1.93	1.32	.99	1.39
MAX	3.0	1.0	1.6	1.0	2.0	2.6	6.7	66	4.5	2.7	1.5	6.2
MIN	.63	.40	.35	.45	.80	.90	.80	.86	1.1	.93	.74	.63
AC-FT	57	45	51	49	56	100	76	300	115	81	61	83

WTR YR 1978 TOTAL 541.16 MEAN 1.48 MAX 66 MIN .35 AC-FT 1070

MUSSELSHELL RIVER BASIN

06126470 HALF BREED CREEK NEAR KLEIN, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTJ)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
18...	0930	.82	1	1380	8.1	13.0	4.0	4	9.5	82
19...	1830	--	--	--	--	--	--	--	--	--
NOV										
23...	1300	.44	2	1630	8.0	-10.0	.5	8	9.4	73
DEC										
12...	1130	.92	0	1560	8.1	4.0	1.0	6	10.3	82
JAN										
25...	1100	.94	70	1470	8.0	-10.0	.0	6	10.9	84
FEB										
16...	1400	.80	0	1450	8.1	-5.0	.5	4	10.9	85
MAR										
27...	1630	1.9	1	1810	8.4	17.0	16.5	3	9.0	103
APR										
19...	1400	.95	2	1570	8.3	14.0	10.5	3	11.6	117
MAY										
16...	1700	.92	2	1640	8.4	15.0	16.5	2	9.4	108
JUN										
15...	1400	1.5	1	1850	8.4	20.0	18.5	2	10.5	127
29...	1340	1.5	1	1780	8.3	31.0	21.0	2	8.1	103
JUL										
13...	1445	1.6	1	1680	8.4	28.5	22.5	2	10.4	135
AUG										
16...	1130	1.3	1	1750	8.0	20.5	15.5	7	7.5	84
SEP										
26...	1330	.92	1	1730	8.3	17.0	15.0	2	11.3	125

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT										
18...	--	570	150	75	93	120	2.2	7.6	510	0
19...	1.0	--	--	--	--	--	--	--	--	--
NOV										
23...	1.3	630	120	87	100	160	2.8	9.3	620	0
DEC										
12...	.8	610	130	79	100	150	2.6	9.0	590	0
JAN										
25...	.6	580	140	79	93	140	2.5	7.3	540	0
FEB										
16...	.4	540	100	79	82	140	2.6	7.1	530	0
MAR										
27...	1.6	560	96	68	95	160	2.9	8.2	550	8
APR										
19...	1.0	580	120	73	96	170	3.1	7.7	560	0
MAY										
16...	1.9	590	85	73	100	170	3.0	8.1	600	10
JUN										
15...	3.8	680	120	89	110	210	3.5	8.2	650	15
29...	1.7	610	73	81	100	200	3.5	8.3	660	0
JUL										
13...	1.6	650	70	79	110	200	3.4	7.6	640	33
AUG										
16...	.8	590	63	74	98	180	3.2	7.5	640	0
SEP										
26...	1.1	610	87	82	99	200	3.5	8.2	640	0

MUSSELSHELL RIVER BASIN

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06126470 HALF BREED CREEK NEAR KLEIN, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ALKA- LITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLD- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT										
18...	420	6.5	370	11	.2	9.9	938	1.28	2.08	.40
19...	--	--	--	--	--	--	--	--	--	--
NOV										
23...	510	9.9	430	14	.3	15	1120	1.52	1.33	1.1
DEC										
12...	480	7.5	400	12	.2	15	1060	1.44	2.63	.99
JAN										
25...	440	8.6	400	18	.2	15	1020	1.39	2.59	1.2
FEB										
16...	430	6.7	380	13	.2	15	978	1.33	2.11	1.2
MAR										
27...	460	3.6	410	10	.2	7.9	1040	1.41	5.34	.33
APR										
19...	460	4.5	430	13	.2	5.6	1070	1.46	2.74	.25
MAY										
16...	510	4.0	460	11	.3	6.7	1140	1.55	2.83	.02
JUN										
15...	560	4.3	550	12	.3	8.4	1320	1.80	5.35	.15
29...	540	5.3	500	23	.2	13	1250	1.70	5.06	.18
JUL										
13...	580	4.5	450	13	.3	12	1220	1.66	5.27	.05
AUG										
16...	530	10	470	12	.4	11	1170	1.59	4.11	.33
SEP										
26...	530	5.1	520	13	.2	10	1250	1.70	3.10	.36

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDEED TOTAL (MG/L AS C)
OCT									
18...	.00	.25	.25	.65	.01	90	20	--	--
19...	--	--	--	--	--	--	--	--	--
NOV									
23...	.07	.41	.48	1.6	.02	110	40	--	--
DEC									
12...	.21	.31	.52	1.5	.02	100	70	--	--
JAN									
25...	.12	.61	.73	1.9	.02	90	30	--	--
FEB									
16...	.20	--	--	--	.01	80	20	--	--
MAR									
27...	.05	.53	.58	.91	.05	110	150	--	--
APR									
19...	.01	.49	.50	.75	.04	110	60	--	--
MAY									
16...	.05	.50	.55	.57	.07	130	90	--	--
JUN									
15...	.06	.83	.89	1.0	.02	160	150	--	--
29...	.04	.91	.95	1.1	.07	160	110	10	.5
JUL									
13...	.03	.80	.83	.88	.04	140	190	--	--
AUG									
16...	.05	1.2	1.2	1.5	.05	140	100	--	--
SEP									
26...	.01	.59	.60	.96	.03	140	50	7.3	.2

MUSSELSHELL RIVER BASIN

06126470 HALF BREED CREEK NEAR KLEIN, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 18...	0930	0	2	0	3	0	2	23
JAN 25...	1100	0	1	0	1	0	0	3
MAR 27...	1630	40	4	0	1	10	2	0
JUL 13...	1445	0	4	0	1	0	2	12

	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MD)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 18...	20	40	.0	2	1	1	.2	10
JAN 25...	20	50	.0	1	0	2	.0	10
MAR 27...	30	50	.0	1	0	4	.0	10
JUL 13...	20	70	.0	5	2	1	.0	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 18...	0930	4.0	.82	26	.06	75
NOV 23...	1300	.5	.44	36	.04	77
DEC 12...	1130	1.0	.92	55	.14	--
JAN 25...	1100	.0	.94	80	.20	87
FEB 16...	1400	.5	.80	22	.05	--
MAR 27...	1630	16.5	1.9	12	.06	--
APR 19...	1400	10.5	.95	14	.04	--
MAY 16...	1700	16.5	.92	8	.02	--
JUN 15...	1400	18.5	1.5	46	.19	--
JUN 29...	1340	21.0	1.5	42	.17	--
JUL 13...	1445	22.5	1.6	61	.26	--
AUG 16...	1130	15.5	1.3	46.	.16	--
SEP 26...	1330	15.0	.92	16	.04	--

06126500 MUSSELSHELL RIVER NEAR ROUNDUP, MT

LOCATION.--Lat 46°25'48", long 108°34'18", in SE¼ sec.22, T.8 N., R.25 E., Musselshell County, Hydrologic Unit 10040202, on left bank just downstream from Half Breed Creek, 0.1 mi (0.2 km) upstream from bridge on U.S. Highway 87, and 2.5 mi (4.0 km) west of Roundup.

DRAINAGE AREA.--4,023 mi² (10,420 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1946 to current year. Monthly discharge only for 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 3,188.22 ft (971.769 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 26, 1949, nonrecording gage at present site and datum.

REMARKS.--Water-discharge records poor. Some regulation by Bair, Martinsdale, and Deadman's Basin Reservoirs (see p.610-611). Diversions for irrigation of about 59,600 acres (241 km²) above station, of which about 11,000 acres (44.5 km²) is flood irrigated.

AVERAGE DISCHARGE.--32 years, 221 ft³/s (6.259 m³/s), 160,100 acre-ft/yr (197 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,610 ft³/s (272 m³/s) June 18, 1967, gage height, 12.45 ft (3.795 m); maximum gage height, 12.89 ft (3.929 m) June 22, 1975 (confinement by flood levee); minimum discharge, 0.60 ft³/s (0.017 m³/s) May 12, 1962, gage height, 0.63 ft (0.192 m); minimum gage height, 0.23 ft (0.070 m) July 31, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,520 ft³/s (213 m³/s) Mar. 23, gage height, 12.50 ft (3.810 m); minimum daily, 18 ft³/s (0.51 m³/s) Nov. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	25	45	52	64	66	1460	491	1200	903	367	229
2	31	24	45	52	64	63	1430	578	1130	865	362	227
3	42	24	45	52	64	64	1240	669	1070	843	350	238
4	39	23	40	52	64	64	985	713	926	977	346	240
5	37	24	35	52	66	66	814	709	832	1130	323	232
6	27	25	32	52	68	69	703	750	825	1120	301	236
7	26	26	30	52	70	72	603	814	869	1130	274	250
8	28	28	30	52	70	74	551	892	1000	1100	248	272
9	25	39	32	53	69	78	502	911	1100	1040	227	250
10	26	31	39	53	67	82	458	1010	1200	1010	263	276
11	26	28	50	54	65	80	427	973	1200	934	242	254
12	26	39	60	54	63	78	396	957	1200	899	229	301
13	26	60	64	55	61	80	367	1030	1140	903	210	336
14	28	83	66	55	60	85	343	1090	989	821	216	343
15	27	61	66	56	58	92	332	1050	869	719	221	301
16	27	46	64	56	58	100	314	930	858	634	232	274
17	27	30	62	56	60	110	330	854	895	587	244	252
18	27	25	61	56	62	130	303	1200	862	554	259	261
19	26	20	60	58	65	350	301	1630	807	537	261	270
20	25	19	58	58	68	900	305	1650	771	551	265	274
21	24	18	58	59	71	2000	301	1550	789	563	270	261
22	23	22	57	60	76	6240	295	1450	792	584	246	223
23	29	28	56	62	79	6810	288	1370	743	581	257	200
24	26	33	54	63	80	3660	284	1490	709	528	272	193
25	26	35	53	64	79	2610	276	1460	706	472	265	179
26	26	40	52	65	76	2890	270	1530	792	404	254	167
27	26	45	51	66	74	3580	270	1560	1050	376	254	162
28	24	48	51	66	70	3110	321	1460	1250	362	259	163
29	25	50	51	66	---	2470	396	1280	1120	401	256	160
30	27	50	51	65	---	1950	466	1150	981	414	232	153
31	31	---	52	64	---	1690	---	1180	---	391	229	---
TOTAL	860	1069	1570	1780	1891	39713	15331	34381	28675	22333	8234	7177
MEAN	27.7	35.6	50.6	57.4	67.5	1281	511	1109	956	720	266	239
MAX	42	83	66	66	80	6810	1460	1650	1250	1130	367	343
MIN	23	18	30	52	58	63	270	491	706	362	210	153
AC-FT	1710	2120	3110	3530	3750	78770	30410	68190	56880	44300	16330	14240
CAL YR 1977	TOTAL	34912.7	MEAN	95.7	MAX	621	MIN	3.8	AC-FT	69250		
WTR YR 1978	TOTAL	163014.0	MEAN	447	MAX	6810	MIN	18	AC-FT	323300		

MUSSELSHELL RIVER BASIN

06126500 MUSSELSHELL RIVER NEAR ROUNDUP, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
18...	1230	26	1	2180	8.2	22.0	9.0	2	10.5	102
NOV										
23...	1100	28	1	2350	8.1	-7.0	.0	2	12.2	94
DEC										
12...	1300	59	1	2340	8.2	4.0	.0	3	11.5	88
JAN										
25...	1315	65	70	1950	7.8	-10.0	.0	2	11.7	90
FEB										
16...	1200	58	0	1850	7.9	-5.0	.0	3	10.9	84
MAR										
22...	1200	6200	2	530	7.9	7.0	1.0	--	10.8	86
24...	1000	3520	1	817	8.0	10.0	2.0	900	11.1	90
APR										
19...	1200	300	2	1850	8.4	16.0	9.0	45	10.1	99
MAY										
16...	1445	946	2	900	8.3	17.5	18.0	90	8.0	95
JUN										
16...	1230	858	1	940	8.5	20.0	17.0	60	8.9	103
JUL										
13...	1200	906	0	970	8.4	26.0	21.5	55	7.9	100
AUG										
16...	1430	219	61	1420	8.4	19.0	19.5	20	8.3	102
SEP										
13...	1000	341	1	1440	8.4	9.5	10.0	35	9.8	98

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT									
18...	1.6	710	430	120	100	260	4.2	5.1	340
NOV									
23...	1.0	830	470	150	110	280	4.2	4.9	440
DEC									
12...	.2	830	500	150	110	280	4.2	5.4	400
JAN									
25...	.4	730	400	140	93	200	3.2	3.9	400
FEB									
16...	.4	710	450	130	94	120	2.0	3.9	320
MAR									
22...	5.9	--	--	--	--	--	--	--	--
24...	3.1	240	110	48	29	78	2.2	5.2	160
APR									
19...	1.1	620	330	110	83	220	3.9	4.8	350
MAY									
16...	1.3	340	130	72	38	75	1.8	3.4	250
JUN									
16...	3.0	370	160	80	42	80	1.8	2.9	250
JUL									
13...	1.4	400	170	83	46	88	1.9	3.3	270
AUG									
16...	.7	460	230	88	59	140	2.8	4.4	260
SEP									
13...	1.0	490	270	100	58	150	3.0	5.7	260

MUSSELSHELL RIVER BASIN

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06126500 MUSSELSHELL RIVER NEAR ROUNDUP, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CAC03)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 18...	0	280	3.4	930	23	.4	5.9	1610	2.19
NOV 23...	0	360	5.6	1000	27	.5	9.0	1800	2.45
DEC 12...	0	330	4.0	1000	24	.4	9.0	1780	2.42
JAN 25...	0	330	10	780	19	.4	9.4	1440	1.96
FEB 16...	0	260	6.4	690	21	.3	9.6	1230	1.67
MAR 22...	--	--	--	--	--	--	--	--	--
24...	0	130	2.6	250	9.1	.2	5.9	505	.69
APR 19...	0	290	2.2	710	29	.4	5.6	1340	1.82
MAY 16...	0	210	2.0	280	11	.3	9.4	612	.83
JUN 16...	5	210	1.3	310	8.9	.4	7.0	660	.90
JUL 13...	5	230	1.8	340	10	.4	9.7	719	.98
AUG 16...	9	230	1.8	510	13	.2	6.2	958	1.30
SEP 13...	4	220	1.7	530	22	.4	6.2	1000	1.36

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 18...	113	.05	.01	.24	.25	.30	.01	230	20
NOV 23...	136	.05	.05	.17	.22	.27	.01	230	30
DEC 12...	284	.32	.14	.09	.23	.55	.00	220	20
JAN 25...	253	.28	.07	.13	.20	.48	.01	180	10
FEB 16...	193	.29	.16	--	--	--	.01	170	0
MAR 22...	--	--	--	--	--	--	--	--	--
24...	4800	.30	.14	.40	.54	.84	1.6	110	110
APR 19...	1090	.12	.03	.67	.70	.82	.07	180	30
MAY 16...	1560	.02	.06	.58	.64	.66	.24	100	20
JUN 16...	1530	.04	.01	.43	.44	.48	.01	110	10
JUL 13...	1760	.00	.03	.59	.62	.62	.10	120	30
AUG 16...	566	.02	.02	.44	.46	.48	.04	190	<10
SEP 13...	921	.02	.01	.57	.58	.60	.06	200	20

DATE	TIME	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	ALUMINUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE)	BERYLLIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	CHROMIUM, DIS- SOLVED (UG/L AS CR)
OCT 18...	1230	--	0	--	4	--	0	--	1	--	0
JAN 25...	1315	--	0	--	1	--	0	--	1	--	0
MAR 24...	1000	3700	180	7	10	0	0	0	0	50	10
JUL 13...	1200	--	0	--	2	--	0	--	1	--	0

MUSSELSHELL RIVER BASIN

06126500 MUSSELSHELL RIVER NEAR ROUNDUP, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
OCT 18...	--	1	--	--	9	--	60	--	40	--
JAN 25...	--	1	--	--	3	--	60	--	40	--
MAR 24...	55	0	58000	26	2	70	40	1400	40	.0
JUL 13...	--	3	--	--	11	--	30	--	10	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 18...	.0	--	2	--	0	--	1	.0	--	10
JAN 25...	.0	--	1	--	2	--	3	.0	--	20
MAR 24...	.7	40	3	21	0	3	2	.0	220	70
JUL 13...	.0	--	3	--	1	--	1	.0	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 18...	1230	9.0	26	8	.56	70
NOV 23...	1100	.0	28	14	1.1	67
DEC 12...	1300	.0	59	32	5.1	--
JAN 25...	1315	.0	65	48	8.4	70
FEB 16...	1200	.0	220	58	8.1	46
MAR 24...	1000	2.0	3520	3050	29000	79
APR 19...	1200	9.0	300	151	122	96
MAY 16...	1445	18.0	946	296	756	90
JUN 16...	1230	17.0	858	249	577	79
JUL 13...	1200	21.5	906	213	521	84
AUG 16...	1430	19.5	219	68	40	82
SEP 13...	1000	10.0	341	122	112	95

MUSSELSHELL RIVER BASIN

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06127150 EAST PARROT CREEK NEAR ROUNDUP, MT

LOCATION.--Lat 46°24'12", long 108°20'47", in SW¼NE¼SE¼ sec.33, T.8 N., R.27 E., Musselshell County,
Hydrologic Unit 10040202, 3.8 mi (6.1 km) upstream from mouth and 12.0 mi (19.3 km) east of Roundup.

DRAINAGE AREA.--20.2 mi² (52.3 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

REMARKS.--Flow was not present during station visits.

06127160 WEST PARROT CREEK NEAR ROUNDUP, MT

LOCATION.--Lat 46°25'57", long 108°25'07", in NW¼NE¼SW¼ sec.24, T.8 N., R.26 E., Musselshell County,
Hydrologic Unit 10040202, 1.0 mi (0.6 km) upstream from mouth, and 4.5 mi (7.2 km) east of Roundup.

DRAINAGE AREA.--20.5 mi² (53.1 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

REMARKS.--Scheduled samplings were not possible during periods of no flow.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAR 27...	1145	.01	1	1340	8.1	18.0	12.0	1	11.6	122
APR 20...	1530	.01	2	1260	8.5	16.0	19.0	2	11.8	146
JUL 14...	1245	.01	0	1250	8.5	29.0	19.5	2	12.1	149
AUG 17...	0845	.01	1	1310	8.0	14.0	11.0	1	6.6	68
SEP 13...	1300	.01	1	1260	8.3	14.0	12.5	1	11.8	124

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
MAR 27...	1.6	380	0	50	62	180	4.0	6.0	480
APR 20...	1.8	300	0	47	45	170	4.3	5.7	410
JUL 14...	1.0	350	0	50	55	180	4.2	5.0	470
AUG 17...	.8	340	0	49	54	180	4.2	6.5	480
SEP 13...	1.3	340	7	50	53	170	4.0	6.1	410

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CaCO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
MAR 27...	0	390	6.1	320	13	.3	2.7	871	1.18
APR 20...	8	350	2.2	300	12	.3	2.5	793	1.08
JUL 14...	18	420	2.6	290	12	.4	5.9	848	1.15
AUG 17...	0	390	7.7	310	11	.3	7.4	855	1.16
SEP 13...	0	340	3.3	320	14	.3	9.0	825	1.12

MUSSELSHELL RIVER BASIN

06127160 WEST PARROT CREEK NEAR ROUNDUP, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
MAR 27...	.02	1.3	.00	.44	.44	1.7	.05	60	40
APR 20...	.02	2.5	.03	.12	.15	2.7	.02	60	30
JUL 14...	.02	1.2	.03	.23	.26	1.5	.01	70	40
AUG 17...	.02	1.3	.02	.32	.34	1.6	.03	90	20
SEP 13...	.02	1.3	.01	.43	.44	1.7	.00	90	20

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
MAR 27...	1145	100	3	0	1	10	0	10
JUL 14...	1245	0	1	0	0	0	0	10

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENIUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 27...	20	20	.0	4	0	2	.0	10
JUL 14...	20	10	.0	4	0	1	.0	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)
MAR 27...	1145	12.0	.01	4	.00
JUL 14...	1245	19.5	.01	12	.00
AUG 17...	0845	11.0	.01	10	.00
SEP 13...	1300	12.5	.01	4	.00

MUSSELSHELL RIVER BASIN

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06127300 FATTIG CREEK NEAR DELPHIA, MT

LOCATION.--Lat 46°29'58", long 108°16'40", in NE¼NE¼NE¼ sec.24, T.7 N., R.27 E., Musselshell County, Hydrologic Unit 10040202, approximately 5 mi (8 km) upstream from Carters Coulee and 11.5 mi (18.5 km) south of Delphia.

DRAINAGE AREA.--22.9 mi² (59.3 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

REMARKS.--Scheduled samplings were not possible during periods of no flow.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAY 18...	1645	.10	60	1300	8.2	8.5	9.0	7	9.7	96
JUN 15...	1230	.01	1	2040	8.6	20.0	26.0	1	8.7	123
JUL 14...	1100	.01	0	2000	8.6	25.0	24.0	1	9.1	125
AUG 17...	1000	.01	0	2100	8.6	18.0	14.0	1	10.1	111
SEP 13...	1400	.31	2	1620	8.7	14.0	14.5	1	11.3	126
DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	
MAY 18...	1.4	470	150	45	86	140	2.8	7.3	390	
JUN 15...	3.3	720	280	57	140	250	4.1	9.6	490	
JUL 14...	1.9	700	220	51	140	270	4.4	10	520	
AUG 17...	1.0	710	270	52	140	260	4.3	9.8	490	
SEP 13...	1.3	560	220	61	99	170	3.1	12	410	
DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L AS SOLVED)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	
MAY 18...	0	320	3.9	410	8.1	.2	7.5	897	1.22	
JUN 15...	20	440	2.1	770	14	.3	1.0	1500	2.04	
JUL 14...	35	480	2.4	710	15	.3	1.6	1490	2.03	
AUG 17...	20	440	2.1	750	14	.4	6.7	1490	2.03	
SEP 13...	0	340	1.3	600	15	.2	9.4	1170	1.59	
DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	
MAY 18...	.24	.15	.06	.62	.68	.83	.05	120	20	
JUN 15...	.04	.01	.04	.46	.50	.51	.00	160	20	
JUL 14...	.04	.02	.03	.46	.49	.51	.02	160	20	
AUG 17...	.04	.01	.00	1.3	1.3	1.3	.02	160	20	
SEP 13...	.98	.01	.01	2.1	2.1	2.1	.01	160	40	

MUSSELSHELL RIVER BASIN

06127300 FATTIG CREEK NEAR DELPHIA, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, TOTAL DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
MAY 18...	1645	250	20	1	1	0	2	1	0	0
JUL 14...	1100	--	0	--	6	0	--	1	--	0

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
MAY 18...	7	1	490	12	4	30	30	0	1	.0
JUL 14...	--	2	--	--	1	--	60	--	10	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, TOTAL DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAY 18...	.0	0	0	3	0	0	0	.0	50	10
JUL 14...	.0	--	3	--	1	--	0	.0	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)
MAY 18...	1645	9.0	.10	10	.00
JUN 15...	1230	26.0	.01	46	.00
JUL 14...	1100	24.0	.01	12	.00
AUG 17...	1000	14.0	.01	33	.00
SEP 13...	1400	14.5	.31	4	.00

MUSSELSHELL RIVER BASIN

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06127500 MUSSELSHELL RIVER AT MUSSELSHELL, MT

LOCATION.--Lat 46°31'23", long 108°06'30", in S4SW4 sec.20, T.9 N., R.29 E., Musselshell County, Hydrologic Unit 10040202, on left bank 0.9 mi (1.4 km) upstream from Hawk Creek, and 1 mi (2 km) west of Musselshell.

DRAINAGE AREA.--4,568 mi² (11,831 km²).

PERIOD OF RECORD.--August 1928 to September 1932 (no records December to February for the water years 1930-31), August 1945 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE--Water-stage recorder. Altitude of gage is 2,990 ft (911 m), by barometer. Prior to Oct. 8, 1949, nonrecording gage at site 1 mi (2 km) downstream at different datums.

REMARKS.--Records good except those for winter period, which are poor. Some regulation by Bair, Martinsdale, and Deadman's Basin Reservoirs (see p.610-611). Diversions for irrigation of about 63,300 acres (256 km²) above station, of which about 12,500 acres (50.6 km²) is flood irrigated.

AVERAGE DISCHARGE.--35 years (1928-29, 1931-32, 1945-78), 209 ft³/s (5.919 m³/s), 151,400 acre-ft/yr (187 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,850 ft³/s (279 m³/s) June 19, 1967, gage height, 11.57 ft (3.527 m); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, about 12 ft (3.7 m) May 19, 1917, at site and datum used August 1945 to October 1949, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,040 ft³/s (228 m³/s) Mar. 24, gage height, 11.18 ft (3.408 m); minimum daily, 23 ft³/s (0.651 m³/s) Nov. 20, 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	36	44	56	68	64	1650	452	1280	870	331	211
2	36	36	47	56	70	64	1510	496	1220	783	318	207
3	35	34	50	56	74	64	1410	619	1160	788	315	213
4	40	33	48	56	74	64	1170	679	1030	798	309	218
5	41	32	45	58	74	66	940	701	875	1040	299	225
6	42	33	40	60	74	68	798	719	826	1070	283	215
7	41	34	37	60	70	72	666	774	807	1080	263	228
8	39	34	35	60	66	76	578	855	945	1060	241	238
9	37	34	35	58	64	78	519	890	1060	1020	222	247
10	35	38	37	58	64	84	478	976	1200	945	208	251
11	35	44	45	58	64	86	445	987	1250	895	228	268
12	34	40	54	60	66	90	413	935	1250	807	211	322
13	34	39	67	62	68	100	393	981	1240	807	200	340
14	34	76	70	62	68	105	369	1060	1110	769	197	355
15	34	83	70	62	70	115	357	1060	920	679	195	336
16	33	69	68	64	72	120	347	976	850	595	202	308
17	34	55	66	64	73	130	344	783	875	538	206	281
18	35	35	64	66	72	150	347	1010	870	504	208	290
19	36	24	62	66	72	170	331	1560	807	478	214	310
20	35	23	60	66	74	190	331	1740	751	470	216	291
21	35	23	60	66	74	800	328	1690	724	485	221	289
22	33	25	58	66	74	3350	319	1590	746	484	222	268
23	33	26	58	66	72	6020	316	1430	706	518	214	240
24	35	27	58	68	70	6900	310	1900	649	484	223	224
25	35	29	56	68	68	2980	298	1660	653	444	227	218
26	34	31	56	68	66	2840	295	1610	684	387	221	206
27	33	33	56	68	66	3190	295	1680	855	340	225	197
28	34	36	56	66	64	3680	307	1640	1160	325	231	191
29	33	38	56	66	---	3050	360	1470	1190	317	227	189
30	37	40	56	64	---	2300	403	1280	981	348	221	186
31	36	---	56	66	---	1870	---	1220	---	348	211	---
TOTAL	1104	1140	1670	1940	1951	38936	16627	35423	28674	20476	7309	7562
MEAN	35.6	38.0	53.9	62.6	69.7	1256	554	1143	956	661	236	252
MAX	42	83	70	68	74	6900	1650	1900	1280	1080	331	355
MIN	33	23	35	56	64	64	295	452	649	317	195	186
AC-FT	2190	2260	3310	3850	3870	77230	32980	70260	56870	40610	14500	15000

CAL YR 1977 TOTAL 31746.5 MEAN 87.0 MAX 515 MIN 3.0 AC-FT 62970
WTR YR 1978 TOTAL 162812.0 MEAN 446 MAX 6900 MIN 23 AC-FT 322900

MUSSELSHELL RIVER BASIN

06130500 MUSSELSHELL RIVER AT MOSBY, MT

LOCATION.--Lat 46°59'41", long 107°53'18", in NW¼NW¼ sec.11, T.14 N., R.30 E., Petroleum County, Hydrologic Unit 10040205, near center of downstream side of bridge on State Highway 20, 0.3 mi (0.5 km) west of Mosby, 10.9 mi (17.5 km) downstream from Flatwillow Creek, and at mile 60.0 (96.5 km).

DRAINAGE AREA.--7,846 mi² (20,321 km²).

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.--Nonrecording gage. Altitude of gage is 2,500 ft (760 m), by barometer. Dec. 6, 1962, to Mar. 14, 1966, water-stage recorder at site 900 ft (274 m) downstream at different datum. Mar. 15, 1966, to Dec. 11, 1973, water-stage recorder and nonrecording gages at site 100 ft (30 m) downstream at same datum. See WSP 2116 for history of changes prior to 1962.

REMARKS.--Water-discharge records fair except those for winter period, which are poor. Some regulation by Bair, Martinsdale, and Deadman's Basin Reservoirs. Diversions for irrigation of about 103,000 acres (417 km²) above station.

AVERAGE DISCHARGE.--46 years (1930-32, 1934-78), 283 ft³/s (8.015 m³/s) 205,000 acre-ft/yr (253 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft³/s (510 m³/s) June 18, 1944, gage height, 14.43 ft (4.307 m); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,100 ft³/s (456 m³/s) Mar. 27, gage height, 14.10 ft (4.298 m), from graph based on observer's readings; minimum observed, 22 ft³/s (0.623 m³/s) Nov. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	270	43	52	62	64	78	7950	769	2400	1630	458	252
2	167	41	52	62	64	76	4100	910	2270	1330	430	240
3	104	41	50	62	64	76	3200	1000	2130	2140	415	243
4	81	40	47	62	64	77	2570	1100	2020	3030	415	243
5	65	43	44	62	64	78	1990	1180	1810	4330	400	252
6	53	43	42	62	66	80	1540	1340	1560	3440	377	252
7	53	41	41	62	66	84	1290	1530	1390	2460	338	258
8	55	40	40	62	66	86	1140	1360	1300	2080	321	246
9	53	40	42	62	68	90	1010	1200	1390	2460	295	246
10	50	22	49	62	70	94	916	1080	1480	2370	279	249
11	44	45	55	62	72	98	829	969	1610	2050	267	270
12	47	48	60	62	74	100	802	927	1610	1850	249	500
13	44	48	66	62	75	105	717	818	1630	1490	249	1160
14	40	53	72	62	77	110	706	796	1630	1420	226	1040
15	40	44	82	62	80	120	686	764	1510	1410	229	641
16	35	71	92	62	84	130	656	722	1280	1200	229	1030
17	39	97	100	62	86	140	666	1920	1170	1010	237	881
18	35	33	115	62	88	160	691	4660	1170	813	252	1090
19	34	31	130	62	90	200	681	7970	1170	1890	261	4810
20	34	30	140	62	92	2720	651	7360	1100	1270	252	2290
21	41	31	150	64	93	10200	686	7080	1020	1230	264	1120
22	37	32	140	68	94	14000	722	4750	963	939	249	813
23	36	33	130	70	94	13500	717	3940	994	769	252	681
24	39	34	110	70	95	12100	701	3790	951	780	261	557
25	39	36	95	70	94	13600	661	6250	886	753	261	530
26	40	38	80	68	90	14000	641	3720	1040	646	255	483
27	36	40	73	68	88	15600	622	3270	1490	543	243	438
28	41	42	68	66	82	14000	608	3060	1520	471	249	411
29	40	44	66	66	---	12300	646	2780	1870	407	258	377
30	43	48	65	66	---	11200	671	2420	1940	392	255	374
31	45	---	64	66	---	9200	---	2210	---	403	252	---
TOTAL	1780	1272	2412	1982	2204	144402	39466	81645	44304	47006	8978	21977
MEAN	57.4	42.4	77.8	63.9	78.7	4658	1316	2634	1477	1516	290	733
MAX	270	97	150	70	95	15600	7950	7970	2400	4330	458	4810
MIN	34	22	40	62	64	76	608	722	886	392	226	240
AC-FT	3530	2520	4780	3930	4370	286400	78280	161900	87880	93240	17810	43590
CAL YR 1977	TOTAL	34402.56	MEAN	94.3	MAX	423	MIN	.56	AC-FT	68240		
WTR YR 1978	TOTAL	397428.00	MEAN	1089	MAX	15600	MIN	22	AC-FT	788300		

MUSSELSHELL RIVER BASIN

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06130500 MUSSELSHELL RIVER AT MOSBY, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to current year.

WATER TEMPERATURES: October 1974 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,900 micromhos Aug. 14, 1977; minimum daily, 678 micromhos, Mar. 23, 1978.

WATER TEMPERATURES: Maximum daily, 26.0°C Aug. 7, 9, 1978; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,590 micromhos Nov. 22; minimum daily, 678 micromhos Mar. 23.

WATER TEMPERATURES: Maximum daily, 26.0°C Aug. 7, 9; minimum daily, 0.0°C on many days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 13...	1030	40	2	2700	8.2	16.0	8.0	45	--	10.2	94
NOV 15...	1230	44	2	2980	8.3	6.5	2.0	30	--	12.0	95
DEC 20...	1415	143	0	2000	8.1	.0	.5	90	--	11.8	90
JAN 17...	1400	62	70	2780	7.9	-10.0	.0	20	--	8.4	63
FEB 14...	1430	78	0	2540	7.8	-10.0	.0	15	--	9.2	69
MAR 23...	1545	13300	2	635	8.0	5.0	2.5	1600	--	10.6	83
APR 25...	1830	14100	1	750	8.0	6.0	4.0	--	--	11.0	92
MAY 30...	1200	723	1	2030	8.3	20.0	13.0	75	--	9.9	103
JUN 27...	1330	2360	60	1200	8.2	11.0	14.5	--	260	8.7	94
JUL 25...	1400	1470	0	1540	8.3	26.0	22.0	--	560	7.5	94
AUG 03...	1300	737	0	1650	8.3	29.0	24.5	--	130	7.8	103
SEP 12...	1200	411	1	1790	8.3	21.5	19.5	--	45	8.3	98
	1400	539	68	2070	8.4	9.0	11.5	--	460	9.0	91
DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT 13...	K32	K20	820	540	130	120	360	5.5	5.8	340	0
NOV 15...	K10	K27	910	610	150	130	410	5.9	5.9	360	0
DEC 20...	K74	480	560	370	100	76	270	5.0	5.9	230	0
JAN 17...	K63	K69	940	570	180	120	360	5.1	5.3	450	0
FEB 14...	K29	40	890	540	160	120	310	4.5	5.0	430	0
MAR 23...	K160	6000	180	89	42	18	62	2.0	4.6	110	0
APR 25...	K50	9600	--	--	--	--	--	--	--	--	--
MAY 30...	<1	K40	750	490	150	92	210	3.3	5.8	320	0
JUN 27...	K180	K110	460	230	98	52	110	2.2	4.7	--	--
JUL 25...	2100	2200	560	390	120	63	160	2.9	5.2	--	--
AUG 03...	K150	K170	580	350	120	69	180	3.2	5.6	--	--
SEP 12...	K51	K5300	600	390	120	74	190	3.4	5.6	--	--
	730	K2100	640	450	130	77	240	4.1	5.8	--	--

MUSSELSHELL RIVER BASIN

06130500 MUSSELSHELL RIVER AT MOSBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ALKALINITY (MG/L AS CAC033)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 13...	280	3.4	1300	28	.4	2.9	2210	2120	3.01	239	.02
NOV 15...	300	2.9	1400	32	.3	3.8	2390	2310	3.25	284	.33
DEC 20...	190	2.9	920	18	.3	6.6	1530	1510	2.08	591	.41
JAN 17...	370	9.1	1300	29	.5	8.6	2250	2230	3.06	377	.41
FEB 14...	350	11	1100	33	.4	9.2	2070	1950	2.82	436	.48
MAR 23...	90	1.8	230	5.2	.3	4.0	401	421	.55	14400	.25
25...	--	--	--	--	--	--	--	--	--	--	--
APR 25...	260	2.6	860	21	.4	6.4	1600	1500	2.18	3120	.05
MAY 30...	230	--	440	9.4	.4	9.1	871	862	1.18	5550	.07
JUN 27...	170	--	690	15	.6	6.3	1190	1160	1.62	4720	.05
JUL 25...	230	--	670	15	.5	8.0	1290	1210	1.75	2570	.05
AUG 03...	210	--	770	21	.4	7.3	1330	1310	1.81	1480	.02
SEP 12...	190	--	900	27	.4	4.1	1660	1500	2.26	2420	.05

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS- SOLVED (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
OCT 13...	--	.00	--	.35	--	.12	.00	--	5.2	.3
NOV 15...	--	.04	--	.36	--	.05	.00	4.4	--	--
DEC 20...	--	.03	--	.61	--	.08	.04	7.3	--	--
JAN 17...	--	.18	--	.29	--	.04	.02	--	5.7	.2
FEB 14...	.16	.08	.24	.26	.72	.02	.01	4.4	--	--
MAR 23...	4.1	.20	4.3	2.1	4.6	2.6	.04	37	--	--
25...	--	--	--	--	--	--	--	--	--	--
APR 25...	.79	.10	.89	.86	.94	.08	.00	6.6	--	--
MAY 30...	--	.03	--	.25	--	.50	.01	6.4	--	--
JUN 27...	2.3	.05	2.3	.54	2.4	.74	.03	17	--	--
JUL 25...	.93	.01	.94	.44	.99	.17	.00	--	5.4	1.0
AUG 03...	.81	.01	.82	.41	.84	.06	.00	6.3	--	--
SEP 12...	1.5	.01	1.5	.57	1.6	.74	.01	6.2	--	--

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	CHROMIUM, DIS- SOLVED (UG/L AS CR)
OCT 13...	1030	2	1	400	100	10	7	20	10
JAN 17...	1400	1	0	100	100	1	1	0	10
MAR 23...	1545	15	8	900	600	0	1	50	40
JUL 25...	1300	4	2	100	100	4	1	10	10

MUSSELSHELL RIVER BASIN

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06130500 MUSSELSHELL RIVER AT MOSBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)
OCT 13...	<50	0	10	0	2000	10	<100	15	120
JAN 17...	0	0	8	3	820	20	4	4	60
MAR 23...	28	0	88	15	98000	160	65	7	1600
JUL 25...	3	1	18	4	6600	30	34	10	210

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 13...	30	.0	.0	2	0	<10	0	20	20
JAN 17...	40	.8	.0	2	2	1	0	50	30
MAR 23...	40	1.3	1.1	5	0	2	0	410	100
JUL 25...	10	.0	.0	1	1	0	0	60	20

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	PCB, TOTAL (UG/L)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ATRA- ZINE, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL (UG/L)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
NOV 15...	1230	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 14...	1430	ND	--	ND	--	ND	ND	--	ND	--
APR 25...	1200	ND	--	ND	--	--	ND	--	ND	--
AUG 03...	1200	ND	--	ND	--	--	ND	--	ND	--

DATE	DDE, TOTAL (UG/L)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- AZINON, TOTAL (UG/L)	DI- AZINON, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN, TOTAL (UG/L)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
NOV 15...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 14...	ND	--	ND	--	ND	--	ND	--	ND	--
APR 25...	ND	--	ND	--	ND	--	ND	--	ND	--
AUG 03...	ND	--	ND	--	ND	--	ND	--	ND	--

MUSSELSHELL RIVER BASIN

06130500 MUSSELSHELL RIVER AT MOSBY, MT--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ETHION, TOTAL (UG/L)	ETHION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	MALA- THION, TOTAL (UG/L)	MALA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
NOV 15...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 14...	ND	--	ND	--	ND	--	ND	--	ND	--
APR 25...	ND	--	ND	--	ND	--	ND	--	ND	--
AUG 03...	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	METH- OXY- CHLOR, TOTAL (UG/L)	METH- OXY- CHLOR, TOT. IN BOTTOM MATL. (UG/KG)	METHYL PARA- THION, TOTAL (UG/L)	METHYL PARA- THION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRI- THION, TOTAL (UG/L)	METHYL TRI- THION, TOT. IN BOTTOM MATL. (UG/KG)	PARA- THION, TOTAL (UG/L)	PARA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOX- APHENE, TOTAL (UG/L)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
NOV 15...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 14...	ND	--	ND	--	ND	--	ND	--	ND	--
APR 25...	ND	--	ND	--	ND	--	ND	--	ND	--
AUG 03...	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	TOTAL TRI- THION (UG/L)	TRI- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4-D, TOTAL (UG/L)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4,5-T TOTAL (UG/L)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SIMA- ZINE TOTAL COUL- SON COND. (UG/L)	SILVEX, TOTAL (UG/L)	SILVEX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
NOV 15...	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 14...	ND	--	ND	--	ND	--	ND	ND	--
APR 25...	ND	--	ND	--	ND	--	--	ND	--
AUG 03...	ND	--	ND	--	ND	--	--	ND	--

MUSSELSHELL RIVER BASIN

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06130500 MUSSELSHELL RIVER AT MOSBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE, AIR (DEG C)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
AUG							
03...	0800	1790	8.3	14.0	17.5	8.0	93
03...	0900	1790	8.3	14.5	18.0	8.2	94
03...	1000	1790	8.3	17.5	18.5	8.2	95
03...	1100	1790	8.3	20.5	19.0	8.1	95
03...	1200	1790	8.3	21.5	19.5	8.3	98
03...	1300	1800	8.3	23.5	20.5	8.3	101
03...	1400	1800	8.3	23.5	21.0	8.3	102
03...	1500	1800	8.3	23.5	21.5	8.3	102
03...	1600	1800	8.3	24.0	22.0	8.2	103
03...	1700	1800	8.4	24.0	22.5	8.2	104
03...	1800	1790	8.4	24.0	22.5	8.2	104
03...	1900	1790	8.4	22.5	22.0	8.2	103
03...	2000	1800	8.3	21.0	22.0	8.2	103
03...	2100	1790	8.4	14.0	21.5	8.2	101
03...	2200	1780	8.3	13.5	21.0	8.0	100
03...	2300	1780	8.3	12.5	20.5	7.7	94
03...	2400	1800	8.3	11.5	20.5	7.9	96
04...	0100	1800	8.3	10.5	20.5	7.8	94
04...	0200	1800	8.3	9.0	20.0	7.8	94
04...	0300	1800	8.3	7.0	20.0	7.8	94
04...	0400	1800	8.3	6.0	19.5	7.8	93
04...	0500	1800	8.3	5.5	19.5	7.7	91
04...	0600	1800	8.3	6.0	19.0	7.7	91
04...	0700	1800	8.3	10.0	19.0	7.7	91
04...	0800	1800	8.3	15.5	19.0	7.9	93

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1980	2900	3280	2590	---	2590	868	2070	1590	1170	1720	2070
2	1830	2930	3110	---	2680	2590	1300	1980	1510	1210	1610	2070
3	1820	2960	2990	---	---	2570	1380	1850	1400	2020	1550	2060
4	2660	3020	2920	2660	2670	2560	1410	1980	1400	1120	1600	2050
5	2360	3000	2910	---	2650	2560	1500	2130	1410	1190	1620	2040
6	2660	2980	2800	---	2650	2530	1600	2120	1480	1080	1620	2000
7	2690	2960	---	---	2640	2500	1700	2030	1510	1250	1810	2010
8	2610	3010	---	---	2620	2470	1820	1940	1520	1370	1840	1990
9	2600	3030	---	---	2610	2450	1920	1680	1450	1380	1920	2000
10	2530	3020	2930	---	2600	2460	1960	1430	1400	1250	2000	1970
11	2660	3040	2970	---	---	2460	2020	1530	1220	1220	2010	1800
12	2680	2970	---	2690	---	2420	2100	1450	1090	1290	2020	2080
13	2700	2960	---	2720	---	2330	2080	1420	1090	1380	2020	2440
14	2720	2980	3410	2720	2600	2180	2100	1400	1070	1410	2030	1420
15	2720	2960	2120	2740	2580	2070	2100	1370	1080	1410	2030	1480
16	2720	2830	2220	2730	2560	1870	2130	1280	1290	1370	2030	1320
17	2760	2810	1570	2720	2570	1930	2180	1230	1300	1410	2030	1130
18	2800	2840	1580	2710	2570	1900	2230	1810	1280	1500	2030	1280
19	2790	2820	1800	2670	2560	1170	2190	1540	1320	1790	2030	1240
20	2770	2990	2010	2660	---	972	2220	1140	1350	1620	2020	1030
21	2800	3300	2680	2630	2520	777	2170	1280	1320	1570	2020	1320
22	2800	3590	2850	2600	2510	811	2130	1330	1340	1550	2010	1540
23	2800	3510	---	2620	2480	678	2060	1310	1350	1600	2010	1650
24	2820	3470	---	2620	2740	735	2050	1520	1350	1640	2010	1760
25	2860	3470	---	2610	2620	795	2020	1180	1350	1600	2010	1760
26	2820	3460	2530	2600	2580	793	2020	1290	1570	1660	2010	1820
27	2820	3360	2530	2600	2580	801	2020	1270	2060	1670	2000	1900
28	2820	3420	2640	---	2610	767	2050	1170	1300	1710	2010	1980
29	2810	3450	2680	2580	---	815	2230	1180	1220	1780	2010	2030
30	2800	3230	---	2590	---	840	2210	1210	1150	1830	2000	2060
31	2830	---	---	2590	---	900	---	1310	---	1830	2010	---
MEAN	2650	3110	2600	2650	2600	1720	1930	1530	1360	1480	1920	1780
WTR YR 1978	MEAN	2070	MAX	3590	MIN	678						

MUSSELSHELL RIVER BASIN

06130500 MUSSELSHELL RIVER AT MOSBY, MT--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.0	6.0	.0	---	.0	---	6.0	12.0	12.0	22.5	22.5	20.0
2	10.5	6.0	.0	---	.0	.0	8.0	12.0	13.5	23.0	19.5	19.5
3	13.0	4.0	.0	---	.0	.0	9.0	14.0	15.5	19.0	18.0	21.5
4	9.0	4.0	.0	.0	.0	.0	9.0	12.0	18.0	20.0	24.0	21.0
5	8.0	4.0	.0	---	.0	.0	9.5	11.0	18.0	19.0	21.0	20.5
6	8.5	4.5	.0	---	.0	.0	8.0	11.0	20.0	20.0	23.0	20.5
7	9.0	5.0	---	---	.0	.0	8.0	9.0	18.0	20.0	26.0	21.5
8	10.0	3.0	---	---	.0	.0	7.0	9.0	19.5	20.0	25.0	22.0
9	9.5	2.0	---	---	.0	.0	8.0	11.0	20.0	18.5	26.0	18.0
10	4.0	1.0	.0	---	.0	.0	7.0	13.0	19.0	20.0	23.5	17.5
11	4.0	2.0	.0	---	.0	.0	9.0	13.0	17.0	21.0	22.5	16.5
12	6.0	2.0	---	.0	.0	.0	7.0	12.0	16.5	20.0	22.0	13.0
13	8.0	4.5	---	.0	.0	.0	7.0	13.0	18.0	19.5	21.5	9.5
14	9.0	2.0	.0	.0	.0	1.0	8.0	15.0	18.5	21.0	19.0	10.5
15	7.0	2.0	1.0	.0	.0	.0	10.0	16.5	18.5	22.0	18.0	12.5
16	8.0	3.5	1.0	.0	.0	1.0	9.0	14.0	18.0	24.0	20.0	13.0
17	8.0	2.0	1.0	.0	.0	2.0	9.0	14.5	18.0	23.0	16.5	12.0
18	7.5	.5	1.0	.0	.0	1.0	7.0	12.0	19.0	19.5	14.5	12.0
19	9.0	.0	1.0	.0	.0	1.0	7.0	11.0	18.5	15.5	16.5	7.5
20	10.0	.0	.0	.0	.0	1.0	7.0	13.0	15.5	18.0	18.0	7.5
21	8.0	.0	1.0	.0	.0	1.0	8.0	15.0	18.0	18.0	18.5	9.0
22	7.5	.0	1.0	.0	.0	1.0	8.0	17.0	21.0	19.5	20.0	11.0
23	8.0	.0	---	.0	.0	1.0	8.0	17.0	20.0	21.0	17.5	13.0
24	8.0	.0	---	.0	.0	1.5	8.0	17.0	22.0	22.5	18.0	14.0
25	10.0	.0	---	.0	.0	2.0	10.0	13.5	21.0	23.0	20.0	15.0
26	11.0	.0	.0	.0	.0	5.0	13.0	15.0	17.5	23.0	19.5	16.0
27	7.0	.0	.0	.0	.0	5.0	13.5	16.5	18.5	23.0	19.0	15.5
28	8.0	1.0	.0	.0	.0	6.0	13.0	17.5	21.0	23.0	16.5	15.5
29	12.0	1.0	.0	.0	---	7.0	12.0	18.0	23.0	21.5	19.0	14.5
30	11.0	1.0	---	.0	---	8.0	12.0	14.0	23.0	21.5	19.0	14.0
31	10.0	---	---	.0	---	8.5	---	12.0	---	21.5	20.0	---
MEAN	8.5	2.0	.5	.0	.0	2.0	9.0	13.5	18.5	20.5	20.0	15.0
WTR YR 1978	MEAN	9.5	MAX	26.0	MIN	.0						

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT						
13...	1030	8.0	40	156	17	99
NOV						
15...	1230	2.0	44	139	17	95
DEC						
20...	1415	.5	143	197	76	98
JAN						
17...	1400	.0	62	110	18	98
FEB						
14...	1430	.0	78	124	26	96
MAR						
23...	1545	2.5	13300	4630	166000	86
APR						
25...	1200	13.0	723	240	469	94
MAY						
30...	1330	14.5	2360	1020	6500	77
JUN						
27...	1400	22.0	1470	1090	4330	90
JUL						
25...	1300	24.5	737	411	818	91
AUG						
03...	1200	19.5	411	200	222	93
SEP						
12...	1400	11.5	539	1180	1720	92

MUSSELSHELL RIVER BASIN

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06130500 MUSSELSHELL RIVER AT MOSBY, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 15,77 1230	APR 25,78 1200	MAY 30,78 1330	JUN 27,78 1400
TOTAL CELLS/ML	410	540	67	570
DIVERSITY: DIVISION	1.0	1.8	0.9	1.2
..CLASS	1.0	1.8	0.9	1.2
...ORDER	1.0	2.4	1.6	1.2
...FAMILY	1.3	2.8	1.6	1.6
....GENUS	1.3	2.9	1.6	1.7

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCUCCALES								
....DOCYSTACEAE								
.....ANKISTRODESMUS	--	-	27	5	--	-	15	3
.....KIRCHNERIELLA	--	-	14	2	--	-	--	-
....DOCYSTIS	--	-	--	-	--	-	59	10
...SCENEDESMACEAE								
.....SCENEDESMUS	--	-	--	-	--	-	180#	31
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMUNAS	--	-	95#	17	--	-	--	-
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
....CUSCINODISCACEAE								
.....CYCLOTELLA	--	-	54	10	22#	33	--	-
..PENNALES								
...GOMPHONEMATACEAE								
.....GOMPHONEMA	51	13	14	2	--	-	--	-
...NAVICULACEAE								
.....NAVICULA	--	-	--	-	--	-	29	5
...NITZSCHIACEAE								
.....NITZSCHIA	100#	25	120#	22	--	-	--	-
...SURIARELLACEAE								
.....SURIARELLA	--	-	--	-	22#	33	--	-
...TABELLARIACEAE								
....TABELLARIA	--	-	68	13	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCOCCALES								
....CHROCOCCOCCAEAE								
.....ANACYSTIS	--	-	54	10	--	-	290#	51
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
.....TRACHELOMONAS	260#	63	95#	17	22#	33	--	-

06130500 MUSSELSHELL RIVER AT MOSBY, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR 1977 to SEPTEMBER 1978

PHYTOPLANKTON						
DATE	JUL 25,78		AUG 3,78		SEP 12,78	
TIME	1300		1200		1400	
TOTAL CELLS/ML	11000		5900		1600	
DIVERSITY: DIVISION	1.8		1.6		1.7	
..CLASS	1.9		1.6		1.7	
...ORDER	2.3		2.3		1.9	
...FAMILY	2.7		2.9		2.5	
....GENUS	3.2		3.5		2.6	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...COELASTRACEAE						
....COELASTRUM	470	4	--	-	--	-
...MICRACETINACEAE						
....GOLENKINIA	--	-	42	1	--	-
...OOCYSTACEAE						
....ANKISTRODESMUS	470	4	890#	15	110	7
....KIRCHNERIELLA	290	3	85	1	--	-
...OOCYSTIS	240	2	250	4	--	-
....QUADRIGULA	--	-	170	3	--	-
...SCENEDESMACEAE						
....ACTINASTRUM	470	4	--	-	--	-
....CRUCIGENIA	--	-	170	3	--	-
...SCENEDESMUS	1200	11	930#	16	110	7
....TETRASTRUM	--	-	170	3	--	-
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	59	1	340	6	83	5
CHRYSOPLHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINOIDISCEAE						
....CYCLOTELLA	830	8	640	11	--	-
...SKELETONEMA	2700#	25	--	-	--	-
..PENNIALES						
...ACHNANTHACEAE						
....ACHNANTHES	--	-	42	1	--	-
...FRAGILARIACEAE						
....FRAGILARIA	--	-	--	-	83	5
...NAVICULACEAE						
....CALONEIS	--	-	--	-	83	5
....NAVICULA	--	-	85	1	170	11
...NITZSCHIA						
....NITZSCHIA	770	7	1200#	20	170	11
..CHRYSOPLHYCEAE						
...CHRYDOMONADALES						
...OCHROMONADACEAE						
....OCHROMONAS	410	4	85	1	--	-
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
...CRYPTOMONIDALES						
...CRYPTOCHRYSIDACEAE						
....CHROMONAS	--	-	--	-	28	2
...CRYPTOMONADACEAE						
....CRYPTOMONAS	120	1	170	3	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
...CHROCOCCACEAE						
....ANACYSTIS	2400#	22	340	6	--	-
...HORMOGONALES						
...OSCILLATORIA						
....OSCILLATORIA	--	-	170	3	720#	46
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
....LEPOCINCLIS	59	1	--	-	--	-
....TRACHELOMONAS	290	3	85	1	--	-
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...PERIDINIALES						
...UNKNOWN FAMILY						
....UNKNOWN GENUS	--	-	--	-	28	2

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

BIG DRY CREEK BASIN

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06130935 CROW ROCK CREEK NEAR COHAGEN, MT

LOCATION.--Lat 47°03'45", long 106°14'11", in SE¼SE¼ sec.11, T.15 N., R.23 E., Garfield County,
Hydrologic Unit 10040106, on county road 2.6 mi (4.2 km) upstream from mouth, and 16.5 mi (26.6 km)
north of Rock Springs.

DRAINAGE AREA.--213 mi² (550 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

		AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
DATE	TIME				(UNITS)					
MAR 31...	1130	99001	36	710	8.0	9.0	2.0	12.4	98	K200
APR 25...	0900	99001	.10	1300	8.3	14.0	12.0	10.1	103	<1
MAY 26...	1015	99001	.40	2680	8.2	15.0	18.5	6.1	71	22
JUN 05...	1600	99001	1.9	2670	8.5	28.5	26.5	8.4	112	140
JUL 17...	1500	99001	.23	760	8.1	23.0	25.0	8.3	109	35
DATE	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
MAR 31...	800	110	20	23	12	100	4.2	4.1	110	0
APR 25...	65	240	68	48	28	200	5.7	6.6	210	0
MAY 26...	210	410	120	67	59	520	11	11	360	0
JUN 05...	66	390	90	62	56	490	11	9.9	360	3
JUL 17...	260	220	0	50	24	85	2.5	13	281	0
DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
MAR 31...	1.8	230	.2	.0	3.7	450	427	.61	44.1	.19
APR 25...	1.7	450	4.0	.1	4.1	848	844	1.15	.23	.02
MAY 26...	3.6	1100	7.4	.1	.7	1950	1940	2.65	2.11	.01
JUN 05...	1.9	1100	7.2	.1	.2	1900	1910	2.58	9.75	.01
JUL 17...	3.6	180	5.2	.1	1.9	517	498	.70	.32	.00
DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C)
MAR 31...	.21	.89	1.1	1.3	.04	.07	130	70	7.8	4.3
APR 25...	.03	1.5	1.5	1.5	.01	.04	180	20	7.4	.9
MAY 26...	.01	1.4	1.4	1.4	.01	.03	490	150	12	.5
JUN 05...	.01	.82	.83	.84	.01	.02	480	40	13	.6
JUL 17...	.00	2.5	2.5	2.5	.03	.07	210	120	11	1.3

BIG DRY CREEK BASIN

06130935 CROW ROCK CREEK NEAR COHAGEN, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC TOTAL SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
MAR 31...	1130	0	3	1	0	0	10	0	2	1	20
MAY 26...	1015	0	2	2	400	100	0	0	2	1	10

	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CU)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAR 31...	0	2	0	12	2	15	4	10	2	160	20
MAY 26...	5	0	1	6	4	14	5	20	20	40	30

	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MU)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 31...	.0	.0	4	0	6	2	0	0	1.0	30	0
MAY 26...	.0	.0	3	2	6	2	0	0	.0	10	20

DATE	TIME	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	BARIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS BA)	BERYL- LIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS BE)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CR)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CO)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)
MAR 31...	1130	160	6400	10	3	40	15	6
MAY 26...	1015	7	140	0	0	8	20	160

DATE	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/L AS HG)	MOLYB- DENUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	NICKEL, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS NI)	SELE- NIUM, TOTAL IN BOT- TOM MA- TERIAL (UG/G)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)
MAR 31...	57	7800	.1	0	50	0	170
MAY 26...	22	310	.0	2	16	0	34

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, DIS- SOLVED (PCI/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (PCI/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)
MAR 31...	1130	<6.6	<4.5	23	16	11	17
MAY 26...	1015	<26	<18	.4	.3	18	1.9

BIG DRY CREEK BASIN

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06130935 CROW ROCK CREEK NEAR COHAGEN, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)
MAR 31...	1130	2.0	36	298	29
APR 25...	0900	12.0	.10	22	.01
MAY 26...	1015	18.5	.40	10	.01
JUN 05...	1600	26.5	1.9	14	.07
JUL 17...	1500	25.0	.23	31	.02

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. FALL DIAM. % FINER THAN 2.00 MM	BED MAT. FALL DIAM. % FINER THAN 4.00 MM	BED MAT. FALL DIAM. % FINER THAN 8.00 MM	BED MAT. FALL DIAM. % FINER THAN 16.0 MM	BED MAT. FALL DIAM. % FINER THAN 32.0 MM	BED MAT. FALL DIAM. % FINER THAN 64.0 MM
MAR 31...	1130	4	6	24	35	42	44	49	63	76	91	100
MAY 25...	1015	81	94	98	99	99	99	100	--	--	--	--

06130935 CROW ROCK CREEK NEAR COHAGEN, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	MAR 31,78 1130	APR 25,78 0900	MAY 26,78 1015	JUN 5,78 1600	JUL 17,78 1500	
TOTAL CELLS/ML	1400	16000	290	730	21000	
DIVERSITY: DIVISION	0.6	1.5	1.2	0.1	0.8	
..CLASS	0.6	1.5	1.2	0.1	0.8	
...ORDER	0.7	1.7	1.2	0.9	0.9	
...FAMILY	1.2	1.7	1.5	0.9	1.0	
....GENUS	1.2	1.7	1.5	0.9	1.1	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....DOCYSTACEAE						
...ANKISTRODESMUS	86	6	3400# 21	--	--	--
...DICTYOSPHAERIUM	--	--	--	--	--	* 0
...KIRCHNERIELLA	--	--	--	--	--	* 0
...VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	14	1	--	--	--	220 1
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINODISCEACEAE						
....CYCLOTELLA	--	--	8900# 57	--	--	840 4
...PENNALES						
...ACHNANTHACEAE						
....COCCONEIS	--	--	--	--	--	* 0
...CYMBELLACEAE						
....CYMBELLA	--	--	--	--	--	130 1
...NAVICULACEAE						
....NAVICULA	58	4	--	45# 15	11 2	180 1
...NITZSCHIA	--	--	480 3	45# 15	--	620 3
..CHRYSTOPHYCEAE						
...CHRYSDOMONADALES						
...OCHROMONADACEAE						
....OCHROMONAS	--	--	--	--	--	* 0
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
...CRYPTOMONIDALES						
...CRYPTOMONODACEAE						
....CRYPTOMONAS	--	--	--	--	--	270 1
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
...CHROCOCCACEAE						
....ANACYSTIS	--	--	--	--	560# 77	--
...COCCOCHLORIS	--	--	--	--	--	18000# 86
...HORMOGONALES						
...NOSTOCACEAE						
....ANABAENA	200	15	2700# 17	--	--	--
...OSCILLATORIA	1000# 74	--	--	180# 62	160# 22	--
EUGLENOPHYTA (EUGLENIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
....EUGLENA	--	--	--	--	--	180 1
...LEPTOCINCLIS	--	--	--	--	--	* 0
...TRACHELOMONAS	--	--	190 1	22 8	--	* 0
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...GYMNODINIALES						
...GYMNODINIACEAE						
....GYMNODINIUM	--	--	96 1	--	--	--

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

BIG DRY CREEK BASIN

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06131000 BIG DRY CREEK NEAR VAN NORMAN, MT

LOCATION.--Lat 47°20'58", long 106°21'26", in NW¼SE¼NW¼ sec.3, T.18 N., R.42 E., Garfield County, Hydrologic Unit 10040105, on left bank 900 ft (270 m) downstream from Little Dry Creek, 3.2 mi (5.1 km) northeast of Van Norman Post Office, and 26 mi (42 km) east of Jordan.

DRAINAGE AREA.--2,554 mi² (6,615 km²).

WATER-DISCHARGE RECORDS

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. Altitude of gage is 2,330 ft (710 m), by barometer. Prior to July 24, 1978, at site 400 ft (120 m) upstream at same datum.

REMARKS.--Records fair except those for winter period and period of no gage height record, Sept. 20-25, which are poor. Few small diversions for irrigation of hay meadows above station.

AVERAGE DISCHARGE.--35 years (1939-47, 1949-68, 1970-78), 56.4 ft³/s (1.597 m³/s), 40,860 acre-ft/yr (50.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,600 ft³/s (697 m³/s) Mar. 21, 1947, gage height, 13.39 ft (4.081 m); maximum gage height, 15.26 ft (4.651 m) Mar. 21, 1947 (ice jam); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 400 ft³/s (11.3 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 27	0500	*12,700 360	*8.78 2.676	June 26	1100	1,390 39.4	4.04 1.231
May 19	1800	3,470 98.3	5.37 1.637	July 4	1100	2,870 81.3	5.17 1.576
June 15	0800	2,310 65.4	4.86 1.481	Sept 20	----	unknown	unknown

No flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	2.7	2.5	.80	.00	.00	1890	23	206	261	32	8.5
2	42	1.2	2.4	1.0	.00	.00	947	21	291	225	45	8.5
3	47	1.8	2.4	.80	.00	.00	629	21	276	200	32	8.5
4	29	1.5	2.5	1.0	.00	.00	474	19	191	1460	30	8.5
5	19	1.8	2.3	1.0	.00	.00	358	22	151	576	25	8.5
6	12	1.5	2.1	.80	.00	.01	341	25	149	764	22	8.1
7	12	2.4	2.2	.60	.00	.05	307	33	264	484	17	8.1
8	10	2.1	2.2	.20	.00	.10	250	57	127	300	17	8.1
9	8.2	1.5	2.0	.00	.00	.50	212	88	92	220	16	8.1
10	6.7	1.5	2.3	.00	.00	.50	185	62	75	170	16	8.1
11	5.7	1.5	2.7	.00	.00	5.0	162	40	67	137	15	8.1
12	5.3	1.8	3.0	.00	.00	40	151	40	62	120	13	63
13	4.9	1.5	3.0	.00	.00	58	137	53	54	105	13	122
14	4.9	1.2	3.2	.01	.00	90	111	40	56	93	12	104
15	4.1	1.2	3.2	.02	.00	130	98	25	946	83	12	127
16	2.7	1.2	3.1	.01	.00	120	96	21	225	75	12	70
17	3.0	.94	3.0	.00	.00	110	80	100	135	67	12	70
18	3.0	.90	3.0	.00	.00	100	77	548	100	62	12	73
19	3.0	.90	3.0	.00	.01	90	67	2300	88	56	12	1730
20	2.7	.90	2.8	.00	.01	250	59	2170	84	51	11	2200
21	2.4	.80	2.8	.00	.02	1400	50	611	78	47	11	1200
22	1.5	1.0	2.9	.01	.03	2500	42	341	71	43	10	400
23	1.5	1.2	2.7	.01	.05	4470	36	229	67	38	10	250
24	1.8	1.4	2.3	.01	.10	2630	36	173	71	35	9.9	190
25	1.8	1.4	2.0	.00	.05	2750	33	137	272	31	9.2	150
26	2.1	2.1	2.0	.00	.02	6250	30	106	955	31	8.9	111
27	2.1	2.1	1.8	.00	.01	10700	29	78	635	27	8.9	94
28	1.8	2.0	1.6	.00	.00	6890	28	67	515	24	8.9	84
29	1.2	2.3	1.4	.00	---	5650	27	63	397	22	8.9	76
30	5.3	2.5	1.2	.00	---	4790	24	90	312	29	8.9	70
31	3.4	---	.80	.00	---	3860	---	148	---	32	8.5	---
TOTAL	279.1	46.84	74.40	6.27	.30	52884.16	6966	7751	7012	5868	479.1	7275.1
MEAN	9.00	1.56	2.40	.20	.011	1706	232	250	234	189	15.5	243
MAX	47	2.7	3.2	1.0	.10	10700	1890	2300	955	1460	45	2200
MIN	1.2	.80	.80	.00	.00	.00	24	19	54	22	8.5	8.1
AC-FT	554	93	148	12	.6	104900	13820	15370	13910	11640	950	14430

CAL YR 1977	TOTAL	1381.72	MEAN	3.79	MAX	82	MIN	.00	AC-FT	2740
WTR YR 1978	TOTAL	88642.27	MEAN	243	MAX	10700	MIN	.00	AC-FT	175800

BIG DRY CREEK BASIN

06131000 BIG DRY CREEK NEAR VAN NORMAN, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	
DEC 19...	1230	3.0	3	2720	7.9	-5.0	.0	100	10.6	79	270	0	
		CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HC03)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CAC03)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
DEC 19...	47	38	550	14	7.5	570	0	470	11	940	16	.3	
		SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC=FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
DEC 19...	6.6	1890	2.57	15.3	.63	.19	.41	.60	1.2	.07	230	30	

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)	
DEC 19...	1230	20	2	0	1	20	3	2	
DATE	TIME	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 19...	40	20	.2	2	2	1	.0	30	

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT CHARGE, SUS- PENDED (T/DAY)	SED- SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC 19...	1230	.0	3.0	336	2.7	97

TIMBER CREEK BASIN

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06131120 TIMBER CREEK NEAR VAN NORMAN, MT

LOCATION.--Lat 47°24'20", long 106°10'25", in E½ sec.13, T.19 N., R.43 E., McCone County, Hydrologic Unit 10040104, at bridge on State Highway 24, and 11.8 mi (19.0 km) northeast of Van Norman.

DRAINAGE AREA.--287 mi² (743 km²).

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAR 23...	1430	57	3	765	7.2	5.0	1.0	90	11.0	85
APR 17...	1300	1.9	3	3290	8.6	7.0	8.5	10	10.6	99
MAY 08...	1330	3.4	1	4100	8.5	13.0	13.5	40	10.0	105
JUN 07...	1400	5.5	1	2420	8.0	20.0	20.0	85	7.4	89
JUL 10...	1400	4.7	0	3500	8.4	25.0	23.5	65	7.3	95
AUG 08...	1200	.48	3	4790	8.6	24.0	22.0	55	6.5	81

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
MAR 23...	4.2	93	0	14	14	120	5.4	4.5	120
APR 17...	2.4	540	110	70	88	610	11	8.6	480
MAY 08...	1.2	560	0	65	96	810	15	11	650
JUN 07...	2.9	360	95	54	54	450	10	8.0	320
JUL 10...	2.1	600	210	59	110	670	12	12	430
AUG 08...	2.3	560	0	42	110	1000	18	12	610

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LILITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
MAR 23...	0	98	12	250	2.6	.1	3.7	468	.64
APR 17...	22	430	2.1	1300	9.5	.2	6.8	2350	3.20
MAY 08...	23	570	3.5	1600	15	.5	4.5	2950	4.01
JUN 07...	0	260	5.1	1000	5.7	--	--	--	--
JUL 10...	24	390	3.0	1600	6.3	1.0	21	2720	3.70
AUG 08...	44	570	2.8	2100	10	.6	1.6	3620	4.92

TIMBER CREEK BASIN

06131120 TIMBER CREEK NEAR VAN NORMAN, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
MAR 23...	72.0	.26	.22	.47	.69	.95	.15	190	90
APR 17...	12.3	.02	.00	.57	.57	.59	.03	880	20
MAY 08...	27.1	.03	.04	.68	.72	.75	.06	1100	40
JUN 07...	--	.09	.08	1.1	1.2	1.3	.06	740	30
JUL 10...	34.5	.00	.03	1.1	1.1	1.1	.07	1500	60
AUG 08...	4.69	.02	.07	1.3	1.4	1.4	.05	1700	30

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
MAR 23...	1430	1800	30	6	1	0	0	0	2	10	0
JUN 07...	1400	--	0	--	2	--	10	--	3	--	0

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
MAR 23...	12	5	2000	1	3	7	3	90	30	.0
JUN 07...	--	3	--	--	16	--	10	--	10	--

TIMBER CREEK BASIN

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06131120 TIMBER CREEK NEAR VAN NORMAN, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, TOTAL DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 23...	.1	7	0	8	1	2	0	1.0	20	20
JUN 07...	.2	--	0	--	7	--	0	.0	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
MAR 23...	1430	1.0	57	309	48	77
APR 17...	1300	8.5	1.9	273	1.4	71
MAY 08...	1330	13.5	3.4	232	2.1	98
JUN 07...	1400	20.0	5.5	146	2.2	99
JUL 10...	1400	23.5	4.7	118	1.5	99
AUG 08...	1200	22.0	.48	98	.13	--
SEP 14...	1400	14.0	.89	82	.20	--

NELSON CREEK BASIN

06131200 NELSON CREEK NEAR VAN NORMAN, MT

LOCATION.--Lat 47°32'08", long 106°09'11", in SW¼NW¼ 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 (2.4 km) upstream from Fort Peck Lake, and 19 mi (30 km) northeast of Van Norman.

DRAINAGE AREA.--100.2 mi² (259.5 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,300 ft (701 m), from topographic map.

REMARKS.--Water-discharge records poor. Diversions for irrigation of about 163 acres (660,000 m²) above station of which about 158 acres (640,000 m²) is flood irrigated. Some storage in stock ponds upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,480 ft³/s (41.9 m³/s) July 4, 1978, gage height, 9.30 ft (2.835 m); no flow occurs during most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,480 ft³/s (41.9 m³/s) July 4, gage height, 9.30 ft (2.835 m); no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.15	.00	.00	.00	.00	.00	13	.05	17	.54	15	.00
2	.12	.00	.00	.00	.00	.00	10	.05	6.2	.99	12	.00
3	.10	.00	.00	.00	.00	.00	8.4	.15	3.9	19	4.5	.00
4	.08	.00	.00	.00	.00	.00	6.2	.15	2.6	445	1.6	.00
5	.06	.00	.00	.00	.00	.00	5.1	.21	1.8	11	.69	.00
6	.04	.00	.00	.00	.00	.00	4.2	3.1	4.3	3.7	.49	.00
7	.03	.00	.00	.00	.00	.00	3.1	3.4	7.8	1.3	.27	.00
8	.03	.00	.00	.00	.00	.00	2.5	12	1.4	.99	.17	.00
9	.02	.00	.00	.00	.00	.00	2.3	4.0	.70	.84	.14	.00
10	.02	.00	.00	.00	.00	.20	1.9	2.1	.91	.56	.11	.00
11	.02	.00	.00	.00	.00	10	1.5	2.8	.36	.46	.08	.20
12	.02	.00	.00	.00	.00	12	.99	5.3	.05	.34	.04	20
13	.01	.00	.00	.00	.00	15	.84	1.9	.04	.23	.02	8.8
14	.00	.00	.00	.00	.00	15	.59	1.3	.21	.19	.01	4.1
15	.00	.00	.00	.00	.00	14	.45	.99	1.7	.10	.01	.49
16	.00	.00	.00	.00	.00	13	.36	.65	.49	.10	.00	.00
17	.00	.00	.00	.00	.00	20	.36	14	.04	.05	.00	.25
18	.00	.00	.00	.00	.00	40	.65	114	.02	.05	.00	.10
19	.00	.00	.00	.00	.00	60	.77	164	.02	.12	.00	409
20	.00	.00	.00	.00	.00	80	1.0	8.9	.04	.05	.00	7.8
21	.00	.00	.00	.00	.00	100	.84	4.0	.02	.05	.00	3.4
22	.00	.00	.00	.00	.00	90	.65	2.5	.01	.71	.00	2.6
23	.00	.00	.00	.00	.00	82	.50	1.9	.01	.30	.00	1.6
24	.00	.00	.00	.00	.00	56	.32	1.4	.01	.13	.00	1.1
25	.00	.00	.00	.00	.00	124	.20	.96	31	.08	.00	.82
26	.00	.00	.00	.00	.00	169	.15	.71	47	.05	.00	.63
27	.00	.00	.00	.00	.00	111	.10	.48	5.3	.05	.00	.49
28	.00	.00	.00	.00	.00	49	.08	.33	2.5	.05	.00	.41
29	.00	.00	.00	.00	---	34	.07	.28	.84	.70	.00	.30
30	.00	.00	.00	.00	---	36	.06	7.1	.54	7.1	.00	.22
31	.00	---	.00	.00	---	28	---	46	---	1.5	.00	---
TOTAL	.70	.00	.00	.00	.00	1158.20	67.18	404.71	136.81	496.33	35.33	462.31
MEAN	.023	.000	.000	.000	.000	37.4	2.24	13.1	4.56	16.0	1.14	15.4
MAX	.15	.00	.00	.00	.00	169	13	164	47	445	15	409
MIN	.00	.00	.00	.00	.00	.00	.06	.05	.01	.05	.00	.00
AC-FT	1.4	.00	.00	.00	.00	2300	133	803	271	984	70	917
CAL YR 1977	TOTAL	229.19	MEAN	.63	MAX	154	MIN	.00	AC-FT	455		
WTR YR 1978	TOTAL	2761.57	MEAN	7.57	MAX	445	MIN	.00	AC-FT	5480		

NELSON CREEK BASIN

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06131200 NELSON CREEK NEAR VAN NORMAN, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAR										
20...	1500	68	0	272	7.6	3.5	2.0	750	9.7	76
27...	1200	116	0	418	7.6	9.0	3.0	360	11.0	89
APR										
07...	1200	3.1	3	2180	8.3	9.0	7.0	65	9.3	83
MAY										
08...	1100	11	1	2720	8.4	12.0	10.5	2800	10.2	99
JUN										
07...	1130	5.6	1	2550	8.2	20.0	18.0	380	7.6	86
JUL										
10...	1200	.53	0	3090	8.0	24.5	20.0	40	7.7	92
AUG										
08...	1030	.10	3	4800	8.4	23.0	21.0	50	6.2	76
SEP										
12...	1200	8.2	60	1160	8.4	12.0	14.0	18000	--	--

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
MAR									
20...	5.2	63	0	16	5.6	37	2.0	3.2	77
27...	1.4	87	5	19	9.6	57	2.7	3.6	100
APR									
07...	2.0	380	100	46	65	350	7.8	6.5	340
MAY									
08...	3.3	230	0	26	40	570	16	8.4	410
JUN									
07...	2.5	410	210	80	52	460	9.8	7.4	250
JUL									
10...	1.1	460	70	77	64	680	14	9.6	470
AUG									
08...	1.7	640	100	60	120	1000	17	13	590
SEP									
12...	6.4	--	--	--	--	--	--	--	200

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
MAR									
20...	0	63	3.1	76	1.0	.1	3.7	181	.25
27...	0	82	4.0	120	1.6	.1	3.6	264	.36
APR									
07...	0	280	2.7	850	6.3	1.2	25	1520	2.07
MAY									
08...	8	350	2.7	1100	7.3	.4	4.8	1970	2.68
JUN									
07...	0	210	2.5	1100	4.7	--	--	--	--
JUL									
10...	0	390	7.5	1400	9.1	.4	6.4	2480	3.37
AUG									
08...	35	540	4.2	2200	8.0	.4	3.9	3730	5.07
SEP									
12...	--	160	1.3	--	--	--	--	--	--

NELSON CREEK BASIN

06131200 NELSON CREEK NEAR VAN NORMAN, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

		SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	
DATE											
MAR 20...		33.2	.32	.03	1.3	1.3	1.6	.71	70	70	
MAR 27...		82.7	.26	.08	.85	.93	1.2	.29	110	80	
APR 07...		12.7	.09	.01	.96	.97	1.1	.09	540	80	
MAY 08...		58.5	1.3	.02	3.7	3.7	5.0	1.9	490	70	
JUN 07...		--	.20	.03	1.1	1.1	1.3	.26	520	40	
JUL 10...		3.55	.00	.07	.90	.97	.97	.05	890	50	
AUG 08...		1.01	.02	.10	1.4	1.5	1.5	.04	1300	460	
SEP 12...		--	.85	.11	3.8	3.9	4.8	3.6	180	--	
		ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED ERABLE (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED ERABLE (UG/L AS CR)	
DATE	TIME										
MAR 27...	1200	0	3	1	10	0	1	9	30	0	
JUN 07...	1130	0	--	2	--	0	--	3	--	0	
		COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED ERABLE (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED ERABLE (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED ERABLE (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
DATE											
MAR 27...	31	3	2100	12	1	20	7	550	30	.0	
JUN 07...	--	5	--	--	6	--	40	--	20	--	
		MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED ERABLE (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED ERABLE (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED ERABLE (UG/L AS SE)	VANA- DIUM, DIS- SOLVED ERABLE (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED ERABLE (UG/L AS ZN)	
DATE											
MAR 27...		.0	3	23	3	3	2	2.0	100	10	
JUN 07...		.3	0	--	3	--	1	--	--	10	

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
MAR 20...	1500	2.0	68	1380	253	99
APR 07...	1200	7.0	3.1	114	.95	98
MAY 08...	1100	10.5	11	5080	151	100
JUN 07...	1130	18.0	5.6	599	9.1	99
JUL 05...	1500	23.0	11	616	18	99
JUL 10...	1200	20.0	.53	148	.21	98
AUG 08...	1030	21.0	.10	147	.04	--
SEP 12...	1200	14.0	8.2	23000	509	100

06131500 FORT PECK LAKE AT FORT PECK, MT

LOCATION.--Lat 48°00'26", long 106°23'49", 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 (3 km) downstream from Bear Creek, 9.5 mi (15.3 km) southwest of Nashua, 9.5 mi (15.3 km) upstream from Milk River, and at mile 1,771.6 (2,850.5 km).

DRAINAGE AREA.--57,500 mi² (148,900 km²).

PERIOD OF RECORD.--October 1937 to current year. (Monthend contents only, except October 1938 to September 1940, when daily 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. Datum of gage is at mean sea level. Prior to May 1, 1941, nonrecording gage at same site and datum.

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. Total capacity, 18,910,000 acre-ft (23.3 km³) between elevation 2,095.00 ft (638.556 m), invert of lower ring gates, and 2,250.00 ft (685.800 m), top of 25 ft (7.6 m) gates. Elevation of spillway crest, 2,225.00 ft (678.180 m). Normal operating level, 17,930,000 acre-ft (22.1 km³), elevation, 2,246.00 ft (684.458 m). Dead storage, 542,800 acre-ft (669 hm³) below elevation 2,095.00 ft (638.556 m). Minimum operating level, 4,283,000 acre-ft (5.28 km³), elevation, 2,160.00 ft (658.368 m), 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 furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 19,310,000 acre-ft (23.8 km³) July 15-17, 1975 (elevation, 2,251.6 ft or 686.29 m); minimum since first filling, 5,061,000 acre-ft (6.24 km³) Jan. 25, 26, 1956 (elevation, 2,167.67 ft or 660.611 m), by capacity table used Mar. 1, 1940, to Dec. 31, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum contents at 2400, 18,810,000 acre-ft (23.2 km³) July 20-25, elevation, 2,249.6 ft (685.68 m); minimum, 13,940,000 acre-ft (17.2 km³) Mar. 12, elevation, 2,227.7 ft (679.00 m).

MONTHEND ELEVATION AND CONTENTS AT 2400; WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in Contents (acre-feet)
Sept. 30	2,232.8	14,980,000	---
Oct. 31	2,232.7	14,960,000	- 20,000
Nov. 30	2,232.0	14,810,000	- 150,000
Dec. 31	2,231.0	14,600,000	- 210,000
CAL YR 1977			-2,050,000
Jan. 31	2,229.5	14,300,000	- 300,000
Feb. 28	2,228.0	14,000,000	- 300,000
Mar. 31	2,236.0	15,660,000	+ 1,660,000
Apr. 30	2,239.4	16,400,000	+ 740,000
May 31	2,244.8	17,650,000	+ 1,250,000
June 30	2,247.5	18,300,000	+ 650,000
July 31	2,249.4	18,760,000	+ 460,000
Aug. 31	2,247.9	18,390,000	- 370,000
Sept. 30	2,248.0	18,420,000	+ 30,000
WTR YR 1978			+ 3,440,000

06132000 MISSOURI RIVER BELOW FORT PECK DAM, MT

LOCATION.--Lat 48°02'39", long 106°21'21", in NW¼ sec.6, T.26 N., R.42 E., McCone County, Hydrologic Unit 10060001, on right bank 2 mi (3 km) upstream from Milk River, 6 mi (10 km) south of Nashua, 8 mi (13 km) downstream from Fort Peck Dam, and at mile 1,763.5 (2,837.5 km).

DRAINAGE AREA.--57,556 mi² (149,070 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1934 to current year.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,018.00 ft (615.086 m), National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to Apr. 14, 1938, at site 0.7 mi (1.1 km) upstream at different datum; Apr. 14, 1938, to Sept. 30, 1963, at present site at datum 2.00 ft (0.610 m) higher, all water-stage recorders. Since Oct. 1, 1969, published discharge is determined by flowmeters at Fort Peck Dam.

REMARKS.--Flow completely regulated by Fort Peck Lake. Diversions for irrigation of about 880,400 acres (3,560 km²) above station.

COOPERATION.--Records since Oct. 1, 1969, furnished by Corps of Engineers; 4 discharge measurements made and records reviewed by Geological Survey. Records for March 1934 to September 1969 collected and computed by Geological Survey.

AVERAGE DISCHARGE.--5 years (1934-39, prior to Fort Peck Lake reaching operational level), 6,347 ft³/s (179.7 m³/s), 4,598,000 acre-ft/yr (5.67 km³/yr); 35 years (1943-78, after operational level in Fort Peck Lake was reached), 9,826 ft³/s (278.3 m³/s), 7,119,000 acre-ft/yr (8.78 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,000 ft³/s (1,440 m³/s) including 32,000 ft³/s (906 m³/s) inflow from spillway 1 mi (2 km) downstream from station, Aug. 8, 1946; maximum gage height observed, 12.30 ft (3.749 m) Mar. 10, 1936 (ice jam), site and datum then in use; maximum daily reverse flow, 400 ft³/s (11.3 m³/s) Mar. 29, 1943 (backwater from Milk River).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 15,300 ft³/s (433 m³/s) Jan. 31, Feb. 6, 21; minimum daily, 16 ft³/s (0.45 m³/s) Apr. 6, result of powerplant shutdown.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5100	5000	10600	10100	15200	13600	2800	7300	11500	10200	13700	14500
2	5200	5200	10700	10400	15200	14000	2100	7200	11200	10100	14300	14700
3	5200	4800	10400	11200	15000	14300	2900	7300	11500	10100	14300	14700
4	4900	4900	10600	11200	13300	14100	2800	7100	11500	10100	14500	14500
5	5000	4900	10600	10900	12100	11500	1600	7300	11400	10000	14500	14700
6	5100	4900	10300	10900	15300	13500	16	7300	11000	10200	14400	14700
7	5000	4900	10000	11500	14600	13300	2500	7100	11400	10100	14400	14500
8	5300	5200	10200	11700	14700	13200	2700	7200	11600	9100	14300	14500
9	5100	5400	10100	12000	14700	13300	2500	6900	11100	10100	14100	14600
10	5100	5300	9900	12000	14800	13600	4700	7100	11600	10100	14400	14500
11	5100	5100	9200	11800	14800	14100	6600	7000	11600	10000	13800	14000
12	5100	4900	10400	12100	13800	14000	8400	7100	11500	10100	14500	14700
13	4900	5000	10300	12000	13500	14500	9000	7000	11500	10100	14500	11200
14	5100	5000	10000	12600	14000	13900	9300	7000	11400	10100	14500	10300
15	5300	4800	10000	12300	14600	10100	9100	7000	11400	10100	14700	10100
16	5300	4600	11100	12500	14700	10400	7000	7100	11500	10100	14500	13800
17	5300	6000	9600	13000	15100	7900	9100	7000	11500	10100	14500	14300
18	4800	6800	9000	13500	14900	7900	9400	7000	11500	10100	14600	13500
19	5200	7100	10200	14200	14800	6900	9400	7300	10600	10200	14700	14300
20	4800	7400	10500	13600	14400	7100	9300	8000	10200	8500	14800	14000
21	4800	8800	10400	12200	15300	7800	9400	4700	10200	9400	14500	13200
22	4800	9400	10600	10500	14500	8000	8900	5000	10000	11700	13200	10000
23	4900	10200	10000	12100	13200	8100	8800	5200	9700	13000	14400	7100
24	5300	9600	10500	10700	13600	8500	7500	8000	9900	14200	14400	10900
25	4700	10200	9400	11800	13400	8300	7400	8000	10000	14200	14400	14300
26	5100	10000	10300	13000	13100	8200	7300	7900	10200	14300	14300	14000
27	5700	10200	10100	14200	13200	8100	7200	7900	10200	14300	14600	14500
28	5100	10200	10200	14100	13900	8100	7300	7900	10100	14200	14600	13300
29	5100	10300	9300	14100	---	5800	7000	8100	10200	12600	14600	13800
30	5200	10300	9100	14800	---	2700	6000	10600	10100	13700	13200	14500
31	5200	---	10600	15300	---	2800	---	10900	---	13900	12800	---
TOTAL	157800	206400	314200	382300	399700	317600	188016	227500	327100	345000	443000	401700
MEAN	5090	6680	10140	12330	14280	10250	6267	7339	10900	11130	14290	13390
MAX	5700	10300	11100	15300	15300	14500	9400	10900	11600	14300	14800	14700
MIN	4700	4600	9000	10100	12100	2700	16	4700	9700	8500	12800	7100
AC-FT	313000	409400	623200	758300	792800	630000	372900	451200	648800	684300	878700	796800
CAL YR 1977	TOTAL	3122900	MEAN	8556	MAX	15400	MIN	4600	AC-FT	6194000		
WTR YR 1978	TOTAL	3710316	MEAN	10170	MAX	15300	MIN	16	AC-FT	7359000		

06132000 MISSOURI RIVER BELOW FORT PECK DAM, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964, 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to current year.

WATER TEMPERATURES: October 1974 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,080 micromhos Nov. 30, 1976; minimum daily, 520 micromhos June 29, 1978.

WATER TEMPERATURES: Maximum daily, 14.5°C on several days during August and September, 1976; minimum daily, 0.0°C on several days during December 1977 to January 1978.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 680 micromhos Sept. 21; minimum daily, 520 micromhos June 29.

WATER TEMPERATURES: Maximum daily, 14.0°C Sept. 21, minimum daily, 0.0°C on several days during December to January.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT											
27...	1300	5100	0	598	8.2	14.0	11.0	2	--	10.1	99
NOV											
21...	1300	8800	--	620	8.2	-15.0	2.0	2	--	10.6	83
DEC											
27...	1430	10100	0	638	7.9	-18.0	.0	2	--	12.2	90
JAN											
25...	1400	11800	0	640	8.3	-22.0	.0	1	--	12.2	90
MAR											
02...	1400	14000	0	640	8.1	-20.0	.0	1	--	12.0	89
20...	1600	7100	0	630	7.2	5.0	1.0	2	--	13.8	105
APR											
28...	1400	7300	60	630	8.4	11.0	8.0	9	--	11.8	107
JUN											
01...	1400	11500	60	600	8.3	15.0	10.0	--	1.6	11.6	110
JUL											
06...	1300	10200	1	605	8.4	24.0	18.0	--	.90	11.2	126
26...	1100	14300	--	610	8.4	29.0	12.0	--	1.4	11.2	112
AUG											
24...	1100	14400	0	650	8.3	24.5	11.0	--	2.0	10.1	98
SEP											
29...	1100	13800	0	654	8.1	15.0	13.5	--	3.0	8.8	91

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOC FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT											
27...	K5	K3	230	72	55	22	43	1.2	3.5	190	0
NOV											
21...	K1	K8	240	84	58	23	44	1.2	3.6	190	0
DEC											
27...	K4	89	240	91	56	24	45	1.3	4.1	180	0
JAN											
25...	K2	91	240	73	57	23	45	1.3	3.9	200	0
MAR											
02...	<1	<1	--	--	--	--	--	--	--	190	0
20...	<1	K19	230	79	56	23	44	1.3	3.7	190	0
APR											
28...	<1	K550	280	120	74	23	44	1.1	3.7	190	0
JUN											
01...	K3	K11	230	70	56	22	45	1.3	3.8	--	--
JUL											
06...	<1	37	240	100	58	23	46	1.3	3.8	--	--
26...	K3	K640	240	77	57	23	46	1.3	3.7	--	--
AUG											
24...	K1	K2	230	83	57	22	48	1.4	3.9	--	--
SEP											
29...	K5	<1	220	74	55	21	52	1.5	3.8	--	--

MISSOURI RIVER MAIN STEM

06132000 MISSOURI RIVER BELOW FORT PECK DAM, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT DAY)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 27...	160	1.9	160	7.7	.7	8.8	378	394	.51	5210	.02
NOV 21...	160	1.9	170	7.5	.7	8.5	389	409	.53	9240	.01
DEC 27...	150	3.6	170	8.4	.7	8.5	393	406	.53	10700	.01
JAN 25...	160	1.6	160	8.0	.7	8.6	406	405	.55	12900	.01
MAR 02...	160	2.4	--	--	--	--	--	--	--	--	.01
20...	160	19	150	8.0	.7	7.4	395	387	.54	7570	.01
APR 28...	160	1.2	200	7.9	.7	8.1	398	455	.54	7850	.11
JUN 01...	160	--	150	7.8	.7	7.5	365	384	.52	12000	.03
JUL 06...	140	--	170	8.0	.8	6.4	387	400	.53	10700	.01
26...	160	--	150	8.0	.7	8.0	388	393	.53	15000	.02
AUG 24...	150	--	170	8.0	.7	8.6	398	408	.54	15500	.09
SEP 29...	150	--	180	7.9	.7	8.2	440	419	.60	16400	.15

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
OCT 27...	--	.01	--	.17	--	.01	.00	3.0	--	--
NOV 21...	--	.00	--	.17	--	.02	.01	2.8	--	--
DEC 27...	--	.04	--	.82	--	.04	.03	--	--	--
JAN 25...	.55	.03	.58	.42	.59	.01	.01	2.8	--	--
MAR 02...	.11	.02	.13	--	.14	.02	--	2.6	--	--
20...	.79	.00	.79	.06	.80	.04	.01	--	3.0	--
APR 28...	1.6	.01	1.6	.18	1.7	.07	.00	2.6	--	--
JUN 01...	--	.01	--	1.5	--	.00	.00	2.4	--	--
JUL 06...	.14	.00	.14	.15	.15	.01	.00	3.0	--	--
26...	.29	.00	.29	.30	.31	.01	.00	--	3.5	.1
AUG 24...	.39	.02	.41	.61	.50	.03	.02	2.7	--	--
SEP 29...	.53	.01	.54	.25	.69	.04	.01	--	3.0	.2

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	CHROMIUM, DIS- SOLVED (UG/L AS CR)
DEC 27...	1430	6	6	0	0	1	1	0	0
MAR 20...	1600	4	4	100	0	13	4	30	10
JUL 26...	1100	5	4	200	300	5	1	0	0
SEP 29...	1100	4	4	0	0	2	1	0	0

MISSOURI RIVER MAIN STEM

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06132000 MISSOURI RIVER BELOW FORT PECK DAM, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS Pb)	LEAD, DIS- SOLVED (UG/L AS Pb)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)
DEC 27...	0	0	26	3	140	20	18	2	40
MAR 20...	0	0	6	3	2400	80	9	22	60
JUL 26...	2	2	8	5	30	20	45	6	10
SEP 29...	0	2	11	3	970	20	8	5	20

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 27...	20	.9	.5	1	1	0	0	40	10
MAR 20...	0	.0	.0	11	8	1	0	20	10
JUL 26...	10	.0	.0	1	1	1	0	10	10
SEP 29...	0	.3	.0	1	1	0	0	20	0

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
24...	0900	650	8.3	20.0	9.0	10.0	93
24...	1000	652	8.2	24.0	10.0	10.1	96
24...	1100	650	8.3	24.5	11.0	10.1	98
24...	1200	653	8.2	25.0	11.5	10.2	100
24...	1300	650	8.3	28.0	12.0	10.3	102
24...	1400	656	8.4	30.0	13.0	10.3	105
24...	1500	650	8.4	29.5	13.5	10.3	106
24...	1600	652	8.4	29.5	14.0	10.3	107
24...	1700	654	8.4	31.5	13.5	10.3	106
24...	1800	650	8.3	30.5	13.0	10.2	104
24...	1900	652	8.4	27.0	12.5	10.0	101
24...	2000	657	8.4	23.5	11.5	9.9	98
24...	2100	651	8.4	21.0	11.0	9.8	96
24...	2200	650	8.3	20.5	10.5	9.7	93
24...	2300	647	8.3	20.0	10.0	9.6	91
24...	2400	648	8.2	20.0	10.0	9.5	90
25...	0100	648	8.2	18.5	9.5	9.5	90
25...	0200	642	8.2	19.0	9.5	9.5	90
25...	0300	642	8.2	18.0	9.5	9.5	90
25...	0400	648	8.2	17.5	9.5	9.5	90
25...	0500	652	8.1	17.5	9.5	9.5	90
25...	0600	648	8.2	18.0	9.5	9.4	89
25...	0700	654	8.2	19.5	9.5	9.5	90
25...	0800	642	8.2	20.0	10.0	9.6	92
25...	0900	654	8.2	22.5	10.0	9.7	93

MISSOURI RIVER MAIN STEM

06132000 MISSOURI RIVER BELOW FORT PECK DAM, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	623	603	620	600	615	590	610	600	630	590	630	630
2	622	600	600	600	615	585	600	600	580	590	640	630
3	624	601	600	600	610	600	600	595	620	580	635	635
4	623	606	610	590	605	590	605	600	600	590	630	630
5	610	596	610	600	610	590	590	600	550	590	640	610
6	621	600	610	570	610	600	610	600	615	585	635	630
7	629	600	615	595	605	620	600	590	630	565	630	635
8	622	605	610	595	610	580	600	595	620	590	640	640
9	629	605	605	600	610	590	610	595	630	600	640	630
10	622	598	599	595	560	600	605	600	615	570	625	635
11	622	599	620	595	610	590	620	600	630	595	635	630
12	625	602	605	590	610	590	610	600	620	590	640	630
13	630	600	600	590	605	600	610	600	615	595	640	645
14	621	600	600	595	605	600	600	600	615	590	620	650
15	623	602	615	600	615	590	600	600	630	595	640	670
16	621	605	600	590	610	610	595	595	600	595	630	670
17	621	600	610	600	620	590	605	595	615	585	550	670
18	620	600	605	600	610	605	595	595	615	595	645	640
19	620	600	615	600	610	600	610	600	630	595	645	665
20	621	635	610	595	610	595	610	595	650	600	640	675
21	622	610	600	590	610	600	610	590	620	595	645	680
22	622	600	615	600	610	595	610	590	615	600	650	655
23	628	602	615	595	610	600	615	595	630	595	650	665
24	630	630	615	600	615	595	605	590	615	600	650	670
25	628	640	620	595	615	610	600	605	550	590	660	660
26	625	600	610	600	610	610	600	595	615	595	650	650
27	624	580	615	590	615	610	600	590	610	600	650	660
28	621	600	620	600	610	600	595	590	630	570	650	670
29	625	600	542	605	---	600	600	590	520	565	650	660
30	622	600	600	600	---	600	600	595	610	600	655	665
31	622	---	620	590	---	600	---	590	---	580	650	---
MEAN	623	604	607	596	609	598	604	596	611	590	638	650
WTR YR 1978	MEAN	610	MAX	680	MIN	520						

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.0	11.0	4.5	.5	1.0	1.5	---	4.0	6.0	7.5	8.0	9.5
2	12.0	11.5	3.5	.0	1.0	1.5	2.5	4.5	6.0	8.0	8.0	9.0
3	10.5	11.0	3.0	.5	1.0	1.5	2.0	4.0	7.0	7.5	8.5	9.5
4	11.5	11.0	2.0	.5	1.0	1.0	2.5	4.0	7.0	7.0	9.0	9.5
5	12.5	11.0	2.0	.0	1.5	1.5	3.0	4.5	8.0	8.0	8.5	9.5
6	12.5	11.0	2.5	1.0	1.0	1.5	4.5	5.0	7.5	8.0	8.0	9.5
7	12.5	10.5	2.5	.5	.5	1.5	2.0	4.5	7.5	7.0	8.5	9.5
8	12.5	10.0	1.0	.5	.5	2.0	2.0	4.5	7.5	7.5	8.5	10.0
9	12.0	10.5	.0	.5	1.5	1.5	2.5	4.5	7.5	7.0	9.0	9.5
10	12.5	10.0	.0	.5	1.0	2.0	2.5	4.5	7.5	8.0	9.0	10.0
11	12.5	10.5	1.5	1.0	1.0	2.0	2.0	4.5	7.0	7.5	8.5	9.0
12	12.5	10.5	1.5	.5	1.0	1.5	2.0	5.0	7.0	7.0	8.5	8.5
13	12.5	10.0	1.5	.5	1.5	2.0	2.5	4.5	8.0	8.5	8.5	10.0
14	12.5	9.5	1.5	.5	1.0	1.5	2.5	5.5	8.0	8.5	9.0	11.0
15	12.5	9.5	1.5	.5	1.5	1.5	1.5	6.0	7.5	9.0	10.0	13.5
16	12.5	8.5	1.5	.5	1.0	2.0	2.0	5.5	8.0	9.0	8.5	12.0
17	12.5	7.5	1.5	.5	1.5	2.0	2.5	5.5	8.0	8.0	9.0	13.0
18	13.0	8.5	1.5	.5	1.5	2.0	2.0	6.0	8.0	8.0	9.0	10.0
19	13.0	8.0	.5	.0	1.5	2.5	2.0	5.5	7.5	8.5	9.5	11.5
20	12.5	5.0	1.0	.5	1.5	2.0	2.5	5.5	7.5	10.0	8.5	12.0
21	12.0	5.5	1.0	1.0	1.5	2.5	2.5	6.0	9.0	8.0	8.5	14.0
22	12.5	6.0	1.0	1.0	1.5	2.0	2.5	6.5	9.0	8.0	8.5	12.0
23	12.5	6.0	1.0	1.0	1.5	1.5	2.5	6.5	7.5	8.5	8.5	11.5
24	12.5	6.0	.0	1.0	1.5	2.0	3.0	7.0	7.5	8.0	8.5	12.5
25	13.0	4.0	.5	1.0	1.5	2.0	3.0	7.0	7.0	8.0	9.0	13.5
26	13.0	6.0	.5	1.0	1.5	2.5	3.0	6.5	7.5	8.0	9.0	11.5
27	12.5	6.0	.5	1.0	1.5	2.5	3.5	7.5	8.0	8.0	9.5	12.0
28	12.5	5.0	.5	1.0	1.0	2.5	3.0	7.0	8.5	8.0	9.0	12.5
29	12.0	6.5	.5	1.0	---	3.0	3.5	7.0	8.0	8.0	9.0	12.0
30	12.0	5.0	.0	1.0	---	3.0	3.5	6.0	8.0	8.0	9.5	13.0
31	11.5	---	.5	.5	---	3.0	---	5.5	---	7.5	9.0	---
MEAN	12.5	8.5	1.5	.5	1.0	2.0	2.5	5.5	7.5	8.0	9.0	11.0
WTR YR 1978	MEAN	6.0	MAX	14.0	MIN	.0						

06132000 MISSOURI RIVER BELOW FORT PECK DAM, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV						
21...	1300	2.0	8800	13	309	76
MAR						
20...	1600	1.0	7100	285	5460	89
APR						
28...	1400	8.0	7300	99	1950	81
JUN						
01...	1400	10.0	11500	50	1550	83
JUL						
06...	1300	18.0	10200	11	303	50
26...	1100	12.0	14300	5	193	69
AUG						
24...	1100	11.0	14400	18	700	--
SEP						
29...	1100	13.5	13800	27	1010	86

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 21,77 1300	MAR 20,78 1600	JUN 1,78 1400
TOTAL CELLS/ML	330	370	210
DIVERSITY: DIVISION	0.2	0.0	0.4
..CLASS	0.2	0.0	0.4
...ORDER	0.2	0.0	0.4
...FAMILY	0.5	0.9	0.4
....GENUS	0.5	1.8	0.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....CHARACIACEAE						
....SCHROEDERIA	8	2	--	-	--	-
....DOCYSTACEAE						
....SELENASTRUM	--	-	--	-	14	7
CHRYSOPHYTA						
..BACILLARIOPHYCEAE						
...PENNALES						
...DIATOMACEAE						
....DIATOMA	24	7	14	4	--	-
...FRAGILARIACEAE						
....ASTERIONELLA	300#	90	140#	37	--	-
....SYNEDRA	--	-	160#	44	--	-
...GOMPHONEMACEAE						
....GOMPHONEMA	--	-	41	11	--	-
...NAVICULACEAE						
....NAVICULA	--	-	14	4	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROOCOCCALES						
...UNKNOWN 218010101021000	--	-	--	-	200#	93

MISSOURI RIVER MAIN STEM

06132000 MISSOURI RIVER BELOW FORT PECK DAM, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUL 6,78 1300	JUL 26,78 1300	AUG 24,78 1100	SEP 28,78 1100
TOTAL CELLS/ML	22	24000	28	88
DIVERSITY: DIVISION	0.0	1.1	0.7	1.3
..CLASS	0.0	1.1	0.7	1.3
...ORDER	0.0	1.3	0.7	1.6
....FAMILY	0.0	1.7	0.8	1.8
.....GENUS	1.0	2.2	0.8	1.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...CHARACIACEAE								
....SCHROEDERIA	--	-	--	-	--	-	7	8
....MICRACTINIACEAE								
....GOLENKINIA	--	-	160	1	--	-	--	-
....DOCYSTACEAE								
....ANKISTRODESMUS	--	-	160	1	--	-	--	-
....CHODATELLA	--	-	160	1	--	-	--	-
....DICTYOSPHAERIUM	--	-	4900#	21	--	-	--	-
....KIRCHNERIELLA	--	-	490	2	--	-	--	-
....DOCYSTIS	--	-	660	3	--	-	--	-
....SCENEDESMACEAE								
....ACTINASTRUM	--	-	660	3	--	-	--	-
....SCENEDESMUS	--	-	660	3	--	-	--	-
....TETRASTRUM	--	-	1300	6	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	330	1	--	-	--	-
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
....CYCLOTETRA	--	-	13000#	56	--	-	11	12
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	11#	50	--	-	1	5	--	-
....COCONEIS	11#	50	--	-	--	-	--	-
...DIATOMACEAE								
....DIATOMA	--	-	--	-	--	-	11	12
...NAVICULACEAE								
....NAVICULA	--	-	--	-	1	5	7	8
...NITZSCHIACEAE								
....NITZSCHIA	--	-	330	1	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...HORMOGONALES								
...NUSTOCACEAE								
....ANABAENA	--	-	--	-	--	-	53#	60
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	--	-	24#	86	--	-
EUGLENOPHYTA (EUGLENIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
....TRACHELOMONAS	--	-	330	1	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...GYMNODINIACEAE								
....GYMNODINIUM	--	-	160	1	1	5	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06132200 SOUTH FORK MILK RIVER NEAR BABB, MT

(International gaging station)

LOCATION.--Lat 48°45'14", long 113°10'00", in NE¼NW¼ sec.34, T.35 N., R.12 W., Glacier County, Hydrologic Unit 10050001, on right bank 300 ft (91 m) upstream from bridge on FAS 464 ("Duck Lake Road"), 14.4 mi (23.2 km) southeast of Babb, and 15.2 mi (24.5 km) northwest of Browning.

DRAINAGE AREA.--68.6 mi² (178 km²).

PERIOD OF RECORD.--May 1961 to current season (seasonal records only).

GAGE.--Water-stage recorder. Datum of gage is 4,731.6 ft (1,442.19 m) above mean sea level.

REMARKS.--Records good except winter period, which are poor. Several small diversions for irrigation above 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, 12,000 ft³/s (340 m³/s) June 8, 1964, gage height, 6.61 ft (2.015 m), from rating curve extended above 400 ft³/s (11.3 m³/s) on basis of slope-area measurement of peak flow at site 3 mi (5 km) downstream; maximum gage height, 6.78 ft (2.067 m) June 20, 1975 (backwater from bridge); no flow Aug. 23, 1973, June 28 to Aug. 14, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 260 ft³/s (7.36 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 30	0045	*472 13.4	*4.60 1.402	June 1	0215	345 9.77	4.25 1.295
Apr. 28	0130	333 9.43	4.21 1.283	Sept. 8	0830	287 8.13	4.10 1.250

Minimum daily discharge, 4.1 ft³/s (0.116 m³/s) Mar. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	5.1				7.0	91	135	248	50	31	14
2	9.9	5.8				6.7	66	130	117	46	41	12
3	7.5	---				5.0	53	117	87	49	34	11
4	6.1	---				4.1	47	102	73	55	25	11
5	5.4	---				5.0	52	95	69	97	20	10
6	5.0	---				5.8	44	107	69	90	16	12
7	5.0	---				7.0	36	99	79	91	14	44
8	4.4	---				8.3	35	79	72	80	12	182
9	4.4	---				10	34	72	69	75	12	54
10	5.7	---				9.9	36	81	80	63	12	31
11	7.1	---				9.0	55	86	71	51	11	26
12	7.6	---				7.6	53	76	63	42	9.9	107
13	7.6	---				7.3	40	67	59	37	12	101
14	6.6	---				7.0	38	79	58	32	15	54
15	5.9	---				6.7	38	112	55	30	17	37
16	5.4	---				7.6	39	95	52	29	18	39
17	5.1	---				9.4	44	86	50	32	36	37
18	4.9	---				21	35	81	46	71	64	30
19	4.6	---				33	37	77	64	102	32	29
20	4.1	---				52	40	69	65	59	27	28
21	4.0	---				47	53	67	52	44	33	25
22	3.9	---				51	51	68	45	44	34	23
23	3.6	---				60	49	73	51	36	72	19
24	3.6	---				75	42	130	61	30	44	19
25	3.7	---				100	42	154	54	24	27	20
26	4.0	---				150	53	96	67	21	21	18
27	5.6	---				200	151	75	51	21	18	18
28	6.5	---				250	197	65	44	20	16	16
29	6.2	---				248	147	61	49	20	16	16
30	5.8	---				287	108	71	66	21	15	16
31	5.3	---				217	---	202	---	24	15	---
TOTAL	178.7	---				1914.4	1806	2907	2086	1486	769.9	1059
MEAN	5.76	---				61.8	60.2	93.8	69.5	47.9	24.8	35.3
MAX	14	---				287	197	202	248	102	72	182
MIN	3.6	---				4.1	34	61	44	20	9.9	10
AC-FT	354	---				3800	3580	5770	4140	2950	1530	2100

THE SEASON MARCH TO OCTOBER

AC-FT

25,020

06133000 MILK RIVER AT WESTERN CROSSING OF INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'27", long 112°32'42", in NE¼ sec.1, T.1, R.20 W., fourth meridian, in Alberta, Hydrologic Unit 10050001, on left bank 0.8 mi (1.3 km) north of international boundary, 22 mi (35 km) upstream from North Milk River, 23 mi (37 km) southwest of Milk River, Alberta, and at mile 680.4 (1,094.8 km).

DRAINAGE AREA.--397 mi² (1,028 km²).

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). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 3,820 ft (1,160 m), from topographic map. Prior to Aug. 9, 1948, and Aug. 9, 1948, to Oct. 31, 1958, water-stage recorders at sites 0.4 mi (0.6 km) and 0.5 mi (0.8 km) downstream, respectively, at different datums.

REMARKS.--Records good except those for Feb. 28 to Aug. 21, which are poor. Several small diversions for irrigation above 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 discharge, 7,930 ft³/s (225 m³/s) June 9, 1964, gage height, 9.77 ft (2.978 m); maximum gage height, 12.55 ft (3.825 m) Mar. 18, 1976 (backwater from ice jam); no flow at times.

EXTREMES FOR CURRENT SEASON.--Peak discharges above base of 430 ft³/s (12.2 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 21	0430	*2600 73.6	a*9.94 3.030	Sept. 8	1300	1240 35.1	5.49 1.673
Apr. 28	1700	460 13.0	4.47 1.362	Sept.13	0200	822 23.3	4.93 1.503
June 1	2140	599 17.0	4.60 1.402				

a--backwater from ice

Minimum daily discharge, 2.1 ft³/s (0.059 m³/s) Mar. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1		---	3.3	535	245	483	81	75	15	36		
2		---	3.1	395	274	423	92	46	13	34		
3		---	2.7	255	280	297	86	60	12	33		
4		---	2.5	112	270	291	92	76	11	33		
5		---	2.1	123	251	302	119	71	9.4	33		
6		---	3.1	123	251	313	106	58	8.6	35		
7		---	4.4	106	283	339	138	47	50	35		
8		---	5.9	93	274	370	240	43	746	34		
9		---	7.0	90	224	199	262	39	363	35		
10		---	4.1	82	200	106	169	34	169	34		
11		---	3.5	90	200	109	119	31	105	35		
12		---	3.1	113	209	112	86	29	320	35		
13		---	2.5	129	194	97	71	29	618	34		
14		---	2.5	102	180	89	55	39	334	34		
15		---	2.5	92	167	82	45	15	178	33		
16		---	2.5	92	222	76	37	9.0	117	33		
17		---	85	107	222	73	47	25	92	34		
18		---	850	115	205	71	70	46	91	34		
19		---	1120	114	186	82	77	96	80	35		
20		---	1600	111	168	91	163	98	71	40		
21		---	2380	126	152	111	142	49	68	41		
22		---	1220	148	146	116	113	74	64	40		
23		---	941	161	147	110	92	186	58	39		
24		---	720	149	193	111	84	151	53	40		
25		---	871	131	258	113	77	107	49	41		
26		---	1020	124	301	129	70	61	45	42		
27		---	1180	139	271	126	64	42	44	45		
28		3.3	913	312	263	120	60	31	43	44		
29		---	681	360	277	100	60	24	39	42		
30		---	598	268	297	82	61	22	37	39		
31		---	648	---	329	---	67	18	---	39		
TOTAL		---	14881.8	4897	7139	5123	3045	1731.0	3903.0	1141		
MEAN		---	480	163	230	171	98.2	55.8	130	36.8		
MAX		---	2380	535	329	483	262	186	746	45		
MIN		---	2.1	82	146	71	37	9.0	8.6	33		
AC-FT		---	29520	9710	14160	10160	6040	3430	7740	2260		

THE SEASON MARCH TO OCTOBER AC-FT 83,030

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06133500 NORTH FORK MILK RIVER ABOVE ST. MARY CANAL, NEAR BROWNING, MT

(International gaging station)

LOCATION.--Lat 48°58'15", long 113°03'19", in NE¼NW¼NE¼ sec.16, T.37 N., R.11 W., Glacier County, Hydrologic Unit 10050001, on left bank 1.7 mi (2.7 km) upstream from outlet of canal, 1.9 mi (3.1 km) south of International boundary, and 29 mi (47 km) north of Browning.

DRAINAGE AREA.--61.8 mi² (160 km²).

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. Records usually obtained at this station only when St. Mary Canal is in operation.

GAGE.--Water-stage recorder. Concrete control since 1936. Altitude of gage is 4,220 ft (1,290 m), from topographic map. Prior to June 20, 1921, nonrecording gages at several sites within 1 mi (2 km) of present site at different datums.

REMARKS.--Records good. Several small diversions for irrigation above 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, 3,090 ft³/s (87.5 m³/s) May 8, 1967, gage height, 7.95 ft (2.423 m), from rating curve extended above 130 ft³/s (3.68 m³/s) on basis of slope-area measurements at gage heights 7.55 ft (2.301 m) and 7.95 ft (2.423 m); no flow Oct. 29, 1942.

EXTREMES FOR CURRENT SEASON.--Maximum discharge, 92 ft³/s (2.61 m³/s) Sept. 12, gage height, 2.10 ft (0.640 m); minimum, 7.5 ft³/s (0.21 m³/s) Aug. 12, gage height, 0.98 ft (0.299 m).

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			---	27	36	50	14	13	11	14		
2			---	23	34	28	13	13	11	14		
3			---	21	32	22	14	11	11	15		
4			---	21	31	20	14	10	11	15		
5			---	22	31	18	17	9.6	11	16		
6			---	20	35	17	17	9.0	12	16		
7			---	19	33	18	19	8.9	18	16		
8			---	19	30	16	20	8.9	29	15		
9			---	20	26	15	18	8.8	17	15		
10			---	19	28	15	16	9.1	14	15		
11			---	24	27	16	15	8.2	16	15		
12			---	22	24	16	14	7.8	68	16		
13			---	20	22	15	13	8.9	40	16		
14			---	20	23	14	13	10	23	16		
15			---	20	24	13	13	8.8	19	16		
16			---	21	23	13	11	9.1	17	16		
17			---	22	22	13	16	18	16	16		
18			---	22	21	13	25	19	16	16		
19			---	23	21	17	29	12	16	16		
20			---	22	19	17	16	11	16	15		
21			---	25	19	14	14	11	15	16		
22			---	26	19	13	13	13	15	16		
23			---	27	19	14	12	28	15	16		
24			---	24	32	15	11	15	15	15		
25			---	23	30	16	9.9	13	15	15		
26			---	25	20	18	9.9	12	14	15		
27			---	36	18	14	9.7	11	14	14		
28			---	44	18	14	9.6	11	14	14		
29				37	18	13	9.7	11	14	13		
30				42	32	22	14	10	11	13		
31				40	---	59	---	11	---	12		
TOTAL			---	727	816	511	446.8	361.1	537	468		
MEAN			---	24.2	26.3	17.0	14.4	11.6	17.9	15.1		
MAX			---	44	59	50	29	28	68	16		
MIN			---	19	18	13	9.6	7.8	11	12		
AC-FT			---	1440	1620	1010	886	716	1070	928		

THE SEASON APRIL TO OCTOBER

AC-FT

7,670

06134000 NORTH MILK RIVER NEAR INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°01'19", long 112°58'16", in SW¼NE¼ sec.11, T.1, R.23 W., fourth meridian, in Alberta, Hydrologic Unit 10050001, on right bank 0.4 mi (0.6 km) upstream from highway bridge, 1.6 mi (2.6 km) north of international boundary, 2.8 mi (4.5 km) east of Whiskey Gap, Alberta, and 11 mi (18 km) southeast of Kimball, Alberta

DRAINAGE AREA.--91.8 mi² (238 km²). Area at site used Apr. 12, 1930 to Aug. 15, 1962, 97.4 mi² (252 km²).

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), drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 4,112.16 ft (1,253.386 m) above mean sea level (Geodetic Surveys of Canada datum). Prior to May 1913, nonrecording gage at site 2 mi (3 km) downstream at different datum. May 1, 1913, to Apr. 11, 1930, water-stage recorder 700 ft (213 m) downstream at different datum. Apr. 12, 1930, to Aug. 15, 1962, water-stage recorder 1,500 ft (457 m) downstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Several small diversions for irrigation above station. For recorded diversions from St. Mary River into North Fork Milk River (see p. 34).

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 discharge, 2,950 ft³/s (83.5 m³/s) June 17, 1948, gage height, 6.47 ft (1.972 m), site and datum then in use, from rating curve extended above 1,500 ft³/s (42.5 m³/s); no flow Mar. 1, 2, 1940.

EXTREMES FOR CURRENT SEASON.--693 ft³/s (19.6 m³/s) Aug. 23, gage height, 4.20 ft (1.280 m); minimum observed, 11 ft³/s (0.31 m³/s) Oct. 31, gage height, 1.40 ft (0.426 m), result of discharge measurement.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1		---	18	39	40	266	639	493	582	14		
2		---	17	31	38	213	637	487	584	15		
3		---	16	29	34	198	641	477	583	16		
4		---	18	27	34	192	648	476	581	15		
5		---	20	26	35	189	654	471	561	16		
6		---	25	23	44	186	649	466	539	16		
7		---	30	20	38	191	651	465	397	16		
8		---	32	19	37	192	657	467	284	16		
9		---	50	20	30	191	645	467	119	16		
10		---	60	20	29	252	640	463	52	16		
11		---	50	26	28	336	583	463	41	16		
12		---	35	25	24	322	539	468	174	17		
13		---	28	21	22	388	533	469	73	17		
14		---	25	20	23	446	503	472	41	17		
15		---	25	20	25	452	362	464	32	17		
16		---	26	23	23	445	255	464	26	17		
17		---	71	26	23	445	264	513	20	17		
18		---	171	26	22	447	293	503	19	17		
19		---	220	30	21	461	295	473	19	17		
20		---	264	28	20	455	321	469	18	16		
21		---	200	32	18	447	416	472	15	17		
22		---	152	34	18	452	456	534	14	18		
23		---	93	39	22	479	455	650	15	17		
24		---	129	33	51	522	450	600	15	17		
25		---	150	28	207	557	464	597	15	17		
26		---	230	29	197	565	482	595	15	16		
27		20	160	37	192	579	482	597	15	16		
28		18	97	52	192	597	480	599	14	16		
29		---	72	42	190	618	482	594	15	15		
30		---	65	35	205	636	482	594	15	15		
31		---	63	---	300	---	486	585	---	13		
TOTAL		---	2612	860	2182	11719	15544	15907	4913	501		
MEAN		---	84.3	28.7	70.4	391	501	513	164	16.2		
MAX		---	264	52	300	636	657	650	584	18		
MIN		---	16	19	18	186	255	463	14	13		
AC-FT		---	5180	1710	4330	23240	30830	31550	9740	994		

THE SEASON MARCH TO OCTOBER

AC-FT

107,600

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06134500 MILK RIVER AT MILK RIVER, ALBERTA

(International gaging station)

LOCATION.--Lat 49°08'37", long 112°04'44", in NE¼ sec.21, T.2, R.16 W., fourth meridian, in Alberta, Hydrologic Unit 10050002, on right bank 5 ft (1.5 m) downstream from highway bridge at Milk River, Alberta, and 22 mi (35 km) downstream from North Milk River.

DRAINAGE AREA.--1,036 mi² (2,683 km²).

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). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,402.78 ft (1,037.167 m) National Geodetic Vertical Datum of 1929 (Geodetic Surveys of Canada datum). Prior to June 17, 1919, nonrecording gages, and June 17, 1919, to Nov. 2, 1921, water-stage recorder all at several sites 300 ft (91 m) upstream at datum 0.61 ft (0.186 m) higher. Nov. 3, 1921 to Aug. 28, 1947, water-stage recorder at site 60 ft (18 m) upstream at present datum. Aug. 29, 1947, to Nov. 10, 1976, water-stage recorder located 700 ft (213 m) downstream on left bank at present datum.

REMARKS.--Records good except those for winter months, which are poor. Since 1917, flow increased during irrigation season by water from St. Mary Canal (see p. 35). Several small diversions for irrigation above station.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

AVERAGE DISCHARGE.--62 years (1916-78), 326 ft³/s (9.232 m³/s), 236,200 acre-ft/yr (291 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,170 ft³/s (260 m³/s) June 21, 1975, gage height, 10.58 ft (3.225 m); maximum gage height, 11.45 ft (3.490 m) Mar. 21, 1978 (backwater from ice); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,500 ft³/s (99.1 m³/s) Mar. 21, gage height, 7.68 ft (2.341 m), backwater from ice; maximum gage height, 11.45 ft (3.490 m) Mar. 21 (backwater from ice); minimum daily discharge, 10 ft³/s (0.28 m³/s) Dec. 8-10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	22	13	11	12	22	885	412	624	722	553	686
2	38	20	13	12	12	22	595	356	886	737	556	673
3	35	18	13	13	13	22	426	387	609	741	543	667
4	31	17	12	13	14	21	333	372	452	749	549	664
5	29	17	11	12	15	23	283	362	381	900	547	663
6	28	16	11	12	15	27	251	362	341	844	528	669
7	30	16	11	11	15	34	235	363	320	805	512	652
8	29	16	10	12	14	50	211	355	312	849	500	1070
9	29	18	10	13	13	70	197	314	317	983	491	1010
10	29	21	10	13	13	72	185	261	300	858	484	516
11	29	25	11	13	12	74	183	222	344	781	474	313
12	30	24	12	14	12	67	169	227	452	686	474	340
13	29	23	13	14	11	57	216	218	455	613	476	896
14	30	21	13	13	12	49	213	196	498	583	475	745
15	29	18	13	12	14	45	193	180	558	538	460	439
16	28	15	13	11	16	81	184	201	563	421	480	293
17	27	13	14	11	19	191	200	238	556	348	537	222
18	27	12	14	12	22	351	222	210	559	408	612	190
19	26	12	14	12	25	468	223	188	563	448	570	180
20	27	11	14	14	27	668	221	178	571	431	584	163
21	26	11	15	16	26	780	229	167	565	496	569	149
22	25	11	13	15	26	2500	252	152	571	559	624	138
23	24	11	12	14	25	1330	275	147	562	575	1120	127
24	24	13	11	13	24	1200	272	168	579	553	1020	118
25	23	15	11	12	23	1610	240	191	632	534	860	109
26	22	17	11	12	22	2160	210	403	672	539	768	102
27	22	18	12	12	21	2350	198	446	683	552	726	98
28	23	18	14	12	21	1770	223	369	689	545	708	95
29	22	17	13	12	---	1330	544	344	701	537	703	90
30	23	15	12	11	---	1130	473	340	717	532	697	86
31	23	---	11	11	---	1090	---	403	---	536	696	---
TOTAL	854	501	380	388	494	19914	8561	8732	16032	19403	18916	12163
MEAN	27.5	16.7	12.3	12.5	17.6	642	285	282	534	626	610	405
MAX	38	25	15	16	27	2500	885	446	886	983	1120	1070
MIN	22	11	10	11	11	21	183	147	300	348	474	86
AC-FT	1690	994	754	770	980	39500	16980	17320	31860	38490	37520	24130

CAL YR 1977 TOTAL 63354 MEAN 174 MAX 786 MIN 10 AC-FT 125700
WTR YR 1978 TOTAL 106338 MEAN 291 MAX 2500 MIN 10 AC-FT 210900

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

MILK RIVER BASIN

06134850 MILK RIVER NEAR WRITING-ON-STONE PARK, ALBERTA

(International gaging station)

LOCATION.--Lat 49°05'18", long 111°32'05", in SW¼ sec.3, T.2, R.12 W., fourth meridian, in Alberta, Hydrologic Unit 10050002, on right bank at downstream side of bridge, approximately 4 mi (6 km) downstream from Writing-On-Stone Park, and 30 mi (48 km) east of Milk River, Alberta.

DRAINAGE AREA.--1,690 mi² (4,380 km²).

PERIOD OF RECORD.--June to October 1978 (seasonal records only).

GAGE.--Water-stage recorder. Altitude of gage is 2,970 ft (905 m), from topographic map.

REMARKS.--Records fair. Flow increased during irrigation season by water supplied from St. Mary Canal (see p. 35). Several small diversions for irrigation above 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 discharge, 3,350 ft³/s (94.9 m³/s) Aug. 23, 1978, gage height, 8.35 ft (2.545 m); minimum, 77 ft³/s (2.18 m³/s) Oct. 16, 1978, gage height, 2.85 ft (0.869 m).

EXTREMES FOR CURRENT SEASON.--Maximum discharge during period June to October, 3,350 ft³/s (94.9 m³/s) Aug. 23, gage height, 8.35 ft (2.545 m); minimum, 77 ft³/s (2.18 m³/s) Oct. 16, gage height 2.85 ft (0.869 m).

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				---	---	437	723	571	680	106		
2				---	---	745	736	580	666	100		
3				---	356	759	776	573	659	93		
4				---	---	521	856	555	659	94		
5				---	---	423	928	556	650	90		
6				---	---	377	971	549	663	87		
7				---	---	346	850	530	678	84		
8				---	---	326	863	520	744	85		
9				---	---	315	934	516	1310	86		
10				---	---	304	976	510	801	84		
11				---	---	308	834	501	487	87		
12				---	---	367	767	501	491	85		
13				---	---	427	661	503	879	83		
14				---	---	421	603	515	1110	82		
15				---	233	484	570	518	688	74		
16				---	215	518	520	533	445	78		
17				---	---	528	591	565	337	78		
18				---	---	526	823	639	274	79		
19				---	---	544	696	664	240	78		
20				---	---	558	560	629	221	78		
21				---	---	562	519	664	198	79		
22				---	---	554	593	950	161	81		
23				---	---	546	671	2730	172	83		
24				---	190	544	666	1680	162	87		
25				---	199	576	631	1130	152	88		
26				275	229	630	610	933	141	86		
27				260	404	666	614	817	133	84		
28				---	382	669	607	747	125	90		
29				---	352	695	593	722	120	91		
30				---	352	704	574	713	113	91		
31				---	383	---	569	697	---	86		
TOTAL				---	---	15380	21885	22811	14179	2669		
MEAN				---	---	513	706	736	473	86.1		
MAX				---	---	759	976	2730	1310	106		
MIN				---	---	304	519	501	113	78		
AC-FT				---	---	30510	43410	45250	28120	5290		

THE SEASON JUNE TO OCTOBER AC-FT 152,600

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

MILK RIVER BASIN

201

06134950 MILK RIVER NEAR PENDANT d'OREILLE, ALBERTA

(International gaging station)

LOCATION.--Lat 49°07'25", long 110°52'15", in NW¼ sec.15, T.2, R.7 W., fourth meridian, in Alberta, Hydrologic Unit 10050002, on left bank, approximately 8 mi (13 km) southeast of Pendant d'Oreille gas plant, and 9 mi (14 km) south of Pendant d'Oreille.

DRAINAGE AREA.--2,330 mi² (6,030 km²).

PERIOD OF RECORD.--June to October 1978 (seasonal records only).

GAGE.--Water-stage recorder. Altitude of gage is 2,800 ft (850 m), from topographic map.

REMARKS.--Records fair. No discharge computations for period, Sept. 6-19. Flow increased during irrigation season by water supplied from St. Mary Canal (see p.35). Several small diversions for irrigation above 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 discharge, 3,670 ft³/s (104 m³/s) Aug. 24, 1978, gage height, 7.68 ft (2.341 m); minimum, 73 ft³/s (2.07 m³/s) Oct. 21, 1978, gage height, 3.12 ft (0.951 m).

EXTREMES FOR CURRENT SEASON.--Maximum discharge during period June to October, 3,670 ft³/s (104 m³/s) Aug. 24, gage height, 7.68 ft (2.341 m); minimum, 73 ft³/s (2.07 m³/s) Oct. 21, gage height, 3.12 ft (0.951 m).

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1					---	373	610	551	686	125		
2					---	430	626	554	657	119		
3					---	713	746	563	659	117		
4					---	793	878	570	661	108		
5					---	557	862	562	657	101		
6					---	463	925	559	---	99		
7					---	420	938	543	---	99		
8					---	384	820	522	---	98		
9					---	353	830	488	---	93		
10					---	326	911	471	---	93		
11					---	316	948	453	---	95		
12					---	318	812	444	---	94		
13					---	347	714	443	---	97		
14					---	450	595	450	---	95		
15					---	424	517	462	---	89		
16					---	472	481	469	---	85		
17					---	510	439	519	---	83		
18					---	520	539	553	---	80		
19					---	524	818	595	---	78		
20					---	519	743	665	299	76		
21					---	532	643	631	258	73		
22					---	551	581	667	239	75		
23					---	533	609	1840	227	79		
24					---	533	644	2550	215	82		
25					---	524	625	1220	205	84		
26					---	529	575	992	169	88		
27					---	562	544	896	156	87		
28					---	592	539	840	143	89		
29					---	589	535	755	137	92		
30					---	335	608	537	132	92		
31					---	340	---	540	696	89		
TOTAL					---	14765	21124	22227	---	2854		
MEAN					---	492	681	717	---	92.1		
MAX					---	793	948	2550	---	125		
MIN					---	316	439	443	---	73		
AC-FT					---	29290	41900	44090	---	5660		

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

MILK RIVER BASIN

06135000 MILK RIVER AT EASTERN CROSSING OF INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 48°59'05", long 110°28'15", in NE¼NW¼ sec.7, T.37 N., R.10 E., Hill County, Hydrologic Unit 10050002, on right bank 1.1 mi (1.8 km) south of international boundary, 6.5 mi (10.5 km) upstream from Lost River, 12.5 mi (20.1 km) northwest of Simpson, 29.5 mi (47.5 km) north of Rudyard, and at mile 466.0 (749.8 km).

DRAINAGE AREA.--2,628 mi² (6,807 km²).

PERIOD OF RECORD.--August 1909 to current year. 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: 1921-13, 1921-22, 1929(M), drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 2,660 ft (811 m), from international boundary map. Prior to Oct. 1, 1970, water-stage recorder or nonrecording gages at several sites within 10.5 mi (16.9 km) upstream at different datums.

REMARKS.--Records fair except those for winter months, which are poor. Since 1917 flow increased during irrigation season by water from St. Mary Canal (see p. 35). Small diversions for irrigation above 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, 10,700 ft³/s (303 m³/s) Apr. 9, 1965, gage height, 9.53 ft (2.905 m), site and datum then in use, but may have been higher Mar. 28, 1952; maximum gage height, 13.65 ft (4.161 m), site and datum then in use Mar. 28, 1952 (backwater from ice); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge recorded, 7,220 ft³/s (204 m³/s) Mar. 27, gage height, 9.61 ft (2.929 m), backwater from ice; maximum gage height recorded, 10.11 ft (3.082 m) Mar. 23 (backwater from ice); minimum daily discharge recorded, 4.0 ft³/s (0.11 m³/s) Feb. 28-Mar. 9, but may have been less during the period the gage was out of operation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64				---	4.0	1670	508	533	774	526	688
2	61				---	4.0	1380	658	582	790	557	681
3	57				---	4.0	1170	552	664	849	563	694
4	54				---	4.0	911	541	994	986	573	677
5	51				---	4.0	824	573	752	849	565	653
6	47				---	4.0	757	607	616	832	528	642
7	46				---	4.0	689	607	557	994	523	662
8	46				---	4.0	597	639	481	989	523	677
9	44				---	4.0	520	607	417	668	515	813
10	42				---	15	477	563	375	895	505	1090
11	36				---	50	428	524	359	974	475	891
12	35				---	85	394	467	344	841	466	993
13	35				---	116	334	421	315	759	459	662
14	34				---	149	294	376	324	760	452	723
15	32				---	207	273	364	412	693	450	1010
16	32				---	262	274	356	401	657	460	739
17	31				---	278	288	347	454	627	471	590
18	30				---	296	443	328	521	615	508	480
19	30				---	433	401	328	540	745	541	439
20	29				---	1740	413	351	517	836	564	373
21	29				---	2030	413	323	509	632	642	328
22	28				---	3270	460	295	500	559	648	292
23	27				---	5540	488	267	518	466	943	265
24	27				---	3080	504	410	508	468	2770	233
25	26				---	3990	466	309	531	526	1490	203
26	25				---	5620	453	254	544	522	1250	188
27	25				---	6800	443	231	580	494	1070	175
28	24				4.0	5180	420	232	635	474	930	165
29	24				---	3400	382	397	735	486	855	159
30	23				---	2600	427	512	730	499	804	153
31	22				---	2010	---	510	---	511	721	---
TOTAL	1116				---	47187.0	16993	13457	15948	21972	22347	16338
MEAN	36.0				---	1522	566	434	532	709	721	545
MAX	64				---	6800	1670	658	994	994	2770	1090
MIN	22				---	4.0	273	231	315	466	450	153
AC-FT	2210				---	93600	33710	26690	31630	43580	44330	32410

Wild Horse Lake closed basin

06135500 SAGE CREEK AT Q RANCH, NEAR WILD HORSE, ALBERTA

(International gaging station)

LOCATION.--Lat 49°06'29", long 110°13'23", in NW¼ sec.9, T.2, R.2 W., fourth meridian, in Alberta, Hydrologic Unit 10050003, on right bank 3.5 mi (5.6 km) north of Q Ranch buildings, 7.5 mi (12.1 km) north of Wild Horse Port of Entry, and 12.5 mi (20.1 km) north of Simpson, Mt.

DRAINAGE AREA.--175 mi² (453 km²).

PERIOD OF RECORD.--March 1935 to current season (seasonal records only). March 1935 to October 1950 monthly discharge only, published in WSP 1309. March to October 1951 monthly discharge only, published in WSP 1729.

GAGE.--Water-stage recorder. Altitude of gage is 2,900 ft (884 m), from topographic map. Prior to Sept. 24, 1935, nonrecording gage at site 2 mi (3 km) downstream at different datum. Sept. 24, 1935, to Oct. 31, 1951, water-stage recorder at site 100 ft (30 m) upstream at datum 0.15 ft (0.046 m) higher.

REMARKS.--Records fair.

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 discharge, 3,500 ft³/s (99.1 m³/s) Apr. 11, 1937, gage height, 15.87 ft (4.837 m), site and datum then in use, caused by failure of Elbow Coulee dam; no flow most of each season.

EXTREMES FOR CURRENT SEASON.--Maximum discharge, 577 ft³/s (16.3 m³/s) Apr. 6, gage height, 11.26 ft³/s (3.432 m); no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	481	50	1.0	.00	.00	.00	.00		
2			.00	258	56	.72	.00	.00	.00	.00		
3			.00	191	31	.49	.00	.00	.00	.00		
4			.00	268	28	.37	.00	.00	.00	.00		
5			.00	473	30	.25	.00	.00	.00	.00		
6			.00	530	17	.18	.00	.00	.00	.00		
7			.00	212	10	.16	.00	.00	.00	.00		
8			.00	94	7.2	.11	2.5	.00	.00	.00		
9			.00	104	5.7	.05	70	.00	.00	.00		
10			.00	100	5.3	.00	70	.00	.00	.00		
11			.00	84	5.2	.00	31	.00	.00	.00		
12			.00	116	4.3	.00	16	.00	.34	.00		
13			.00	74	4.2	.00	7.9	.00	114	.00		
14			.00	43	3.6	.00	8.2	.00	105	.00		
15			.00	38	2.6	.00	3.1	.00	24	.00		
16			.00	49	2.0	.00	1.1	.00	8.7	.00		
17			.00	70	1.5	.00	.54	.00	3.6	.00		
18			.00	278	1.3	.00	.42	.00	1.5	.00		
19			.00	289	1.1	.00	.40	.00	.74	.00		
20			.00	92	1.4	.00	.25	.00	.41	.00		
21			.00	58	1.4	.00	.15	.00	.22	.00		
22			.00	51	.95	.00	.08	.00	.12	.00		
23			.00	44	.68	.00	.00	.00	.01	.00		
24			.00	44	2.2	.00	.00	.00	.00	.00		
25			.00	49	.49	.00	.00	.00	.00	.00		
26			.00	49	46	.00	.00	.00	.00	.00		
27			.00	75	16	.00	.00	.00	.00	.00		
28			.00	83	7.0	.00	.00	.00	.00	.00		
29			.00	59	3.6	.00	.00	.00	.00	.00		
30			.00	37	2.1	.00	.00	.00	.00	.00		
31			213	---	1.5	---	.00	.00	---	.00		
TOTAL			213.00	4373	397.83	3.33	211.64	.00	258.64	.00		
MEAN			6.87	146	12.8	.11	6.83	.000	8.62	.000		
MAX			213	530	56	1.0	70	.00	114	.00		
MIN			.00	37	.68	.00	.00	.00	.00	.00		
AC-FT			422	8670	789	6.6	420	.00	513	.00		

THE SEASON MARCH TO OCTOBER AC-FT 10,820

Note.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

MILK RIVER BASIN

Wild Horse Lake closed basin

06136000 SAGE CREEK AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'14", long 110°11'22", in SE¼ sec.3, T.1, R.2 W., fourth meridian, in Alberta, Hydrologic Unit 10050003, on right bank 0.3 mi (0.5 km) north of international boundary, 1.1 mi (1.8 km) east of Wild Horse Port of Entry, and 5.2 mi (8.4 km) north of Simpson, Mt.

DRAINAGE AREA.--220 mi² (570 km²).

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 and concrete low-water control. Altitude of gage is 2,800 ft (853 m), from international boundary map. Prior to Sept. 22, 1950, at site 0.5 mi (0.8 km) downstream at different datum.

REMARKS.--Records poor. Many diversions for irrigation above station. All of the flow may be diverted at times. During the spring, high-water natural overflow occurs at many points along channel above and below gage.

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 discharge, 66 ft³/s (1.87 m³/s) Apr. 12, 1978, gage height, 4.44 ft (1.353 m), backwater from snow; maximum gage height, 5.12 ft (1.561 m) Apr. 11, 1978 (backwater from snow); no flow most of each season.

EXTREMES FOR CURRENT SEASON.--Maximum discharge, 66 ft³/s (1.87 m³/s) Apr. 12, gage height, 4.44 ft (1.353 m) backwater from snow; maximum gage height, 5.12 ft (1.561 m) Apr. 11 (backwater from snow). No flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	.00	36	3.1	.00	.00	.00	.20		
2			.00	.00	37	1.6	.00	.00	.00	.20		
3			.00	.00	42	1.0	.00	.00	.00	.17		
4			.00	.00	29	.94	.00	.00	.00	.17		
5			.00	.00	23	.65	.00	.00	.00	.17		
6			.00	.00	26	.55	.00	.00	.00	.13		
7			.00	.00	15	.50	.00	.00	.00	.13		
8			.00	.00	9.9	.65	.00	.00	.00	.13		
9			.00	.00	7.4	.50	.00	.00	.00	.13		
10			.00	.00	6.5	.35	.28	.00	.00	.10		
11			.00	23	6.0	.30	51	.00	.00	.10		
12			.00	63	5.6	.25	49	.00	.00	.10		
13			.00	59	5.4	.20	29	.00	.00	.10		
14			.00	50	5.2	.17	20	.00	6.0	.07		
15			.00	47	4.9	.13	14	.00	54	.07		
16			.00	27	4.2	.10	9.0	.00	45	.07		
17			.00	10	3.3	.07	7.8	.00	22	.10		
18			.00	17	2.5	.00	5.1	.00	12	.10		
19			.00	39	1.6	.00	3.3	.00	7.0	.13		
20			.00	45	1.3	.00	1.3	.00	3.1	.13		
21			.00	46	1.2	.00	.45	.00	1.4	.20		
22			.00	48	1.0	.00	.30	.00	.78	.20		
23			.00	49	1.1	.00	.20	.00	.55	.20		
24			.00	48	1.5	.00	.13	.00	.45	.20		
25			.00	46	1.4	.00	.10	.00	.35	.49		
26			.00	46	21	.00	.07	.00	.30	.65		
27			.00	44	38	.00	.03	.00	.30	.30		
28			.00	47	17	.00	.03	.00	.30	.17		
29			.00	47	10	.00	.03	.00	.30	.13		
30			.00	45	7.0	.00	.03	.00	.25	.07		
31			.00	---	4.0	---	.00	.00	---	.03		
TOTAL			.00	846.00	375.0	11.06	191.15	.00	154.08	5.14		
MEAN			.000	28.2	12.1	.37	6.17	.000	5.14	.17		
MAX			.00	63	42	3.1	51	.00	54	.65		
MIN			.00	.00	1.0	.00	.00	.00	.00	.03		
AC-FT			.00	1680	744	22	379	.00	306	10		

THE SEASON MARCH TO OCTOBER AC-FT 3,140

205

LOCATION.--Lat 48°18'07", long 109°50'37", in SW¼SW¼NW¼ sec.6, T.29 N., R.14 E., Hill County, Hydrologic Unit 10050005, on right bank 1,000 ft (305 m) upstream from Bonneau Reservoir, 4,000 ft (1,219 m) downstream from Wolf Creek, and 4.1 mi (6.6 km) northwest of Rocky Boy Agency.

WATER-DISCHARGE RECORDS

REMARKS.--Water-discharge records poor. Backwater from beaver dams Oct. 1 to Sept. 30. No known regulation or diversions above station.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 30 ft³/s (0.85 m³/s) and maximums(*):

Date	Time	Discharge		Gage height		Date	Time	Discharge		Gage height	
		(ft ³ /s)	(m ³ /s)	(ft)	(m)			(ft ³ /s)	(m ³ /s)	(ft)	(m)
Mar. 17	2130	101	2.86	6.29	1.917	June 12	2300	52	1.47	5.48	1.670
Mar. 26	1600	*a243	6.88	*b6.86	2.091	June 19	1600	116	3.29	6.02	1.835
Apr. 18	1700	86	2.44	5.82	1.774	July 5	1930	37	1.05	5.20	1.585
May 6	1000	182	5.15	6.49	1.978	Sept. 12	1730	*78	2.21	6.09	1.856
May 31	1600	112	3.17	6.04	1.841						

Minimum daily discharge, 1.9 ft³/s (0.054 m³/s) Dec. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	2.8	3.0	3.8	3.0	3.0	31	45	72	21	7.0	6.2
2	8.9	2.0	2.8	3.7	3.0	2.7	27	45	52	20	9.5	5.5
3	6.6	3.2	2.7	3.7	3.1	2.6	27	46	47	20	8.4	5.0
4	6.0	2.2	2.6	3.8	3.2	2.8	24	47	44	20	8.4	5.5
5	5.8	2.6	2.4	3.7	3.4	3.2	23	53	42	27	6.4	5.2
6	5.8	3.2	2.3	3.7	3.5	4.6	23	89	42	26	5.5	6.6
7	5.4	3.4	2.2	3.5	3.7	5.0	23	74	43	23	4.8	7.1
8	5.4	3.5	2.1	3.5	3.8	6.0	22	83	42	32	4.1	8.6
9	5.8	3.4	1.9	4.0	3.5	9.0	21	68	41	28	4.1	7.6
10	5.4	4.0	2.2	4.0	3.4	8.4	20	69	39	26	3.5	6.6
11	4.8	4.0	3.0	3.8	3.3	8.0	18	66	46	19	3.1	6.8
12	4.4	3.7	4.0	3.8	3.2	7.8	21	77	48	16	3.2	47
13	3.5	4.1	4.0	3.7	3.1	7.5	18	65	40	16	3.1	28
14	3.2	3.4	4.0	3.7	3.1	7.2	18	61	38	14	4.3	12
15	3.1	3.5	4.0	3.4	3.0	6.4	17	60	36	13	4.8	8.4
16	3.1	3.5	4.0	3.4	3.1	5.2	17	63	34	13	5.2	7.9
17	3.4	3.2	4.1	3.4	3.4	13	32	76	39	16	12	7.9
18	3.1	2.7	4.1	3.2	3.5	49	58	119	32	20	17	8.3
19	2.8	2.6	4.1	3.4	3.8	22	59	83	83	18	11	9.2
20	2.7	2.5	4.1	3.4	4.0	28	51	72	62	16	9.8	9.9
21	3.2	2.2	4.0	3.4	4.3	30	46	67	40	13	12	8.5
22	3.4	2.4	4.0	3.7	4.4	28	42	62	35	11	11	7.4
23	3.2	2.5	4.0	3.4	5.0	19	34	59	32	10	13	6.8
24	3.2	2.8	4.0	3.1	5.5	43	34	74	30	6.9	11	6.1
25	3.4	3.0	4.1	3.2	3.1	62	34	59	31	7.6	8.6	5.8
26	3.2	3.0	4.1	3.5	3.0	142	32	52	29	7.1	8.1	5.5
27	3.2	3.0	4.3	3.4	2.7	85	39	47	26	6.4	8.6	5.2
28	3.2	3.1	4.0	3.2	3.1	53	49	45	23	5.5	9.2	5.6
29	3.4	3.2	3.8	3.1	---	55	54	43	21	5.8	8.1	5.2
30	3.5	3.1	3.8	3.0	---	56	49	47	20	5.8	7.3	6.0
31	3.4	---	3.7	2.9	---	47	---	86	---	5.8	6.6	---
TOTAL	137.5	91.8	107.4	108.5	98.2	821.4	963	2002	1209	496.9	239.3	271.4
MEAN	4.44	3.06	3.46	3.50	3.51	26.5	32.1	64.6	40.3	16.0	7.72	9.05
MAX	12	4.1	4.3	4.0	5.5	142	59	119	83	32	17	47
MIN	2.7	2.0	1.9	2.9	2.7	2.6	17	43	20	5.5	3.1	5.0
AC-FT	273	182	213	215	195	1630	1910	3970	2400	986	475	538
CAL YR 1977	TOTAL	2126.0	MEAN	5.82	MAX	56	MIN	1.9	AC-FT	4220		
WTR YR 1978	TOTAL	6546.4	MEAN	17.9	MAX	142	MIN	1.9	AC-FT	12980		

MILK RIVER BASIN

06137570 BOXELDER CREEK NEAR ROCKY BOY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
11...	1430	5.0	0	569	8.2	13.0	6.0	4	11.2	102
NOV										
07...	1430	3.5	3	591	8.0	5.0	4.5	8	10.7	93
DEC										
22...	1430	4.0	1	548	7.9	-5.5	.0	5	12.7	98
JAN										
17...	1530	3.4	2	533	7.6	-16.5	.0	7	11.6	89
FEB										
23...	1115	3.7	2	524	8.0	7.5	.0	4	12.1	93
MAR										
21...	1400	28	1	348	8.0	14.5	1.5	30	11.9	95
APR										
11...	1345	18	73	462	8.2	7.0	4.0	4	10.4	97
JUN										
05...	1415	43	0	427	8.5	28.0	18.5	4	8.3	102
20...	1530	55	0	435	8.4	25.0	17.0	7	8.7	101
JUL										
11...	1500	21	0	472	8.4	23.0	19.5	4	8.5	105
AUG										
08...	0900	4.1	0	552	8.0	20.5	18.5	15	7.5	90
SEP										
06...	1515	6.6	1	503	8.3	25.0	21.5	2	8.2	104

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TUCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)
OCT									
11...	120	41	210	0	49	22	52	1.6	6.3
NOV									
07...	--	64	220	0	49	23	61	1.6	5.8
DEC									
22...	62	50	200	0	44	21	52	1.6	5.6
JAN									
17...	60	33	210	0	46	22	55	1.7	5.2
FEB									
23...	K2200	320	190	0	43	21	56	1.8	5.2
MAR									
21...	K40	5600	130	0	28	14	33	1.3	6.5
APR									
11...	K160	K30	150	0	31	18	42	1.5	5.4
JUN									
05...	62	57	160	0	39	16	34	1.2	5.4
20...	240	290	160	0	38	17	38	1.3	5.2
JUL									
11...	88	91	180	0	39	19	43	1.4	5.3
AUG									
08...	42	85	180	0	42	18	45	1.5	6.0
SEP									
06...	230	720	190	0	45	19	51	1.6	6.5

MILK RIVER BASIN

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06137570 BOXELDER CREEK NEAR ROCKY BOY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 11...	370	0	3.7	23	3.0	.3	24	362	.49
NOV 07...	380	0	6.1	31	4.0	.3	24	386	.53
DEC 22...	330	0	6.6	28	3.2	.3	22	339	.46
JAN 17...	350	0	14	24	3.5	.2	24	353	.46
FEB 23...	340	0	5.4	27	3.4	.2	23	347	.47
MAR 21...	200	0	3.2	27	3.4	.1	14	225	.31
APR 11...	270	0	2.7	29	3.6	.2	16	279	.38
JUN 05...	240	6	1.3	21	1.8	.2	17	259	.35
20...	260	9	1.8	23	1.8	.2	19	280	.38
JUL 11...	290	7	1.9	20	1.8	.2	22	300	.41
AUG 08...	330	0	5.3	19	1.5	.2	22	317	.43
SEP 06...	340	0	2.7	14	2.0	.2	24	330	.45

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 11...	4.89	.01	.03	.32	.35	.36	.08	150	100
NOV 07...	3.65	.01	.04	.47	.51	.52	.14	160	50
DEC 22...	3.66	.05	.02	.29	.31	.36	.08	140	80
JAN 17...	3.24	.11	.09	1.2	1.3	1.4	.12	160	100
FEB 23...	3.47	.18	.15	.42	.57	.75	.09	140	70
MAR 21...	17.0	.19	.28	1.0	1.3	1.5	.32	110	210
APR 11...	13.6	.01	.03	.69	.72	.73	.06	120	40
JUN 05...	30.1	.03	.03	.46	.49	.52	.08	130	50
20...	41.6	.01	.01	.47	.48	.49	.15	120	40
JUL 11...	17.0	.00	.03	.59	.62	.62	.14	140	50
AUG 08...	3.51	.02	.02	.69	.71	.73	.14	150	30
SEP 06...	5.88	.01	.03	.50	.53	.54	.13	140	50

DATE	TIME	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	ALUMINUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE)	BERYLLIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)
OCT 11...	1430	90	20	2	2	0	0	<10	3	20
JAN 17...	1530	--	20	--	1	--	0	--	1	--
APR 11...	1345	190	0	2	3	10	0	1	0	20
JUN 20...	1530	--	0	--	3	--	0	--	1	--

MILK RIVER BASIN

06137570 BOXELDER CREEK NEAR ROCKY BOY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHROMIUM, DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 11...	0	<10	0	430	<100	9	2	2	100	90
JAN 17...	10	--	2	--	--	7	--	2	--	80
APR 11...	0	6	0	710	14	3	2	2	60	40
JUN 20...	0	--	6	--	--	2	--	5	--	40

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL SOLVED (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 11...	.0	.0	6	1	<50	2	0	0	1.2	10
JAN 17...	--	.0	--	1	--	4	--	0	.9	0
APR 11...	.0	.0	--	2	13	7	0	0	1.0	20
JUN 20...	--	.0	--	0	--	0	--	1	3.4	5

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEDUS (CFS)	SEDIM- ENT, SUS- PENDED (MG/L)	SEDIM- ENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 11...	1430	6.0	5.0	7	.09	--
NOV 07...	1430	4.5	3.5	7	.07	--
DEC 22...	1430	.0	4.0	28	.30	--
JAN 17...	1530	.0	3.4	22	.20	--
FEB 23...	1115	.0	3.7	6	.06	--
MAR 21...	1400	1.5	28	166	13	54
APR 11...	1345	4.0	18	19	.92	68
JUN 05...	1415	18.5	43	21	2.4	--
JUN 20...	1530	17.0	55	39	5.8	83
JUL 11...	1500	19.5	21	17	.96	--
AUG 08...	0900	18.5	4.1	43	.48	--
SEP 06...	1515	21.5	6.6	10	.18	--

MILK RIVER BASIN

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06137580 SAGE CREEK NEAR WHITLASH, MT

LOCATION.--Lat 48°53'40", long 111°01'47", in NW¼NW¼SW¼ sec. 12, T.36 N., R.5 E., Liberty County, Hydrologic Unit 10050006, on left bank, 0.2 mi (0.3 km) downstream from bridge on Black Jack Road, 10 mi (16 km) southeast of Whitlash.

DRAINAGE AREA.--7.26 mi² (18.8 km²).

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,900 ft (1,189 m), from topographic map.

REMARKS.--Records fair except those for period Nov. 17 to Mar. 29, which are poor. No regulation above station. Diversions for irrigation of about 40 acres (162,000 m²) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22 ft³/s (0.62 m³/s) May 2, 1978, gage height, 2.41 ft (0.735 m); maximum gage height, 2.62 ft (0.799 m) Mar. 8, 1978 (backwater from ice); minimum discharge, no flow part of each day Nov. 20, 21, Dec. 5, 6, 18, 19, 24, 1977, Jan. 5, 1978, result of siphon action over weir.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22 ft³/s (0.62 m³/s) May 2, gage height, 2.41 ft (0.735 m), only peak above base of 20 ft³/s (0.57 m³/s); maximum gage height, 2.62 ft (0.799 m) Mar. 8 (backwater from ice); minimum discharge, no flow part of each day Nov. 20, 21, Dec. 5, 6, 18, 19, 24, Jan. 5, result of siphon action over weir.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.81	.55	.60	.35	.38	.22	3.6	21	17	2.7	2.1	1.8
2	.48	.74	.51	.32	.38	.15	4.1	22	17	2.6	1.9	1.7
3	.42	.55	.50	.32	.38	.15	3.3	20	15	2.8	1.8	1.6
4	.42	.60	.50	.29	.38	.11	3.1	19	13	2.9	1.7	1.5
5	.42	.60	.47	.20	.38	.15	3.4	17	11	4.7	1.5	1.5
6	.42	.67	.45	.26	.38	.19	2.7	18	10	3.5	1.4	1.5
7	.42	.74	.42	.42	.40	.44	2.4	17	9.4	3.3	1.4	1.5
8	.44	.55	.40	.40	.38	.80	2.4	18	8.4	3.3	1.4	1.3
9	.46	.60	.38	.45	.38	1.0	2.6	19	7.6	3.2	1.3	1.2
10	.44	.74	.50	.45	.35	1.2	2.7	20	7.1	3.1	1.2	1.3
11	.46	.67	.64	.44	.32	1.0	3.2	20	7.0	2.8	1.1	1.7
12	.46	.60	1.0	.38	.35	.90	3.2	19	6.4	2.7	1.1	9.3
13	.44	.60	.74	.38	.32	.81	3.0	18	6.0	2.6	1.1	8.1
14	.44	.67	.55	.35	.32	.55	2.8	19	5.7	2.4	1.1	9.5
15	.46	.60	.48	.35	.26	.55	3.0	20	5.3	2.3	1.1	9.8
16	.48	.48	.54	.35	.22	.67	3.1	21	5.1	2.2	1.1	8.1
17	.51	.48	.48	.35	.19	7.0	2.8	20	4.9	2.4	2.6	6.9
18	.51	.47	.46	.35	.22	8.0	3.4	19	4.5	3.7	2.3	6.3
19	.55	.46	.44	.35	.22	4.4	3.9	19	4.9	3.5	1.8	5.6
20	.60	.45	.45	.37	.22	4.7	4.8	18	4.3	3.1	2.0	5.0
21	.67	.43	.45	.40	.70	5.6	5.5	17	4.0	2.8	2.0	4.6
22	.74	.42	.50	.50	1.0	2.8	5.0	17	4.0	2.8	2.4	4.4
23	.67	.43	.46	.40	1.3	2.0	5.0	16	3.9	2.6	6.7	4.1
24	.67	.44	.45	.38	1.1	3.0	5.7	14	3.7	2.4	4.4	3.8
25	.67	.46	.44	.38	.80	5.2	7.4	12	3.6	2.4	3.5	3.4
26	.60	.74	.42	.38	.65	9.8	12	9.8	3.4	2.3	3.0	3.3
27	.55	.55	.42	.38	.55	5.0	12	8.6	3.1	2.2	2.7	3.1
28	.60	.51	.38	.40	.35	5.8	14	7.8	2.9	2.2	2.5	3.1
29	.60	.74	.38	.38	---	8.6	19	8.4	2.9	2.1	2.4	2.8
30	.60	.60	.38	.40	---	10	20	7.6	2.8	2.1	2.3	2.7
31	.60	---	.38	.38	---	6.1	---	13	---	2.0	2.1	---
TOTAL	16.61	17.14	15.17	11.51	12.88	96.89	169.1	515.2	203.9	85.7	65.0	120.5
MEAN	.54	.57	.49	.37	.46	3.13	5.64	16.6	6.80	2.76	2.10	4.02
MAX	.81	.74	1.0	.50	1.3	10	20	22	17	4.7	6.7	9.8
MIN	.42	.42	.38	.20	.19	.11	2.4	7.6	2.8	2.0	1.1	1.2
AC-FT	33	34	30	23	26	192	335	1020	404	170	129	239
CAL YR 1977	TOTAL	359.46	MEAN .98	MAX 5.5	MIN .15	AC-FT 713						
WTR YR 1978	TOTAL	1329.60	MEAN 3.64	MAX 22	MIN .11	AC-FT 2640						

MILK RIVER BASIN

06140500 MILK RIVER AT HAVRE, MT

LOCATION.--Lat 48°33'23", long 109°40'14", in NE¼SE¼SE¼ sec.5, T.32 N., R.16 E., Hill County, Hydrologic Unit 10050004, on upstream side of highway bridge on 7th Avenue East in Havre, 30 ft (9 m) downstream from Bullhook Creek, 9.4 mi (15.1 km) downstream from Big Sandy Creek, and 17 mi (27 km) downstream from Fresno Dam.

DRAINAGE AREA.--5,844 mi² (15,136 km²), of which 670 mi² (1,735 km²) 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), August 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.--Nonrecording gage read once or twice daily. Datum of gage is 2,461.11 ft (750.146 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Nov. 4, 1902, nonrecording gage at site 0.5 mi (0.8 km) upstream at different datum. Nov. 4, 1902, to Nov. 25, 1910, nonrecording gage at datum 0.47 ft (0.143 m) higher, Mar. 9, 1911, to July 13, 1920, nonrecording gage at present datum, and July 14, 1920, to Sept. 30, 1922, nonrecording gage at datum 4.00 ft (1.219 m) higher, all at site 30 ft (9 m) downstream.

REMARKS.--Records poor. Bullhook Creek flood-control project is designed to bypass damaging floods to Milk River channel several miles downstream. Diversions for irrigation of about 6,000 acres (24.3 km²) above station. Since 1917, flow increased during irrigation season by water from St. Mary Canal which diverts from the St. Mary River near Babb (see p. 34). Flow regulated by Fresno Reservoir (see p. 611).

AVERAGE DISCHARGE.--17 years (1899-1916), prior to operation of St. Mary Canal, 273 ft³/s (7.731 m³/s) 197,800 acre-ft/yr (244 hm³/yr); 30 years (1916-22, 1954-78), 435 ft³/s (12.32 m³/s), 315,200 acre-ft/yr (389 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 20,000 ft³/s (566 m³/s) Apr. 12, 1899, gage height, 19.3 ft (5.88 m), present datum, from floodmarks, from rating curve extended above 5,200 ft³/s (147 m³/s); no flow at times in several years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,840 ft³/s (222 m³/s) Mar. 31, gage height, 15.30 ft (4.663 m); minimum daily, 1.0 ft³/s (0.028 m³/s) Oct. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	47	10	10	12	25	6970	990	900	1270	1520	850
2	50	43	10	10	12	23	5720	904	100	1240	1520	850
3	45	45	10	10	14	21	4990	958	200	1230	1520	843
4	45	43	8.0	10	16	20	3770	958	470	1230	1510	329
5	43	43	8.0	10	18	22	3020	1030	527	1250	1510	433
6	42	38	8.0	10	18	25	2400	1060	536	1230	1490	510
7	41	35	6.0	10	20	27	1940	1090	527	1250	1490	622
8	42	23	6.0	10	20	30	1590	1110	600	1240	1480	843
9	36	23	4.0	10	20	32	1380	1160	780	1200	1470	857
10	52	22	6.0	10	20	38	1180	1200	857	1220	1450	904
11	54	30	10	12	18	45	1070	1130	871	1180	1450	930
12	55	26	12	14	18	50	1190	1110	885	1160	1430	1090
13	48	23	12	14	18	55	891	1040	904	1160	1420	982
14	48	19	12	14	16	57	850	1170	808	1160	1420	990
15	47	17	12	14	16	60	800	1450	836	1130	1410	990
16	46	16	10	14	14	60	800	1160	766	1150	1400	958
17	48	10	10	14	14	60	750	1100	930	1200	1320	958
18	38	10	10	12	16	65	724	924	943	1270	1280	966
19	7.0	8.0	10	12	20	70	689	950	1010	1180	1230	966
20	4.0	8.0	10	10	25	75	759	911	943	1170	1170	958
21	2.0	6.0	12	12	30	85	836	917	950	1170	1170	950
22	1.0	6.0	12	14	37	100	958	864	1010	1160	1160	937
23	2.0	6.0	10	16	45	150	924	815	1010	1160	1160	966
24	8.0	6.0	10	16	43	400	787	885	924	1210	1120	958
25	18	6.0	10	14	35	700	759	937	904	1270	1130	950
26	46	10	12	14	30	1500	675	974	924	1520	1130	924
27	47	10	14	14	26	2500	759	891	950	1530	1140	857
28	51	10	14	12	26	2970	1110	898	1090	1580	1110	300
29	54	10	14	10	---	5870	1120	1010	1060	1520	911	150
30	55	10	12	10	---	7510	1070	930	1110	1520	966	130
31	47	---	10	10	---	7700	---	900	---	1520	898	---
TOTAL	1178.0	609.0	314.0	372	617	30345	50481	31426	24325	39280	40385	23951
MEAN	36.0	20.3	10.1	12.0	22.0	979	1683	1014	811	1267	1303	798
MAX	56	47	14	16	45	7700	6970	1450	1110	1580	1520	1090
MIN	1.0	6.0	4.0	10	12	20	675	815	100	1130	898	130
AC-FT	2340	1210	623	738	1220	60190	100100	62330	48250	77910	80100	47510
CAL YR 1977 TOTAL	89086.0			MEAN 244	MAX 1220	MIN 1.0	AC-FT 176700					
WTR YR 1978 TOTAL	243283.0			MEAN 667	MAX 7700	MIN 1.0	AC-FT 482600					

06144100 WALBURGER COULEE BELOW DIVERSIONS, NEAR GOVENLOCK, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°17'30", long 110°01'20", in SW¼ sec.13, T.4, R.1 W., fourth meridian, Hydrologic Unit 10050007, on right bank 3 mi (5 km) north of Walburger ranch and 10 mi (16 km) northwest of Govenlock.

PERIOD OF RECORD.--March 1963 to October 1978 (discontinued). July 1960 to current season in reports of Department of the Environment, Canada. Seasonal records only.

GAGE.--Water-stage recorder. Altitude of gage is 3,100 ft (945 m), from topographic map.

REMARKS.--Records good except those for winter period, which are poor. Established to measure releases from Middle Creek Reservoir to Lodge Creek. Releases may be stored or diverted for irrigation above the 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 recorded, 58 ft³/s (1.64 m³/s) Mar. 29, 1966; maximum gage height, 5.71 ft (1.470 m) Apr. 14, 1965 (backwater from ice); no flow most of each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	.04	.11	.02	.00	.00	.00	.00		
2			.00	.04	.07	.01	.00	.00	.00	.00		
3			.00	.10	.04	.00	.00	.00	.00	.00		
4			.00	.32	.07	.00	.00	.00	.00	.00		
5			.00	18	.06	.00	.00	.00	.00	.00		
6			.00	3.9	.05	.00	.05	.00	.00	.00		
7			.00	.08	.05	.01	.01	.00	.00	.00		
8			.00	.11	.03	.00	.00	.00	.00	.00		
9			.00	.14	.02	.00	.00	.00	.00	.00		
10			.00	.12	.04	.00	.01	.00	.00	.00		
11			.00	.18	.02	.00	.01	.00	.00	.00		
12			.00	.09	.02	.00	.00	.00	.00	.00		
13			.00	.04	.01	.00	.00	.00	.00	.00		
14			.00	.04	.01	.00	.00	.00	.00	.00		
15			.00	.07	.00	.00	.00	.00	.00	.00		
16			.00	.06	.02	.00	.00	.00	.00	.00		
17			.00	.19	.02	.00	.00	.00	.00	.00		
18			.00	.17	.01	.00	.00	.00	.00	.00		
19			.00	.09	.00	.00	.00	.00	.00	.00		
20			.00	.05	.00	.00	.00	.00	.00	.00		
21			.00	.05	.00	.00	.00	.00	.00	.00		
22			.00	.06	.00	.00	.00	.00	.00	.00		
23			.00	.05	.00	.00	.00	.00	.00	.00		
24			.00	.04	.07	.00	.00	.00	.00	.00		
25			.00	.03	.02	.00	.00	.00	.00	.00		
26			.00	.01	.00	.00	.00	.00	.00	.00		
27			.00	.02	.00	.00	.00	.00	.00	.00		
28			.00	.06	.00	.00	.00	.00	.00	.00		
29			.00	.07	.00	.00	.00	.00	.00	.00		
30			.18	.10	.00	.00	.00	.00	.00	.00		
31			.53	---	.01	---	.00	.00	---	.00		
TOTAL			.71	24.32	.75	.04	.08	.00	.00	.00		
MEAN			.023	.81	.024	.001	.003	.000	.000	.000		
MAX			.53	.18	.11	.02	.05	.00	.00	.00		
MIN			.00	.01	.00	.00	.00	.00	.00	.00		
AC-FT			1.4	48	1.5	.08	.2	.00	.00	.00		

THE SEASON APRIL TO OCTOBER AC-FT 51.0

NOTE.--Maximum daily discharge may have been greater prior to activation of gage for the season. Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

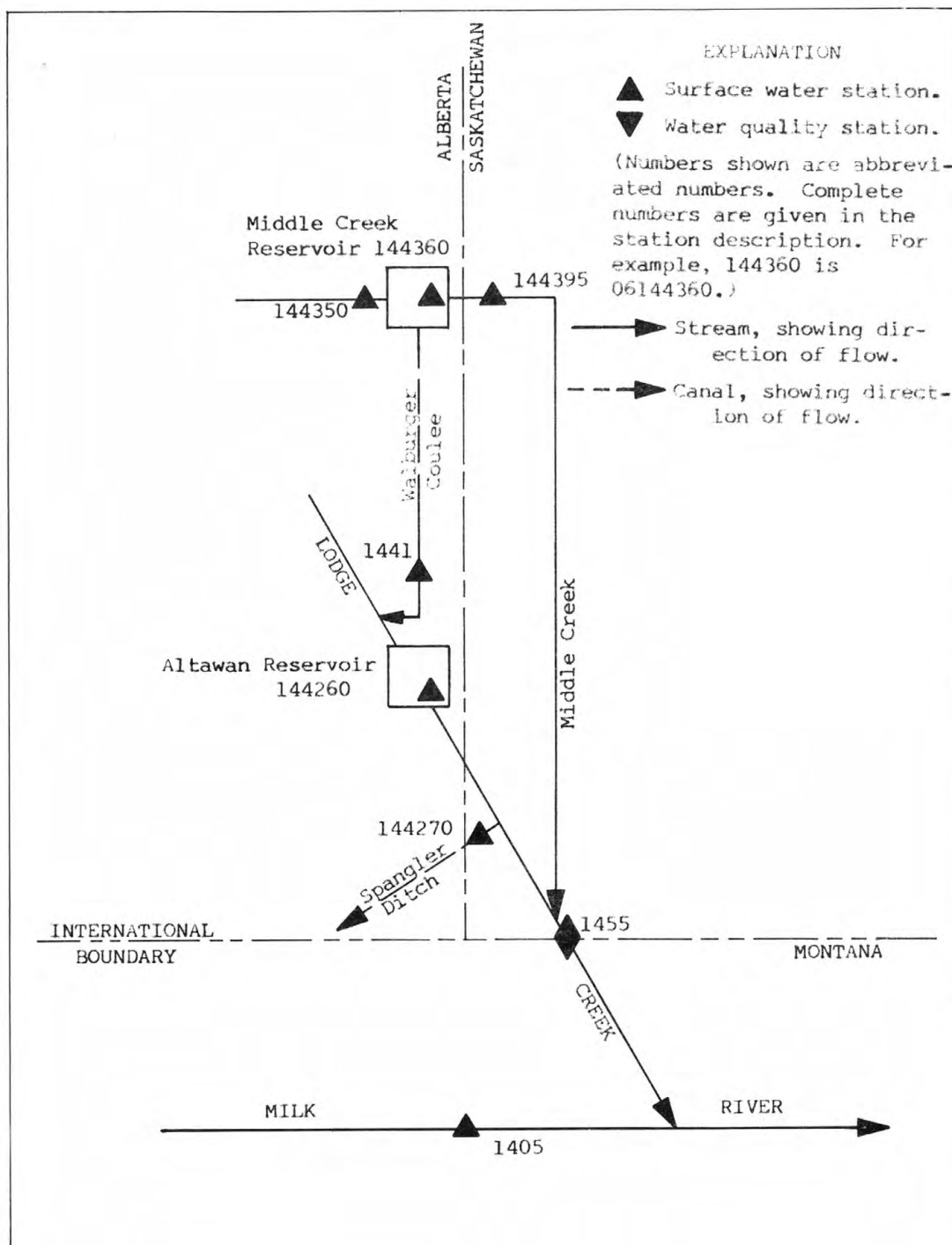


Figure 9. Schematic diagram showing diversions and storage in Lodge Creek basin in Canada

06144270 SPANGLER DITCH NEAR GOVENLOCK, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°09'16", long 109°54'58", in NW¼ sec.26, T.2, R.30 W., third meridian, Hydrologic Unit 10050007, on right bank 0.9 mi (1.4 km) south of Altawan Dam and 6.8 mi (10.9 km) southwest of Govenlock.

PERIOD OF RECORD.--March 1966 to current season. 1915 to 1936, March 1950 to current season, in reports of Department of the Environment, Canada. Seasonal records only. Estimates of seasonal diversion only in most years prior to March 1950.

GAGE.--Water-stage recorder. Altitude of gage is 2,920 ft (890 m), from topographic map. Prior to March 1950, nonrecording gages at several sites within 2 mi (3 km) of present site at different datums. March 1950 to July 8, 1960, water-stage recorder at site 350 ft (107 m) downstream at different datum.

REMARKS.--Records fair. No gage-height record Mar. 1 to Apr. 4. Canal diverts water from right bank of Lodge Creek in SW¼ sec.35, T.2, R.30 W., third meridian, for irrigation of 1,320 acres (5.3 km²) under Spangler irrigation project.

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 ft³/s (1.84 m³/s) Apr. 22, 1950; no flow most of each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	.00	.00	.00	.60	45	.01	.00		
2			.00	.00	.00	.00	.59	45	.01	.00		
3			.00	.00	.00	.00	.60	45	.01	.00		
4			.00	.00	.00	.00	.59	44	.01	.00		
5			.00	.00	.00	6.2	.65	38	.02	.00		
6			.00	.00	.00	34	3.1	28	.08	.00		
7			.00	.00	.00	39	7.4	28	.09	.00		
8			.00	.00	.00	40	.16	29	.11	.00		
9			.00	.00	.00	40	.00	29	.10	.00		
10			.00	.00	.00	41	.00	29	.11	.00		
11			.00	.00	.00	42	.00	29	.20	.00		
12			.00	.00	.00	42	.00	20	.27	.00		
13			.00	.00	.00	42	.00	13	.18	.00		
14			.00	.00	.00	44	.00	.08	.00	.00		
15			.00	.00	.00	44	.00	.01	.00	.00		
16			.00	.00	.00	41	.00	.00	.00	.00		
17			.00	.00	.00	17	.00	.00	.00	.00		
18			.00	.00	.00	12	.00	.00	.00	.00		
19			.00	.00	.00	11	.00	.00	.00	.00		
20			.00	.00	.00	11	.00	.00	.00	.00		
21			.00	.00	.00	11	.00	.00	.00	.00		
22			.00	.00	.00	6.1	.00	.02	.00	.00		
23			.00	.00	.00	1.2	.00	.03	.00	.00		
24			.00	.00	.00	.21	.00	.02	.00	.00		
25			.00	.00	.00	.13	.00	.02	.00	.00		
26			.00	.00	.00	.09	.00	.02	.00	.00		
27			.00	.00	.00	.05	.00	.03	.00	.00		
28			.00	.00	.00	.02	.00	.03	.00	.00		
29			.00	.00	.00	.07	.00	.02	.00	.00		
30			.00	.00	.00	.55	.00	.02	.00	.00		
31			.00	---	.00	---	25	.02	---	.00		
TOTAL			.00	.00	.00	525.62	38.69	422.32	1.20	.00		
MEAN			.000	.000	.000	17.5	1.25	13.6	.040	.000		
MAX			.00	.00	.00	44	25	45	.27	.00		
MIN			.00	.00	.00	.00	.00	.00	.00	.00		
AC-FT			.00	.00	.00	1040	77	838	2.4	.00		

THE SEASON MARCH TO OCTOBER

AC-FT

1,950

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06144350 MIDDLE CREEK NEAR ALBERTA BOUNDARY

(International gaging station)

LOCATION.--Lat 49°25'30", long 110°03'08", in SW¼ sec.34, T.5, R.1 W., fourth meridian, Hydrologic Unit 10050007, on left bank 2 mi (3 km) upstream from Middle Creek Reservoir and 18 mi (29 km) northwest of Govenlock, Saskatchewan.

DRAINAGE AREA.--116 mi² (300 km²).

PERIOD OF RECORD.--March 1963 to current season. June 1910 to April 1915 and September 1949 to current season in reports of Department of the Environment, Canada. Seasonal records only. Published as "at McKinnon's Ranch" 1910-15.

GAGE.--Water-stage recorder. Datum of gage is 3,381.13 ft (1,030.568 m) above mean sea level (Geodetic Surveys 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 (0.5 km) downstream at different datums.

REMARKS.--Records fair except those for winter period, which are poor. Minor diversions for irrigation above 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 discharge, 4,980 ft³/s (141 m³/s) Apr. 15, 1952, gage height, 10.27 ft (3.130 m), site and datum then in use, from rating curve extended above 600 ft³/s (17.0 m³/s) on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES FOR CURRENT SEASON.--Maximum discharge, 102 ft³/s (2.89 m³/s) Apr. 8, gage height, 5.03 ft (1.533 m); maximum gage height, 5.33 ft (1.625 m) Mar. 31 (backwater from ice); minimum daily discharge, 0.07 ft³/s (0.002 m³/s) Mar. 1-15.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.07	5.5	51	1.4	.60	.43	.40	.65		
2			.07	6.0	47	1.3	.77	.43	.38	.70		
3			.07	6.4	42	1.5	.83	.47	.37	.71		
4			.07	7.0	33	1.4	.82	.44	.36	.66		
5			.07	18	23	1.3	.92	.42	.35	.63		
6			.07	16	15	1.3	.89	.39	.48	.66		
7			.07	12	8.1	1.3	.93	.36	.47	.68		
8			.07	66	5.8	1.3	.95	.36	.48	.68		
9			.07	55	5.0	1.2	.96	.41	.40	.69		
10			.07	63	4.9	1.0	.95	.37	.40	.67		
11			.07	57	4.8	2.0	.94	.35	.68	.64		
12			.07	58	4.2	2.0	.80	.36	.96	.64		
13			.07	33	4.0	1.5	.77	.37	.66	.67		
14			.07	32	3.4	1.2	.74	.44	.50	.70		
15			.07	21	2.5	1.1	.71	.46	.45	.72		
16			.08	26	1.9	.93	.71	.50	.44	.69		
17			.10	48	1.5	.90	.67	.52	.42	.72		
18			.11	77	1.3	.85	.67	.53	.39	.78		
19			.11	64	1.2	.88	.64	.46	.41	.76		
20			.12	49	1.1	.95	.64	.46	.41	.70		
21			.12	41	1.2	.91	.60	.48	.44	.65		
22			.13	30	1.2	.90	.60	.52	.47	.66		
23			.14	16	1.2	.89	.57	.46	.49	.65		
24			.14	18	2.3	.88	.57	.43	.51	.63		
25			.16	22	1.4	.88	.53	.42	.51	.63		
26			.24	30	26	.92	.52	.39	.49	.63		
27			.38	53	11	.92	.48	.42	.50	.64		
28			.73	69	4.7	.86	.43	.44	.53	.65		
29			1.2	71	2.9	.90	.49	.41	.56	.60		
30			3.3	56	1.9	.86	.46	.42	.60	.60		
31			5.3	---	1.4	---	.46	.42	---	.60		
TOTAL			13.43	1127.9	315.9	34.03	21.82	13.34	14.51	20.69		
MEAN			.43	37.6	10.2	1.13	.70	.43	.48	.67		
MAX			5.3	77	51	2.0	.96	.53	.96	.78		
MIN			.07	5.5	1.1	.85	.43	.35	.35	.60		
AC-FT			27	2240	627	67	43	26	29	41		

THE SEASON MARCH TO OCTOBER

AC-FT

3,090

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06144395 MIDDLE CREEK BELOW MIDDLE CREEK RESERVOIR, NEAR GOVENLOCK, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°24'44", long 109°55'06", in SW¼ sec.25, T.5, R.30 W., third meridian, Hydrologic Unit 10050007, on right bank 9.8 mi (15.8 km) downstream from Middle Creek Reservoir and 14 mi (23 km) northwest of Govenlock.

DRAINAGE AREA.--161 mi² (417 km²).

PERIOD OF RECORD.--April 1972 to current season. July 1909 to May 1931, September 1935 to October 1936, and April 1972 to current season in reports of Department of the Environment, Canada. Seasonal records only. 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.

GAGE.--Water-stage recorder. Altitude of gage is 3,300 ft (1,010 m), from topographic map. Prior to April 1972, nonrecording gages at two sites within 2 mi (3 km) of present site, at different datums.

REMARKS.--Records good, except those for winter period, which are poor. Flow completely regulated by Middle Creek Reservoir (see p. 218). Many diversions for irrigation above station. Flow may be diverted to Lodge Creek through Middle Creek Reservoir. Diversions for irrigation of 920 acres (3.7 km²) between Middle Creek Reservoir and 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 recorded, 58 ft³/s (1.64 m³/s) Apr. 18, 1974; no flow at times most seasons.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	16	.00	.00	.00	.00	.00	.00		
2			.00	37	.00	.00	.00	.00	.00	.00		
3			.00	33	.00	.00	.00	.00	.00	.00		
4			.00	25	.00	.00	.00	.00	.00	.00		
5			.00	17	.00	.00	.00	.09	.00	.00		
6			.00	12	.00	.00	.00	.92	.00	.00		
7			.00	.12	.00	.00	.00	2.4	.00	.00		
8			.00	.03	.00	.00	.00	4.6	.00	.00		
9			.00	.02	.00	.00	.00	2.6	.00	.00		
10			.00	.01	.00	.00	.00	.36	.00	.00		
11			.00	.02	.00	.00	.00	.06	.00	.00		
12			.00	.01	.00	.00	.00	.00	.00	.00		
13			.00	.00	.00	.97	.00	.00	.00	.00		
14			.00	.00	.00	3.3	.00	.00	.00	.00		
15			.00	.00	.00	2.6	.00	.00	.00	.00		
16			.00	.00	.00	4.1	.00	.00	.00	.00		
17			.00	.00	.00	2.5	.00	.00	.00	.00		
18			.00	.01	.00	.86	.00	.00	.00	.00		
19			.00	.00	.00	.11	.00	.00	.00	.00		
20			.00	.00	.00	.01	.00	.00	.00	.00		
21			.00	.00	.00	.00	.00	.00	.00	.00		
22			.00	.00	.00	.00	.00	.00	.00	.00		
23			.00	.00	.00	.00	.00	.00	.00	.00		
24			.00	.00	.00	.00	.00	.00	.00	.00		
25			.00	.00	.00	.00	.00	.00	.00	.00		
26			.00	.00	.00	.00	.00	.00	.00	.00		
27			.00	.00	.00	.00	.00	.00	.00	.00		
28			.00	.00	.00	.00	.00	.00	.00	.00		
29			.00	.00	.00	.00	.00	.00	.00	.00		
30			.00	.00	.00	.00	.00	.00	.00	.00		
31			.00	---	.00	---	.00	.00	---	.00		
TOTAL			.00	140.22	.00	14.45	.00	11.03	.00	.00		
MEAN			.000	4.67	.000	.48	.000	.36	.000	.000		
MAX			.00	37	.00	4.1	.00	4.6	.00	.00		
MIN			.00	.00	.00	.00	.00	.00	.00	.00		
AC-FT			.00	278	.00	29	.00	22	.00	.00		

THE SEASON APRIL TO OCTOBER AC-FT 329

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

MILK RIVER BASIN

06145500 LODGE CREEK BELOW MCRAE CREEK, AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'20", long 109°43'05", in SW¼ sec.5, T.1, R.28 W., third meridian, in Saskatchewan, Hydrologic Unit 10050007, on right bank 0.3 mi (0.5 km) downstream from McRae Creek, 0.4 mi (0.6 km) north of international boundary, 0.8 mi (1.3 km) northeast of Willow Creek Port of Entry, and 31 mi (50 km) north of Havre, Mt.

DRAINAGE AREA.--818 mi² (2,119 km²).

WATER-DISCHARGE RECORDS

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".

GAGE.--Water-stage recorder. Datum of gage is 2,731.0 ft (832.41 m) above mean sea level (International Boundary Survey datum).

REMARKS.--Records good. Natural flow affected by numerous storage reservoirs, diversions for irrigation of about 3,000 acres (12 km²) and return flow from irrigated area.

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 discharge, 7,760 ft³/s (220 m³/s) June 14, 1962, gage height, 14.40 ft (4.389 m); no flow at times each season. Flood of June 14, 1962, is probably the highest since 1910.

EXTREMES FOR CURRENT SEASON.--Maximum discharge, 1,180 ft³/s (33.4 m³/s) Apr. 5, gage height, 8.04 ft (2.451 m); no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	.00	157	28	.07	.00	.00	1.0		
2			.00	20	133	25	.03	.00	.00	.69		
3			.00	122	112	16	.02	.00	.00	.48		
4			.00	400	99	11	.01	.00	.00	.37		
5			.00	1070	84	7.8	.03	.00	.00	.26		
6			.00	849	75	5.8	.03	.00	.00	.19		
7			.00	352	62	5.2	.04	.00	.00	.14		
8			.00	338	53	4.2	.06	.00	.00	.09		
9			.00	329	42	6.8	.05	.00	.00	.07		
10			.00	264	35	10	.05	.00	.00	.05		
11			.00	241	32	6.8	.13	.00	.00	.03		
12			.00	239	32	3.6	.06	.00	.00	.03		
13			.00	236	30	2.6	.03	.00	.90	.02		
14			.00	172	26	2.2	.01	.00	.37	.02		
15			.00	142	24	1.7	.00	.00	1.2	.02		
16			.00	122	24	1.2	.00	.00	.63	.02		
17			.00	118	28	.94	.01	.00	.31	.01		
18			.00	154	20	.84	.01	.00	.18	.01		
19			.00	348	17	4.3	.11	.00	.10	.01		
20			.00	430	18	5.2	2.5	.00	.07	.01		
21			.00	256	17	3.1	1.5	.00	.06	.01		
22			.00	188	15	2.4	.84	.00	6.7	.01		
23			.00	150	14	1.6	.63	.00	24	.01		
24			.00	113	15	1.1	.50	.00	24	.01		
25			.00	95	14	.81	.37	.00	25	.00		
26			.00	103	14	.68	.23	.00	26	.00		
27			.00	112	12	.50	.13	.00	17	.00		
28			.00	169	13	.33	.05	.00	7.6	.00		
29			.00	222	17	.22	.03	.00	3.7	.00		
30			.00	205	16	.13	.02	.00	1.8	.00		
31			.00	---	16	---	.01	.00	---	.00		
TOTAL			.00	7559.00	1266	160.05	7.56	.00	139.62	3.56		
MEAN			.000	252	40.8	5.34	.24	.000	4.65	.11		
MAX			.00	1070	157	28	2.5	.00	26	1.0		
MIN			.00	.00	12	.13	.00	.00	.00	.00		
AC-FT			.00	14990	2510	317	15	.00	277	7.1		

THE SEASON MARCH TO OCTOBER

AC-FT

18,120

06145500 LODGE CREEK BELOW MCRAE CREEK AT INTERNATIONAL BOUNDARY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1977 to present.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)
APR										
06...	0945	831	106	1.5	28	3	2.9	9.1	.7	3.0
12...	1245	230	299	3.5	31	31	0.8	26	1.3	5.1
JUN										
22...	1500	2.2	1160	22.5	260	96	39	160	4.3	8.1

DATE	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FIT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
APR									
06...	31	22	1.2	.1	4.6	66	.09	148	.13
12...	61	87	2.3	.1	0.7	185	.25	115	.19
JUN									
22...	200	410	15	.2	.2	772	1.05	4.59	.02

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
APR									
06...	.00	0	2	10	50	1	0	1	140
12...	.07	30	6	0	60	1	0	3	60
JUN									
22...	.01	0	2	5	120	0	5	2	50

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
APR									
06...	0	2	20	.0	1	0	0	2.0	30
12...	3	40	30	.0	1	4	0	2.0	20
JUN									
22...	5	140	10	.0	0	6	1	.0	10

RESERVOIRS IN LODGE CREEK BASIN IN SASKATCHEWAN

(International gaging stations)

06144260 ALTAWAN RESERVOIR.--Lat 49°09'59", long 109°55'03", in NE¼SW¼ sec.35, T.2, R.30 W., third meridian, Hydrologic Unit 10050007, at dam on Lodge Creek, 6.3 mi (10.1 km) southwest of Govenlock. DRAINAGE AREA, 365 mi² (945 km²). PERIOD OF RECORD, February 1966 to current season. February 1960 to current season in reports of Department of the Environment, Canada. Seasonal records only. Water-stage recorder. Datum of gage is at mean sea level (PFRA datum). Prior to July 7, 1967, nonrecording gage in gate well read every ten days during irrigation season.

Reservoir is formed by earthfill dam with concrete spillway and control works as well as an emergency dirt spillway, completed in 1959. Total capacity is 5,830 acre-ft (7.19 hm³) between elevation 2,917.6 ft (889.28 m), bottom of outlet, and 2,952.5 ft (899.92 m), maximum design level. No dead storage. Elevation of top of dam, 2,960.0 ft (902.21 m); elevation of natural emergency spillway crest, 2,955.0 ft (900.68 m); and elevation of spillway crest, 2,949.0 ft (898.86 m). Figures given herein represent total contents. Water is used for irrigation. This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 7,080 acre-ft (8.73 hm³) May 7, 1967, elevation 2,955.37 ft (900.797 m), from highwater mark; no storage Mar. 1, 1960.

EXTREMES FOR CURRENT SEASON: Maximum contents, 6,560 acre-ft (8.09 hm³) Apr. 19, elevation, 2,954.20 ft (900.440 m); minimum observed, 105 acre-ft (129,500 m³) Mar. 1, elevation, 2,923.90 ft (891.205 m).

06144360 MIDDLE CREEK RESERVOIR.--Lat 49°24'20", long 109°59'01", in NE¼ sec.21, T.5, R.30 W., third meridian, Hydrologic Unit 10050007, at dam on Middle Creek, 0.7 mi (1.1 km) east of Alberta-Saskatchewan boundary, 6.3 mi (10.1 km) west of Battle Creek, and 15 mi (24 km) northwest of Govenlock. DRAINAGE AREA, 130 mi² (337 km²). PERIOD OF RECORD, February 1966 to current season. Occasional nonrecording gage readings in 1937 and 1939-51, March 1952 to current season in reports of Department of the Environment, Canada. Seasonal records only. Water-stage recorder. Datum of gage is at mean sea level (PFRA datum). Prior to July 7, 1967, nonrecording gage in gate well read every ten days during irrigation season.

Reservoir is formed by earthfill dam with concrete control works and sod spillway at elevation 3,383.0 ft (1,031.14 m) on Middle Creek and at Ducks Unlimited outlet, constructed in 1937. Total capacity, 13,080 acre-ft (16.1 hm³) between elevation 3,368.60 ft (1,026.749 m), invert of outlet pipe on Middle Creek, and 3,383.0 ft (1,031.14 m), natural spillway. Invert of outlet pipe at Ducks Unlimited outlet is at elevation 3,372.04 ft (1,027.798 m). Figures given herein represent total contents. Water is used for irrigation and to maintain levels of Orleans Lakes. Water may be released to Lodge Creek via Ducks Unlimited outlet Simms Lake and Walburger Coulee. Spillway does not return water to Middle Creek, may return to Lodge Creek via Walburger Coulee. This is one of a number of stations which are maintained jointly by Canada and the United States.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 23,080 acre-ft (28.5 hm³) Apr. 13, 1952, elevation, 3,387.92 ft (1,032.638 m); no storage at times.

EXTREMES FOR CURRENT SEASON: Maximum contents, 4,960 acre-ft (6.12 hm³) May 27, elevation, 3,375.86 ft (1,028.962 m); minimum, 1,690 acre-ft (2.08 hm³) Mar. 24-26, elevation, 3,373.31 ft (1,027.880 m).

Monthend contents, in acre-feet, year October 1977 to October 1978

Date	Altawan Reservoir	Middle Creek Reservoir
Oct. 31	100	1,830
Nov. 30	-	-
Dec. 31	-	-
Jan. 31	-	-
Feb. 28	105	1,730
Mar. 31	206	1,810
Apr. 30	6,140	4,530
May 31	5,800	4,910
June 30	4,610	4,370
July 31	4,680	3,760
Aug. 31	3,650	3,220
Sept. 30	3,310	3,190
Oct. 31	3,240	3,030

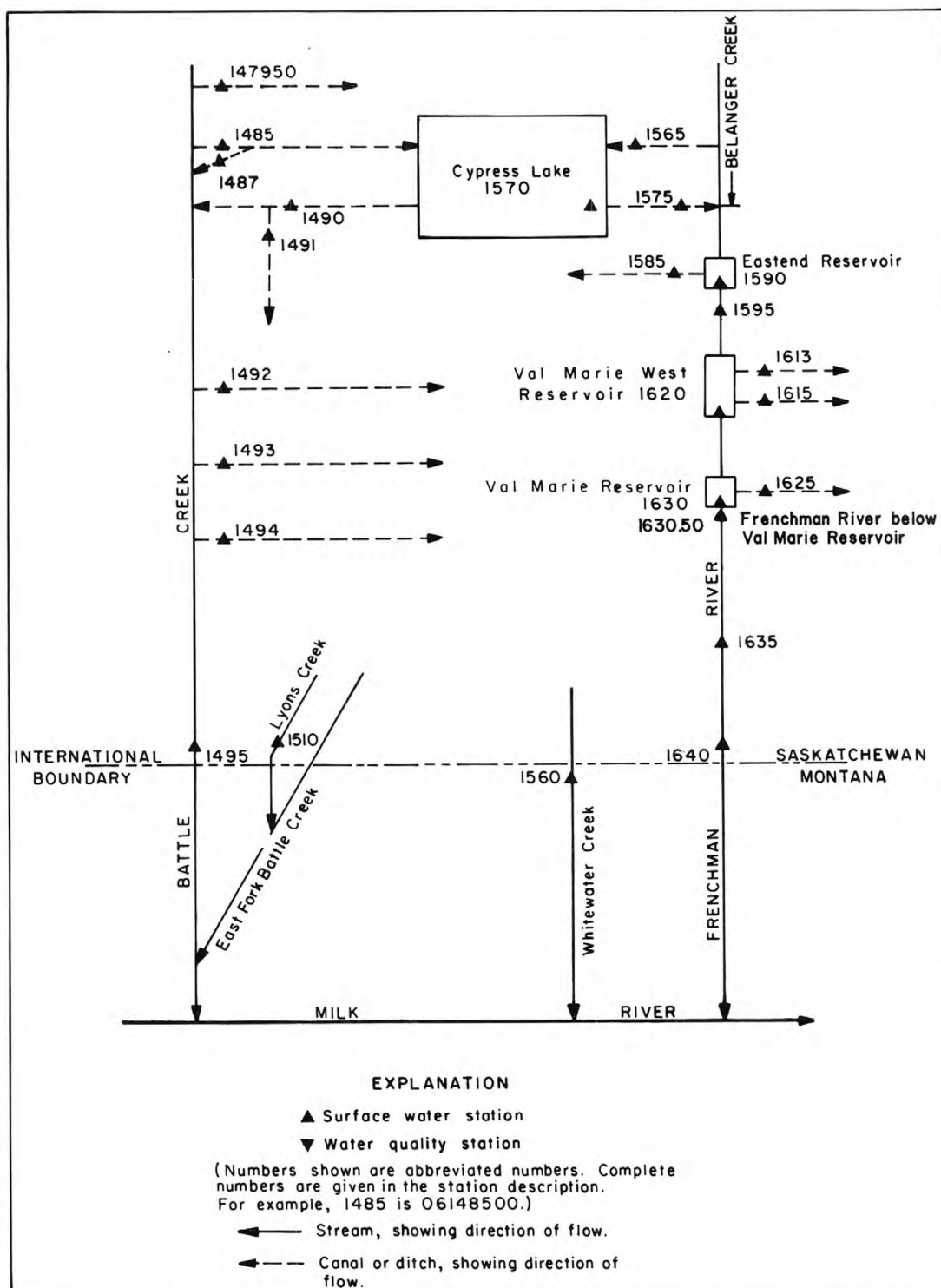


Figure 10. Schematic diagram showing diversions and storage in Battle Creek and Frenchman River basins in Canada.

MILK RIVER BASIN

06147950 GAFF DITCH NEAR MERRYFLAT, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°26'05", long 109°50'07", in NW¼ sec.34, T.5, R.29 W., third meridian, Hydrologic Unit 10050008, on left bank about 200 ft (61 m) downstream from headgates, and 4 mi (6 km) southwest of Merryflat.

PERIOD OF RECORD.--March 1972 to current season. March 1964 to current season in reports of Department of the Environment, Canada. Seasonal records only.

GAGE.--Water-stage recorder. Altitude of gage is 3,350 ft (1,020 m), from topographic map.

REMARKS.--Records good. Water is diverted from left bank of Battle Creek in NW¼ sec.34, T.5, R.29 W., third meridian, for irrigation of about 890 acres (3.6 km²) along Battle Creek.

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 ft³/s (1.19 m³/s) Apr. 22, 1971; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALJES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	.00	14	17	.00	.00	.03	.07		
2			.00	.00	16	18	.00	.00	.03	.07		
3			.00	.00	15	13	.00	.00	.02	.07		
4			.00	.00	14	9.9	.00	.00	.00	.07		
5			.00	.00	13	8.6	.00	.00	.01	.07		
6			.00	.00	15	8.1	.03	.00	.03	.06		
7			.00	.00	17	9.3	.09	.00	.30	.06		
8			.00	.00	17	11	.10	.00	3.8	.06		
9			.00	.00	17	3.8	.08	.00	4.0	.06		
10			.00	.00	17	.79	.08	.00	3.4	.06		
11			.00	.00	15	.72	.08	.00	.01	.05		
12			.00	.00	15	.69	.08	.00	.03	.05		
13			.00	.00	16	.72	.08	.00	.06	.05		
14			.00	.00	15	.70	.08	.00	.05	.04		
15			.00	.00	17	.19	.06	.04	.06	.03		
16			.00	.00	19	.17	.07	.04	.07	.05		
17			.00	.00	19	.12	.05	.04	.07	.05		
18			.00	.00	20	.12	.06	.04	.07	.05		
19			.00	.00	19	.13	.06	.04	.09	.05		
20			.00	.00	17	.13	.01	.04	.14	.05		
21			.00	.00	15	.12	.02	.04	.15	.05		
22			.00	.00	14	.09	.00	.04	.15	.04		
23			.00	.00	14	.08	.00	.04	.09	.04		
24			.00	.00	18	.11	.00	.04	.08	.04		
25			.00	.00	22	.11	.00	.04	.07	.04		
26			.00	2.6	20	.10	.00	.04	.06	.04		
27			.00	12	17	.01	.00	.04	.06	.04		
28			.00	8.1	15	.00	.00	.04	.06	.04		
29			.00	8.0	14	.00	.00	.04	.06	.04		
30			.00	11	14	.00	.00	.04	.07	.04		
31			.00	---	14	---	.00	.04	---	.04		
TOTAL			.00	41.70	504	103.80	1.03	.68	13.12	1.57		
MEAN			.000	1.39	16.3	3.46	.033	.022	.44	.051		
MAX			.00	12	22	18	.10	.04	4.0	.07		
MIN			.00	.00	13	.00	.00	.00	.00	.03		
AC-FT			.00	83	1000	206	2.0	1.3	26	3.1		

THE SEASON MARCH TO OCTOBER AC-FT 1,320

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06148500 CYPRESS LAKE WEST INFLOW CANAL NEAR WEST PLAINS, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°28'18", long 109°37'08", in SE¼ sec.18, T.6, R.27 W., third meridian, Hydrologic Unit 10050008, on left bank 2.5 mi (4.0 km) downstream from canal headgates, 5.5 mi (8.8 km) northeast of West Plains, and 13 mi (21 km) 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. Altitude of gage is 3,210 ft (978 m), from topographic map. Prior to Oct. 16, 1956, at site 2.3 mi (3.7 km) upstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Canal diverts water from Battle Creek in NW¼ 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 wasteway and drain canal 0.4 mi (0.6 km) downstream.

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 ft³/s (25.0 m³/s) Apr. 27, 1965; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	73	105	.04	.00	.00	.00	2.1		
2			.00	76	87	.04	.00	.00	.00	2.1		
3			.00	75	93	.04	.00	.00	.00	2.2		
4			.00	65	76	.04	.00	.00	.00	2.2		
5			.00	78	61	.00	.00	.00	.00	11		
6			.00	62	50	.00	.00	.00	.00	20		
7			.00	42	39	.00	.00	.00	.00	13		
8			.00	38	25	.00	.00	.00	.00	14		
9			.00	32	.92	.00	1.2	.00	.00	13		
10			.00	43	.69	.00	10	.00	.00	13		
11			.00	62	.39	.00	28	.00	.00	11		
12			.00	67	.19	.00	18	.00	31	7.5		
13			.00	77	.02	.00	6.4	.00	46	7.4		
14			.00	52	.00	.00	4.7	.00	50	7.5		
15			.00	38	.00	.00	4.2	.00	21	7.4		
16			.00	38	.00	.00	4.0	.00	19	7.5		
17			.00	50	.00	.00	3.9	.00	20	7.6		
18			.00	65	.00	.00	3.8	.00	20	7.1		
19			.00	66	.02	.00	3.4	.00	17	6.9		
20			.00	60	.00	.38	4.7	.00	15	8.8		
21			.00	59	.01	.62	11	.00	11	12		
22			.00	54	.00	.19	11	.00	12	12		
23			.00	47	.01	.00	10	.00	12	8.9		
24			.00	42	.23	.00	8.9	.00	12	4.5		
25			.00	41	.57	.00	4.3	.00	11	4.4		
26			.00	56	.14	.00	4.1	.00	3.8	4.3		
27			.00	57	.00	.00	4.4	.00	3.7	4.3		
28		43		156	.00	.00	4.6	.00	3.7	4.2		
29		36		214	.00	.00	.34	.00	3.6	4.2		
30		43		125	.02	.00	.00	.00	2.1	3.1		
31		55		---	.04	---	.00	.00	---	.16		
TOTAL			177.00	2010	539.25	1.35	150.94	.00	313.90	233.36		
MEAN			5.71	67.0	17.4	.045	4.87	.000	10.5	7.53		
MAX			55	214	105	.62	28	.00	50	20		
MIN			.00	32	.00	.00	.00	.00	.00	.18		
AC-FT			351	3990	1070	2.7	299	.00	623	463		

THE SEASON MARCH TO OCTOBER AC-FT 6,800

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06148700 CYPRESS LAKE WEST INFLOW CANAL DRAIN NEAR OXARAT, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°28'26", long 109°36'41", in NW¼ sec.17, T.6, R.27 W., third meridian, Hydrologic Unit 10050008, on left bank about 500 ft (152 m) downstream from drain gate on Cypress Lake west inflow canal, 0.5 mi (0.8 km) upstream from Battle Creek, and 4 mi (6 km) northwest of Oxarat Post Office.

PERIOD OF RECORD.--March 1963 to current season. March 1955 to current season in reports of Department of the Environment, Canada. Seasonal records only.

GAGE.--Water-stage recorder. Altitude of gage is 3,200 ft (975 m), from topographic map.

REMARKS.--Records fair except those for period of no gage height record, which are poor. No gage height record Feb. 27 to May 4. 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 ft³/s (12.7 m³/s) Apr. 20, 1955; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00					.00	2.5	.07	.02	.02	.01	.00
2	.00					.00	2.8	.07	.02	.02	.01	.00
3	.00					.00	3.0	.07	.02	.01	.01	.00
4	.00					.00	3.1	.04	.02	.02	.01	.00
5	.00					.00	3.1	.02	.02	.02	.01	.00
6	.00					.00	1.1	.02	.02	.02	.01	.00
7	.00					.00	.35	.02	.02	.02	.01	.00
8	.00					.00	.25	.02	.02	.02	.01	.00
9	.10					.00	.25	.02	.02	.02	.01	.00
10	.11					.00	.25	.02	.02	.02	.00	.00
11	.11					.00	.25	.02	.03	.03	.00	.04
12	.10					.00	.25	.02	.03	.03	.01	.09
13	.10					.00	.21	.01	.03	.02	.01	.08
14	.10					.00	.21	.01	.02	.02	.00	.09
15	.09					.00	.21	.01	.02	.02	.00	.09
16	.08					.00	.21	.01	.02	.02	.00	.07
17	.05					.00	.18	.01	.02	.02	.00	.06
18	.05					.00	.18	.01	.01	.02	.00	.05
19	.06					.00	.18	.01	.02	.02	.00	.05
20	.06					.00	.14	.02	.02	.02	.00	.04
21	.04					.00	.14	.02	.02	.02	.00	.03
22	.01					.00	.14	.02	.03	.02	.00	.03
23	.01					.00	.14	.02	.03	.02	.00	.03
24	.01					.00	.11	.02	.03	.02	.00	.03
25	.01					.00	.11	.02	.03	.02	.00	.04
26	.00					.00	.11	.02	.03	.02	.00	.04
27	.00					1.1	.11	.02	.03	.02	.00	.04
28	.00					1.8	.11	.02	.03	.02	.00	.04
29	.00					2.0	.07	.02	.02	.02	.00	.04
30	.00					2.1	.07	.02	.02	.01	.00	.04
31	.00					2.1	---	.02	---	.01	.00	---
TOTAL	1.09					9.10	19.83	.72	.69	.61	.11	1.02
MEAN	.035					.29	.66	.023	.023	.020	.004	.034
MAX	.11					2.1	3.1	.07	.03	.03	.01	.09
MIN	.00					.00	.07	.01	.01	.01	.00	.00
AC-FT	2.2					18	39	1.4	1.4	1.2	.2	2.0

THE SEASON MARCH TO OCTOBER

AC-FT

67

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06149000 CYPRESS LAKE WEST OUTFLOW CANAL NEAR WEST PLAINS, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°28'12", long 109°35'18", in SW¼ sec.16, T.6, R.27 W., third meridian, Hydrologic Unit 10050008, on left bank 1.1 mi (1.8 km) downstream from Cypress Lake West Dam, 6 mi (10 km) northeast of West Plains, and 12.6 mi (20.3 km) 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. Altitude of gage is 3,180 ft (969 m), from topographic map. Prior to Sept. 18, 1952, at site 1 mi (2 km) upstream and 300 ft (91 m) downstream from Cypress Lake West Dam at different datum.

REMARKS.--Records good except those for winter period, which are poor. Canal diverts water from Cypress Lake in NW¼ sec.15, T.6, R.27 W., third meridian, for irrigation of 5,500 acres (22 km²) 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.

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 ft³/s (8.61 m³/s) May 4, 1951; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	.10	3.9	143	26	.05	.00	.02		
2			.00	.02	18	140	7.7	.05	.00	.07		
3			.00	.07	3.9	140	.55	.04	.00	.08		
4			.00	.28	4.5	139	.42	.03	.00	.08		
5			.00	.78	.77	137	.43	.03	.00	.05		
6			.00	.00	1.1	137	.32	.03	.00	.06		
7			.00	.00	1.1	135	1.7	.02	.00	.06		
8			.00	.00	.56	134	1.7	.19	.03	.05		
9			.00	.00	.36	129	1.6	1.0	.03	.04		
10			.00	.00	.22	130	1.6	.28	.03	.03		
11			.00	.05	.16	131	1.5	.11	.22	.03		
12			.00	.03	.13	114	1.5	.05	.24	.03		
13			.00	.03	.12	118	1.2	.03	.09	.03		
14			.00	.02	.11	115	.28	.03	.08	.05		
15			.00	.03	.09	75	.16	.02	.05	.07		
16			.00	.03	.08	1.0	.11	.03	.39	.08		
17			.00	.03	.16	.54	.11	.03	.18	.12		
18			.00	.02	.15	.33	.11	.03	.10	.10		
19			.00	.02	.13	.68	.09	.03	.08	.08		
20			.00	.03	.15	6.1	.09	.03	.07	.06		
21			.00	.02	.14	12	.08	.04	.07	.06		
22			.00	.03	.10	4.4	.07	.03	.05	.06		
23			.00	.03	.11	8.0	.05	.05	.04	.06		
24			.00	.06	.31	29	.03	.03	.04	.09		
25			.00	.10	.17	28	.03	.02	.04	.13		
26			.00	.13	.13	37	.03	.02	.04	.09		
27			.00	.09	.11	44	.03	.02	.03	.08		
28			.00	.05	.12	43	.03	.01	.03	.06		
29			.00	.07	18	42	.04	.01	.03	.08		
30			.00	.05	109	42	.05	.00	.02	.06		
31			.30	---	144	---	.05	.00	---	.04		
TOTAL			.30	2.17	307.88	2215.05	47.66	2.34	1.98	2.02		
MEAN			.010	.072	9.93	73.8	1.54	.075	.066	.065		
MAX			.30	.78	144	143	26	1.0	.39	.13		
MIN			.00	.00	.08	.33	.03	.00	.00	.02		
AC-FT			.6	4.3	611	4390	95	4.6	3.9	4.0		

THE SEASON MARCH TO OCTOBER AC-FT 5,120

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

MILK RIVER BASIN

06149100 VIDORA DITCH NEAR CONSUL, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°27'20", long 109°35'20", in SW¼ sec.9, T.6, R.27 W., third meridian, Hydrologic Unit 10050008, on left bank 0.5 mi (0.8 km) downstream from headgate near lower end of Cypress Lake west outflow canal and 11.7 mi (18.8 km) north of Consul.

PERIOD OF RECORD.--March 1963 to current season. March 1952 to current season in reports of Department of the Environment, Canada. Seasonal records only.

GAGE.--Water-stage recorder. Altitude of gage is 3,200 ft (975 m), from topographic map. Prior to Aug. 1, 1963, at datum 1.0 ft (0.31 m) higher.

REMARKS.--Records fair. No gage-height record Mar. 1 to May 2 and Sept. 14 to Oct. 31. Water may be delivered either to this canal or returned to Battle Creek from Cypress Lake. Canal diverts water from Cypress Lake west outflow canal in NE¼ sec.8, T.6, R.27 W., third meridian, for irrigation of about 2,140 acres (8.6 km²) in the Battle Creek basin.

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, 97 ft³/s (2.75 m³/s) June 12, 13, 1975; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	.00	.00	46	24	.00	.00	.00		
2			.00	.00	.00	44	9.2	.00	.00	.00		
3			.00	.00	.00	41	19	.00	.00	.00		
4			.00	.00	.00	45	.00	.00	.00	.00		
5			.00	.00	.00	46	.00	.00	.00	.00		
6			.00	.00	.00	46	.00	.00	.00	.00		
7			.00	.00	.00	47	.00	.00	.00	.00		
8			.00	.00	.00	47	.00	.00	.00	.00		
9			.00	.00	.00	46	.00	.00	.00	.00		
10			.00	.00	.00	47	.00	.00	.00	.00		
11			.00	.00	.00	18	.00	.00	.00	.00		
12			.00	.00	.00	.00	.00	.00	.00	.00		
13			.00	.00	.00	.00	.00	.00	.00	.00		
14			.00	.00	.00	.00	.00	.00	.00	.00		
15			.00	.00	.00	.00	.00	.00	.00	.00		
16			.00	.00	.00	.00	.00	.00	.00	.00		
17			.00	.00	.00	.00	.00	.00	.00	.00		
18			.00	.00	.00	.00	.00	.00	.00	.00		
19			.00	.00	.00	.00	.00	.00	.00	.00		
20			.00	.00	.00	.00	.00	.00	.00	.00		
21			.00	.00	.00	.00	.00	.00	.00	.00		
22			.00	.00	.00	.00	.00	.00	.00	.00		
23			.00	.00	.00	4.4	.00	.00	.00	.00		
24			.00	.00	.00	26	.00	.00	.00	.00		
25			.00	.00	.00	26	.00	.00	.00	.00		
26			.00	.00	.00	35	.00	.00	.00	.00		
27			.00	.00	.00	41	.00	.00	.00	.00		
28			.00	.00	.00	41	.00	.00	.00	.00		
29			.00	.00	.00	40	.00	.00	.00	.00		
30			.00	.00	24	39	.00	.00	.00	.00		
31			.00	---	45	---	.00	.00	---	.00		
TOTAL			.00	.00	69.00	725.40	33.39	.00	.00	.00		
MEAN			.000	.000	2.23	24.2	1.08	.000	.000	.000		
MAX			.00	.00	45	47	24	.00	.00	.00		
MIN			.00	.00	.00	.00	.00	.00	.00	.00		
AC-FT			.00	.00	137	1440	66	.00	.00	.00		

THE SEASON MARCH TO OCTOBER AC-FT 1,640

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06149200 RICHARDSON DITCH NEAR CONSUL, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°21'49", long 109°32'14", near center of south line of sec.11, T.5, R.27 W., third meridian, Hydrologic Unit 10050008, on left bank 420 ft (128 m) downstream from headgate and 4.8 mi (7.7 km) north of Consul.

PERIOD OF RECORD.--March 1963 to current season. 1910-12, 1914, 1916-20, 1922-33, 1935, July 1946 to current season in reports of Department of the Environment, Canada. Seasonal records only. 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 (0.305 m) higher.

REMARKS.--Records good except those for periods of no gage-height record, Mar. 1 to May 3, Sept. 14 to Oct. 31, which are poor. Ditch diverts from left bank of Battle Creek in SW¼ sec.11, T.5, R.27 W., third meridian, for irrigation of about 1,330 acres (5.3 km²) along Battle Creek.

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 ft³/s (2.04 m³/s) June 15, 1974; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	.01	.04	49	.00	.00	.02	.04		
2			.00	.01	.04	49	.02	.00	.02	.04		
3			.00	.01	.04	49	.03	.00	.01	.04		
4			.00	.01	.04	48	.03	.00	.01	.04		
5			.00	.01	.03	48	.05	.00	.01	.04		
6			.00	.01	.05	47	.05	.00	.02	.04		
7			.00	.01	.03	56	.04	.00	.03	.04		
8			.00	.01	.04	60	.04	.00	.03	.04		
9			.00	.01	.04	49	.04	.00	.03	.04		
10			.00	.01	.02	27	.05	.00	.03	.04		
11			.00	.02	.02	21	.05	.00	.03	.04		
12			.00	.02	.02	19	.04	.00	.03	.04		
13			.00	.02	.07	5.6	.03	.02	.04	.04		
14			.00	.02	.15	.07	.02	.05	.04	.04		
15			.00	.02	.20	.09	.01	.04	.04	.04		
16			.00	.02	.21	.07	.01	.03	.04	.04		
17			.00	.02	.21	.02	.02	.00	.04	.04		
18			.00	.02	.22	.01	.01	.00	.04	.04		
19			.00	.02	.21	.03	.02	.00	.04	.04		
20			.00	.02	.17	.06	.01	.00	.04	.04		
21			.00	.03	.12	.05	.01	.02	.04	.04		
22			.00	.03	.09	.03	.01	.03	.04	.04		
23			.00	.03	.07	.03	.00	.04	.04	.04		
24			.00	.03	.03	.03	.00	.03	.04	.04		
25			.00	.03	.03	.04	.00	.04	.04	.04		
26			.00	.03	.03	.03	.00	.04	.04	.04		
27			.00	.03	.03	.03	.00	.05	.04	.04		
28			.00	.03	.01	.02	.00	.05	.04	.04		
29			.00	.03	.01	.01	.00	.04	.04	.04		
30			.00	.03	.33	.00	.00	.03	.04	.04		
31			.00	---	49	---	.00	.03	---	.04		
TOTAL			.00	.60	84.27	528.22	.59	.54	.99	1.24		
MEAN			.000	.020	2.72	17.6	.019	.017	.033	.040		
MAX			.00	.03	.49	.60	.05	.05	.04	.04		
MIN			.00	.01	.01	.00	.00	.00	.01	.04		
AC-FT			.00	1.2	167	1050	1.2	1.1	2.0	2.5		

THE SEASON MARCH TO OCTOBER AC-FT 1,220

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06149300 MCKINNON DITCH NEAR CONSUL, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°19'47", long 109°29'24", in NW¼ sec.30, T.4, R.26 W., third meridian, Hydrologic Unit 10050008, on right bank 1.0 mi (1.6 km) downstream from headgate on Battle Creek and 2.7 mi (4.3 km) northeast of Consul.

PERIOD OF RECORD.--March 1963 to current season. 1911-26, 1929-31, and March 1938 to current season in reports of Department of the Environment, Canada. Seasonal records only. Estimates of seasonal diversion 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 (0.305 m) higher.

REMARKS.--Records good except those for June 12-16, which are poor. No gage height record Mar. 1 to May 3 and Sept. 14 to Oct. 31. Ditch diverts from right bank of Battle Creek in NE¼ sec.30, T.4, R.26 W., third meridian, for irrigation of about 1,320 acres (5.3 km²) along Battle Creek.

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 ft³/s (1.93 m³/s) June 18, 1975; no flow most of each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	.00	.00	32	.00	.00	.00	.00		
2			.00	.00	.00	33	.00	.00	.00	.00		
3			.00	.00	.00	34	.00	.00	.00	.00		
4			.00	.00	.00	37	.00	.00	.00	.00		
5			.00	.00	.00	37	.00	.00	.00	.00		
6			.00	.00	.00	38	.00	.00	.00	.00		
7			.00	.00	.00	38	.00	.00	.00	.00		
8			.00	.00	.00	37	.00	.00	.00	.00		
9			.00	.00	.00	39	.00	.00	.00	.00		
10			.00	.00	.00	41	.00	.00	.00	.00		
11			.00	.00	.00	43	.00	.00	.00	.00		
12			.00	.00	.00	41	.00	.00	.00	.00		
13			.00	.00	.00	21	.00	.00	.00	.00		
14			.00	.00	.00	16	.00	.00	.00	.00		
15			.00	.00	.00	6.2	.00	.00	.00	.00		
16			.00	.00	.00	.25	.00	.00	.00	.00		
17			.00	.00	.00	.00	.00	.00	.00	.00		
18			.00	.00	.00	.00	.00	.00	.00	.00		
19			.00	.00	.00	.00	.00	.00	.00	.00		
20			.00	.00	.00	.00	.00	.00	.00	.00		
21			.00	.00	.00	.02	.00	.00	.00	.00		
22			.00	.00	.00	.02	.00	.00	.00	.00		
23			.00	.00	.00	.01	.00	.00	.00	.00		
24			.00	.00	.00	.00	.00	.00	.00	.00		
25			.00	.00	.00	.00	.00	.00	.00	.00		
26			.00	.00	.00	.03	.00	.00	.00	.00		
27			.00	.00	.00	.01	.00	.00	.00	.00		
28			.00	.00	.00	.00	.00	.00	.00	.00		
29			.00	.00	.00	.00	.00	.00	.00	.00		
30			.00	.00	.00	.00	.00	.00	.00	.00		
31			.00	---	23	---	.00	.00	---	.00		
TOTAL			.00	.00	23.00	493.54	.00	.00	.00	.00		
MEAN			.000	.000	.74	16.5	.000	.000	.000	.000		
MAX			.00	.00	23	43	.00	.00	.00	.00		
MIN			.00	.00	.00	.00	.00	.00	.00	.00		
AC-FT			.00	.00	46	979	.00	.00	.00	.00		

THE SEASON MARCH TO OCTOBER

AC-FT

1,020

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06149400 NASHLYN CANAL NEAR CONSUL, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°13'57", long 109°33'27", in NE¼ sec.22, T.3, R.27 W., third meridian, Hydrologic Unit 10050008, on left bank 0.8 mi (1.3 km) downstream from headgate on Battle Creek, 5.9 mi (9.5 km) south of Consul.

PERIOD OF RECORD.--March 1963 to current season. 1912, 1914-35, 1938 to current season in reports of Department of the Environment, Canada. Seasonal records only. Prior to March 1950, estimates of seasonal diversion 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 (0.8 km) downstream at different datums.

REMARKS.--Records good. Ditch diverts water from left bank of Battle Creek in SW¼ sec.27, T.3, R.27 W., third meridian, for irrigation of about 1,880 acres (7.6 km²) along Battle Creek.

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 ft³/s (2.41 m³/s) Apr. 14, 1952; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	8.8	17	1.6	.00	.00	.00	.00		
2			.00	23	6.2	17	.00	.00	.00	.00		
3			.00	7.6	4.4	23	.00	.00	.00	.00		
4			.00	2.4	4.3	24	.00	.00	.00	.00		
5			.00	2.3	3.5	25	.00	.00	.00	.00		
6			.00	3.4	.56	25	.00	.00	.00	.00		
7			.00	1.7	.22	20	.00	.00	.00	.00		
8			.00	.87	.14	1.9	.00	.00	.00	.00		
9			.00	3.5	.10	.60	.00	.00	.00	.00		
10			.00	28	.08	.36	.00	.00	.00	.00		
11			.00	35	.06	.27	.00	.00	.00	.00		
12			.00	20	.02	.04	.00	.00	.00	.00		
13			.00	17	.00	.00	.00	.00	.00	.00		
14			.00	17	.00	.00	.00	.00	.00	.00		
15			.00	25	.00	.00	.00	.00	.00	.00		
16			.00	29	.00	.00	.00	.00	.00	.00		
17			.00	29	.00	.00	.00	.00	.00	.00		
18			.00	28	.00	.00	.00	.00	.00	.00		
19			.00	27	.00	.00	.00	.00	.00	.00		
20			.00	26	.00	.00	.00	.00	.00	.00		
21			.00	27	.00	.00	.00	.00	.00	.00		
22			.00	29	.00	.00	.00	.00	.00	.00		
23			.00	31	.00	.00	.00	.00	.00	.00		
24			.00	32	.00	.00	.00	.00	.00	.00		
25			.00	33	.00	.00	.00	.00	.00	.00		
26			.00	31	.00	.00	.00	.00	.00	.00		
27			.00	31	.00	.00	.00	.00	.00	.00		
28			.00	30	.00	.00	.00	.00	.00	.00		
29			.00	19	.00	.00	.00	.00	.00	.00		
30			.00	17	.00	.00	.00	.00	.00	.00		
31			.18	---	.00	---	.00	.00	---	.00		
TOTAL			.18	614.57	36.58	138.77	.00	.00	.00	.00		
MEAN			.006	20.5	1.18	4.63	.000	.000	.000	.000		
MAX			.18	35	17	25	.00	.00	.00	.00		
MIN			.00	.87	.00	.00	.00	.00	.00	.00		
AC-FT			.4	1220	73	275	.00	.00	.00	.00		

THE SEASON MARCH TO OCTOBER AC-FT 1,570

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06149500 BATTLE CREEK AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'08", long 109°25'20", in SE¼ sec.4, T.1, R.26 W., third meridian, Hydrologic Unit 10050008, on left bank 600 ft (183 m) north of international boundary in Saskatchewan, 8 mi (13 km) upstream from Woodpile Coulee, and 30 mi (48 km) north of Chinook, Mt.

DRAINAGE AREA.--931 mi² (2,411 km²).

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 figures only), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,729.8 ft (832.04 m) above mean sea level (International Boundary Survey datum, adjustment of 1928).

REMARKS.--Records good. Natural flow of stream affected by storage reservoirs, diversions for irrigation of about 9,500 acres (38.4 km²), and return flow from irrigated areas. Water may be diverted into or from Frenchman River basin through Cypress Lake.

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 discharge, 5,820 ft³/s (165 m³/s) Apr. 15, 1952, gage height, 10.56 ft (3.219 m), reduced by overflow into Lodge Creek basin; no flow at times most season.

EXTREMES FOR CURRENT SEASON.--Maximum discharge, 1,620 ft³/s (45.9 m³/s) Apr. 5, gage height, 7.07 ft (2.155 m), backwater from ice; maximum gage height, 8.44 ft (2.573 m) Apr. 5 (backwater from ice); no flow Aug. 13-23, Sept. 1-4.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.33	26	39	17	12	2.6	.00	4.3	13	
2			.25	30	32	21	15	2.1	.00	3.2	---	
3			.18	40	25	21	12	1.2	.00	2.3	---	
4			.10	63	26	18	16	.84	.00	1.8	---	
5			.07	419	55	26	18	.55	.13	3.9	---	
6			.26	637	33	36	21	.33	1.6	6.0	---	
7			.35	603	25	40	22	.23	1.3	8.5	---	
8			.26	356	21	42	18	.19	2.6	9.2	---	
9			.35	386	18	62	15	.13	3.2	9.2	---	
10			.39	260	20	44	15	.07	2.3	11	---	
11			.39	207	15	41	13	.04	3.9	10	---	
12			.43	148	12	53	10	.01	75	8.5	---	
13			.43	95	13	68	19	.00	63	6.7	---	
14			.46	72	31	70	17	.00	31	5.3	---	
15			.48	66	29	78	14	.00	32	3.9	---	
16			.48	55	25	97	11	.00	28	2.8	---	
17			.51	55	24	110	10	.00	17	2.6	---	
18			.55	51	23	82	8.9	.00	11	1.9	---	
19			.55	40	22	38	7.8	.00	8.5	2.1	---	
20			.55	32	20	28	6.0	.00	14	4.6	---	
21			.58	24	18	24	6.4	.00	14	6.7	---	
22			.58	23	16	22	5.0	.00	11	7.8	---	
23			.62	32	15	19	7.1	.00	9.2	7.5	---	
24			.62	34	16	24	5.7	.06	8.2	7.1	---	
25			.71	27	16	29	3.9	.07	7.1	8.2	---	
26			.83	28	15	22	3.2	.05	5.3	8.5	---	
27			1.2	27	14	18	2.3	.04	6.0	7.8	---	
28			1.6	43	12	18	3.6	.03	5.7	7.1	---	
29			3.2	46	10	17	4.3	.02	5.7	6.4	---	
30			3.9	46	10	15	2.6	.02	5.0	7.1	---	
31			12	---	18	---	2.1	.01	---	10	---	
TOTAL			33.21	4021	668	1202	326.9	8.64	371.73	192.0	---	
MEAN			1.07	134	21.5	40.1	10.5	.28	12.4	6.19	---	
MAX			12	637	55	110	22	2.6	75	11	---	
MIN			.07	23	10	15	2.1	.00	.00	1.8	---	
AC-FT			66	7980	1320	2380	648	17	737	381	---	

THE SEASON MARCH TO OCTOBER

AC-FT

13,530

06151000 LYONS CREEK AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'20", long 109°13'50", in SW¼ sec.1, T.1, R.25 W., third meridian, Hydrologic Unit 10050008, on right bank 0.3 mi (0.5 km) north of international boundary, 8 mi (13 km) south of Arena, Saskatchewan, and 28 mi (45 km) north of Chinook, Mt.

DRAINAGE AREA.--66.7 mi² (173 km²).

PERIOD OF RECORD.--March 1927 to current season (seasonal records only in most seasons). Monthly discharge only for February, March 1934, published in WSP 1309. Prior to March 1962, published as Lyons Coulee at international boundary.

REVISED RECORDS.--WSP 1389: 1929(M), 1936, 1937(M), 1939, 1940-41(M), 1946(M). WSP 1629: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 2,800 ft (853 m), from international boundary map. Prior to Oct. 19, 1935, nonrecording gages at site 0.5 mi (0.8 km) south of international boundary at different datum. Oct. 19, 1935, to Oct. 31, 1940, nonrecording gage at site 1.2 mi (1.9 km) north of international boundary at different datum. Nov. 1, 1940, to Aug. 4, 1958, nonrecording gages at sites within 300 ft (91 m) of present site at present datum.

REMARKS.--Records fair except those for winter period, which are poor. Natural flow of stream affected by small stock-water and irrigation dams above 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 discharge, 1,200 ft³/s (34.0 m³/s) July 6, 1955, gage height, 8.38 ft (2.554 m), from floodmark, from rating curve extended above 600 ft³/s (17.0 m³/s); no flow most of each season.

EXTREMES FOR CURRENT SEASON.--Maximum discharge, 758 ft³/s (21.5 m³/s) Apr. 6, gage height, 5.31 ft (1.618 m), backwater from ice; no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	.00	2.4	.16	.00	.00	.00	.00	.00	
2			.00	.00	1.8	.14	.00	.00	.00	.00	---	
3			.00	.00	1.4	.09	.00	.00	.00	.00	---	
4			.00	.00	1.1	.03	.00	.00	.00	.00	---	
5			.00	70	.99	.01	.00	.00	.00	.00	---	
6			.00	458	.92	.01	.00	.00	.00	.00	---	
7			.00	267	.66	.00	.00	.00	.00	.00	---	
8			.00	241	.56	.00	.00	.00	.00	.00	---	
9			.00	193	.42	.00	.00	.00	.00	.00	---	
10			.00	130	.42	.00	.00	.00	.00	.00	---	
11			.00	167	.78	.00	.00	.00	.00	.00	---	
12			.00	90	.58	.00	.00	.00	.00	.00	---	
13			.00	32	.61	.00	.00	.00	.00	.00	---	
14			.00	20	.56	.00	.00	.00	.00	.00	---	
15			.00	17	.56	.00	.00	.00	.00	.00	---	
16			.00	18	.38	.00	.00	.00	.00	.00	---	
17			.00	19	.31	.00	.00	.00	.00	.00	---	
18			.00	19	.31	.00	.00	.00	.00	.00	---	
19			.00	16	.56	.00	.00	.00	.00	.00	---	
20			.00	10	.99	.00	.00	.00	.00	.00	---	
21			.00	7.6	.85	.00	.00	.00	.00	.00	---	
22			.00	7.1	.72	.00	.00	.00	.00	.00	---	
23			.00	5.8	.66	.00	.00	.00	.00	.00	---	
24			.00	4.3	1.4	.00	.00	.00	.00	.00	---	
25			.00	4.1	1.4	.00	.00	.00	.00	.00	---	
26			.00	4.1	.99	.00	.00	.00	.00	.00	---	
27			.00	3.6	.56	.00	.00	.00	.00	.00	---	
28			.00	2.8	.34	.00	.00	.00	.00	.00	---	
29			.00	3.6	.19	.00	.00	.00	.00	.00	---	
30			.00	3.3	.19	.00	.00	.00	.00	.00	---	
31			.00	---	.19	---	.00	.00	---	.00	---	
TOTAL			.00	1813.30	23.80	.44	.00	.00	.00	.00	---	
MEAN			.000	60.4	.77	.015	.000	.000	.000	.000	---	
MAX			.00	458	2.4	.16	.00	.00	.00	.00	---	
MIN			.00	.00	.19	.00	.00	.00	.00	.00	---	
AC-FT			.00	3600	47	.9	.00	.00	.00	.00	---	

THE SEASON MARCH TO OCTOBER

AC-FT

3,640

06154400 PEOPLES CREEK NEAR HAYS, MT

LOCATION.--Lat 48°13'35", long 108°42'40", in SW¼ sec.35, T.29 N., R.23 E., Blaine County, Hydrologic Unit 10050009, on right bank 45 ft (14 m) downstream from bridge on State Highway 376, 2.5 mi (4.0 km) downstream from Myrtle Creek, and 16.4 mi (26.4 km) north of Hays.

DRAINAGE AREA.--220 mi² (570 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 2,714.10 ft (827.258 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for Oct. 1 to Mar. 21, which are poor. Some storage in numerous stock ponds and diversions for irrigation of about 1,300 acres (5.26 km²) above station.

AVERAGE DISCHARGE.--11 years, 18.5 ft³/s (0.523 m³/s), 13,400 acre-ft/yr (16.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,460 ft³/s (240 m³/s) June 8, 1972, gage height, 15.03 ft (4.581 m), from floodmark, from rating curve extended above 490 ft³/s (13.9 m³/s) on basis of slope-area measurement of peak flow; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.83 m³/s) and maximums(*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 21	1815	Ice Jam	*8.83 2.691	May 20	0845	111 3.14	4.45 1.356
Mar. 29	2100	682 19.3	6.80 2.073	May 24	0815	175 4.96	4.89 1.490
May 7	1230	263 7.45	5.33 1.625	July 5	2200	*1,050 29.7	7.69 2.344

No flow for part of Nov. 2, Jan. 20, and Feb. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	.06	.20	.04	.01	.02	163	83	72	23	10	7.3
2	.04	.03	.16	.04	.01	.02	128	76	86	30	8.0	6.8
3	.06	.03	.14	.04	.01	.02	99	75	75	59	8.3	5.7
4	.06	.03	.10	.04	.01	.02	77	76	61	75	14	4.9
5	.06	.06	.09	.04	.01	.02	80	82	54	135	12	4.2
6	.06	.03	.08	.04	.01	.02	65	130	50	183	8.3	4.2
7	.06	.03	.08	.04	.01	.02	62	226	48	75	6.2	4.7
8	.03	.06	.07	.03	.01	.20	58	214	45	67	5.9	5.2
9	.03	.06	.07	.03	.01	1.0	53	182	47	67	4.7	4.7
10	.03	.06	.10	.02	.01	5.0	45	157	42	53	4.0	5.4
11	.03	.03	.10	.01	.01	20	44	125	41	45	4.0	9.6
12	.03	.03	.20	.01	.01	30	43	111	42	38	3.2	39
13	.03	.03	.60	.01	.01	35	42	98	41	30	3.6	49
14	.03	.03	1.4	.01	.01	40	41	97	38	26	3.6	60
15	.03	.06	2.0	.01	.01	50	41	89	28	23	2.9	44
16	.03	.03	10	.01	.01	50	41	80	24	20	3.2	25
17	.03	.06	5.0	.01	.01	60	53	74	23	20	3.4	19
18	.03	.06	3.0	.01	.01	40	61	85	24	22	3.2	14
19	.03	.06	1.5	.01	.01	200	63	97	37	24	2.3	12
20	.03	.06	.70	.01	.01	390	57	105	62	25	4.7	10
21	.06	.06	.30	.01	.01	600	48	83	74	22	6.2	10
22	.06	.06	.14	.01	.02	527	42	73	55	22	5.2	9.9
23	.06	.06	.12	.01	.02	220	41	83	44	20	7.4	9.6
24	.06	.06	.10	.01	.03	254	62	134	38	19	9.6	9.0
25	.03	.06	.09	.01	.04	452	31	107	38	17	9.6	8.3
26	.03	.08	.08	.01	.04	526	30	96	37	13	8.3	7.7
27	.06	.08	.06	.01	.03	369	34	73	35	12	8.6	7.7
28	.06	.08	.05	.01	.02	236	46	62	32	11	11	7.0
29	.06	.12	.05	.01	---	230	59	57	27	10	9.6	7.3
30	.06	.30	.05	.01	---	212	74	56	23	9.6	12	7.7
31	.03	---	.04	.01	---	203	---	63	---	9.3	8.3	---
TOTAL	1.53	1.86	26.67	.57	.41	4800.34	1783	3149	1343	1184.9	211.3	418.9
MEAN	.049	.062	.86	.018	.015	155	59.4	102	44.8	38.2	6.82	14.0
MAX	.18	.30	10	.04	.04	600	163	226	86	183	14	60
MIN	.03	.03	.04	.01	.01	.02	30	56	23	9.3	2.3	4.2
AC-FT	3.0	3.7	53	1.1	.8	9520	3540	6250	2660	2350	419	831
CAL YR 1977 TOTAL	895.32			MEAN 2.45	MAX 50	MIN .01	AC-FT 1780					
WTR YR 1978 TOTAL	12921.48			MEAN 35.4	MAX 600	MIN .01	AC-FT 25630					

06154410 LITTLE PEOPLES CREEK NEAR HAYS, MT

LOCATION.--Lat 47°57'59", long 108°39'37", in SE&SE&NW¼ sec.32, T.26 N., R.24 E., Blaine County, Hydrologic Unit 10050009, on right bank 0.5 mi (0.8 km) upstream from entrance to Mission Canyon, and 2 mi (3 km) southeast of Hays.

DRAINAGE AREA.--11.8 mi² (30.6 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,760 ft (1,150 m), from topographic map. August 1972, to June 24, 1976, gage at present site at datum 10.00 ft (3.048 m) higher.

REMARKS.--Records poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--6 years, 6.53 ft³/s (0.185 m³/s), 4,730 acre-ft/yr (5.83 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 576 ft³/s (16.3 m³/s) May 25, 1974, gage height, 4.57 ft (1.393 m), from floodmark, at site and datum then in use, from rating curve extended above 44 ft³/s (1.25 m³/s) on basis of slope-area measurement of peak flow; minimum daily, 1.5 ft³/s (0.042 m³/s) Sept. 24-29, Dec. 9, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50 ft³/s (1.42 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 8	0700	68 1.93	11.27 3.437	May 24	0700	*119 3.37	*11.77 3.587
May 18	1630	85 2.41	11.45 3.490	Sept. 13	0630	66 1.87	10.97 3.344

Minimum daily discharge, 1.5 ft³/s (0.042 m³/s) Dec. 9.

CORRECTION.--Datum of gage published in error in MT-77-1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	1.7	1.7	1.6	2.0	1.9	5.7	50	27	6.2	5.4	3.5
2	1.7	1.7	1.7	1.6	2.1	1.5	5.7	28	27	5.0	4.0	3.5
3	1.7	1.7	1.7	1.7	2.1	1.7	6.3	20	24	7.1	3.9	3.5
4	1.7	1.7	1.7	1.7	1.9	1.7	6.3	25	22	6.0	3.9	3.5
5	1.7	1.7	1.6	1.7	1.9	1.7	7.5	25	20	6.4	3.7	3.5
6	1.6	1.7	1.6	1.7	1.9	1.7	9.3	39	19	6.0	3.5	3.5
7	1.6	1.7	1.6	1.7	1.9	1.6	6.7	30	16	6.8	3.4	3.5
8	1.6	1.7	1.6	1.6	1.9	1.6	8.2	39	12	7.1	3.5	3.7
9	1.3	1.7	1.5	1.6	1.9	1.6	8.2	49	11	6.8	3.5	3.4
10	1.6	1.7	1.6	1.6	1.9	1.7	7.9	36	11	7.1	3.5	3.4
11	1.6	1.7	1.6	1.6	1.9	1.6	7.5	29	9.0	6.0	3.5	3.5
12	1.6	1.7	1.6	1.6	2.0	1.8	7.5	25	9.2	6.5	3.5	9.2
13	1.6	1.7	1.7	1.6	1.9	1.8	7.2	21	8.9	6.2	3.5	47
14	1.6	1.7	1.6	1.6	1.9	1.9	7.0	19	9.6	6.2	3.9	50
15	1.6	1.7	1.6	1.6	1.9	1.7	7.0	17	8.9	6.2	3.5	22
16	1.6	1.7	1.9	1.6	1.6	1.7	7.0	14	8.1	6.2	3.5	17
17	1.6	1.7	1.9	1.6	1.6	1.6	6.2	17	7.3	6.2	3.5	12
18	1.6	1.7	1.9	1.6	1.9	1.9	8.7	63	7.6	5.9	3.5	9.6
19	1.3	1.7	1.9	1.6	1.6	1.9	6.2	64	8.9	6.5	3.5	6.5
20	1.7	1.7	1.9	1.6	1.6	1.9	6.7	42	8.5	6.8	3.5	7.8
21	1.7	1.7	1.9	1.6	1.8	1.9	9.6	30	7.8	6.5	3.5	7.1
22	1.7	1.7	1.9	1.6	1.9	1.9	9.0	30	7.4	6.5	3.5	6.6
23	1.6	1.7	2.0	1.7	2.0	1.9	8.5	64	7.4	6.8	3.5	6.0
24	1.6	1.7	2.0	1.6	1.9	2.0	7.9	97	6.8	6.2	3.5	5.5
25	1.6	1.7	2.0	1.9	1.9	2.1	7.9	73	6.8	5.9	3.5	5.1
26	1.6	1.7	2.0	1.9	1.9	2.1	13	36	7.1	6.5	3.5	4.8
27	1.6	1.7	2.0	1.9	1.9	2.1	21	39	7.1	6.5	3.5	4.5
28	1.6	1.7	2.0	1.9	1.9	2.2	21	32	6.5	6.2	3.5	4.1
29	1.6	1.7	2.0	1.9	---	2.4	23	28	6.5	6.5	3.5	3.8
30	1.6	1.7	1.9	1.9	---	2.6	23	20	6.5	6.5	3.5	3.6
31	1.6	---	1.9	1.9	---	2.5	---	29	---	6.2	3.5	---
TOTAL	53.2	51.0	55.9	52.9	53.1	58.9	305.1	1186	345.2	200.9	112.8	252.7
MEAN	1.72	1.70	1.80	1.71	1.70	1.90	10.2	38.3	11.5	6.48	3.64	8.42
MAX	1.8	1.7	2.0	1.9	2.1	2.6	28	97	27	7.1	5.4	47
MIN	1.6	1.7	1.5	1.6	1.6	1.6	5.9	14	6.5	5.0	3.4	3.4
AC-FT	106	101	111	105	105	117	605	2350	687	398	224	501
CAL YR 1977	TOTAL	928.1	MEAN	2.54	MAX	13	MIN	1.5	AC-FT	1840		
WTR YR 1976	TOTAL	2726.7	MEAN	7.46	MAX	97	MIN	1.5	AC-FT	5410		

MILK RIVER BASIN

06154410 LITTLE PEOPLES CREEK NEAR HAYS, MT--Continued

WATER-QUALITY RECORDS.

PERIOD OF RECORD.--Water years 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
19...	1300	1.7	0	464	8.3	23.0	6.0	1	10.0	93
NOV										
30...	1300	2.0	0	450	8.1	.0	4.0	1	11.1	97
DEC										
14...	1430	1.7	3	530	7.8	6.5	4.5	1	10.2	90
JAN										
19...	1400	1.6	--	478	8.2	-13.0	1.5	2	11.4	93
FEB										
22...	1300	1.6	0	470	8.5	5.0	5.5	2	11.6	105
MAR										
23...	1500	2.1	3	458	8.3	2.0	5.0	0	--	--
APR										
12...	1400	7.5	3	430	8.2	6.5	7.5	1	9.9	94
MAY										
17...	1300	16	62	410	7.8	11.0	8.5	2	10.0	98
JUN										
07...	1100	17	0	395	8.1	19.0	12.5	1	9.0	97
JUL										
19...	1200	6.3	1	460	8.4	19.0	12.0	0	10.0	106
AUG										
30...	1500	3.5	0	458	8.3	27.0	14.5	1	8.9	100
SEP										
14...	1400	29	1	355	7.5	18.0	11.5	5	9.1	95

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCUCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)
OCT									
19...	--	--	250	23	60	25	2.6	.1	.8
NOV									
30...	K12	K2	270	44	70	24	2.5	.1	1.6
DEC									
14...	<1	<1	260	33	64	25	2.5	.1	1.5
JAN									
19...	<1	<1	250	21	61	24	2.8	.1	1.3
FEB									
22...	<1	K4	260	33	62	25	2.5	.1	1.5
MAR									
23...	--	--	260	50	66	24	3.2	.1	1.6
APR									
12...	<1	<1	250	40	67	19	4.7	.1	2.1
MAY									
17...	K5	K14	200	22	53	17	3.9	.1	2.0
JUN									
07...	K2	K7	210	25	56	18	3.8	.1	1.9
JUL									
19...	K7	K550	240	29	65	20	4.9	.1	2.0
AUG									
30...	60	410	240	40	65	20	4.5	.1	1.8
SEP									
14...	<1	70	190	13	51	14	3.0	.1	1.9

06154410 LITTLE PEOPLES CREEK NEAR HAYS, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 19...	280	0	2.2	32	1.0	.3	10	270	.37
NOV 30...	280	0	3.6	27	1.0	.3	10	274	.37
DEC 14...	280	0	7.1	30	.9	.3	10	272	.37
JAN 19...	280	0	2.6	30	1.0	.3	9.9	268	.36
FEB 22...	270	2	1.4	28	1.0	.3	9.8	265	.36
MAR 23...	260	--	2.1	31	.9	.3	9.3	265	.36
APR 12...	250	0	2.5	39	.8	.3	11	267	.36
MAY 17...	220	0	5.6	29	1.0	.3	11	226	.31
JUN 07...	230	0	2.9	29	.6	.3	11	234	.32
JUL 19...	200	31	1.7	32	1.4	.3	13	268	.36
AUG 30...	250	0	2.0	32	.8	.3	11	259	.35
SEP 14...	210	0	11	23	1.0	.2	13	211	.29

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 19...	1.24	.03	.02	.01	.03	.06	.01	20	50
NOV 30...	1.48	.13	.02	.00	.00	.13	.00	20	10
DEC 14...	1.25	.11	.06	.00	.05	.16	.00	30	20
JAN 19...	1.16	.09	.00	.11	.11	.20	.01	40	20
FEB 22...	1.14	.06	.00	.02	.02	.08	.01	10	10
MAR 23...	1.50	.02	.00	.19	.19	.21	.01	20	0
APR 12...	5.41	.06	.03	.16	.19	.25	.01	20	110
MAY 17...	9.76	.01	.01	.14	.15	.16	.03	20	0
JUN 07...	10.7	.00	.00	.09	.09	.09	.00	30	20
JUL 19...	4.56	.02	.00	.34	.34	.36	.01	40	30
AUG 30...	2.45	.00	.01	.10	.11	.11	.01	50	30
SEP 14...	16.5	.01	.01	.54	.55	.56	.02	30	130

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
DEC 14...	1430	--	0	--	2	--	0	--	0	--
MAR 23...	1500	--	0	--	1	--	0	--	7	--
APR 12...	1400	100	0	3	4	10	0	6	9	10
MAY 17...	1300	210	0	3	1	0	5	3	4	0
JUN 07...	1100	--	0	--	1	--	0	--	2	--
SEP 14...	1400	620	60	6	1	0	0	60	3	0

MILK RIVER BASIN

06154410 LITTLE PEOPLES CREEK NEAR HAYS, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHROMIUM, DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
DEC 14...	0	--	0	--	--	0	--	10	--	10
MAR 23...	0	--	4	--	--	0	--	10	--	0
APR 12...	0	2	2	200	7	3	8	5	20	0
MAY 17...	0	8	0	400	41	7	9	7	--	10
JUN 07...	0	--	8	--	--	40	--	10	--	10
SEP 14...	0	10	9	870	670	10	20	20	50	10

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENIUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENIUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 14...	--	.0	--	0	--	0	--	1	.7	10
MAR 23...	--	.1	--	0	--	1	--	5	1.0	10
APR 12...	.0	.0	12	1	6	3	1	0	1.0	10
MAY 17...	.0	.0	0	1	2	0	0	0	1.0	10
JUN 07...	--	.0	--	0	--	0	--	0	1.0	10
SEP 14...	.0	.0	0	0	4	2	0	0	1.7	20

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 19...	1300	6.0	1.7	20	.09	25
NOV 30...	1300	4.0	2.0	44	.24	--
DEC 14...	1430	4.5	1.7	32	.15	--
JAN 19...	1400	1.5	1.6	36	.16	--
FEB 22...	1300	5.5	1.6	28	.12	--
APR 12...	1400	7.5	7.5	16	.32	--
MAY 17...	1300	8.5	16	84	3.6	--
JUN 07...	1100	12.5	17	31	1.4	--
AUG 30...	1500	14.5	3.5	12	.11	--
SEP 14...	1400	11.5	29	78	6.1	62

06156000 WHITEWATER CREEK NEAR INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 48°57'10", long 107°51'40", in NW¼ sec.24, T.37 N., R.29 E., Phillips County, Hydrologic Unit 10050011, on left bank 500 ft (152 m) downstream from North Fork, 3.3 mi (5.3 km) south of international boundary, 11 mi (18 km) north of Loring, Mt. and 14 mi (23 km) south of Orkney, Saskatchewan.

DRAINAGE AREA.--458 mi² (1,186 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1927 to current season (seasonal records only in most seasons).

REVISED RECORDS.--WSP 1389: 1928, 1931(M), 1936, 1939-41(M), 1943, 1950(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. V-Notch sharp-crested weir in concrete control since October 1938. Altitude of gage is 2,500 ft (762 m), from international boundary map. Prior to Aug. 31, 1927, nonrecording gage, and Aug. 31, 1927, to Aug. 31, 1948, water-stage recorder, at site 300 ft (91 m) upstream at present datum.

REMARKS.--Records good except those for periods of no gage height record or those for winter period, which are poor.

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, 3,500 ft³/s (99.1 m³/s) Apr. 14, 1952, gage height, 6.15 ft (1.875 m), from rating curve extended above 2,100 ft³/s (59.5 m³/s) on basis of conveyance study; no flow at times most seasons.

EXTREMES FOR CURRENT SEASON.--Maximum discharge, 616 ft³/s (17.4 m³/s) Apr. 2, gage height, 4.68 ft (1.426 m), backwater from ice; no flow Aug. 12-16.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.15	295	14	.58	.07	.06	.11	.06	.13	
2			.15	327	15	.55	.06	.05	.09	.08	---	
3			.15	229	13	.48	.10	.04	.08	.08	---	
4			.15	295	10	.41	.12	.04	.07	.08	---	
5			.15	425	9.0	.33	.11	.03	.06	.07	---	
6			.15	220	8.4	.31	.10	.02	.05	.07	---	
7			.15	88	7.3	.39	.07	.02	.05	.06	---	
8			.20	44	5.6	.37	.10	.01	.04	.08	---	
9			.20	36	3.9	.33	.10	.01	.04	.08	---	
10			.20	26	2.3	.26	.08	.01	.04	.08	---	
11			.20	26	1.4	.31	.11	.01	.08	.07	---	
12			.20	20	1.2	.39	.09	.00	.37	.07	---	
13			.20	15	1.0	.35	.06	.00	.43	.07	---	
14			.20	10	.90	.33	.05	.00	.25	.08	---	
15			.20	7.8	.81	.28	.04	.00	.16	.08	---	
16			.20	7.3	.63	.23	.03	.00	.13	.09	---	
17			.20	8.4	.66	.23	.03	.01	.11	.10	---	
18			.20	9.0	.90	.20	.05	.01	.10	.11	---	
19			.20	6.5	.84	.28	.09	.01	.10	.11	---	
20			.20	4.8	.77	.28	.09	.01	.09	.11	---	
21			.20	3.2	.84	.25	.07	.02	.11	.10	---	
22			.20	2.0	.44	.22	.07	.04	.11	.10	---	
23			.20	3.2	3.9	.19	.05	.07	.09	.10	---	
24			.20	7.8	3.4	.16	.04	.08	.07	.09	---	
25			.50	9.0	2.6	.15	.03	.09	.07	.09	---	
26			1.0	15	1.3	.16	.02	.09	.07	.10	---	
27			9.0	16	.94	.13	.02	.09	.07	.10	---	
28			31	15	.71	.11	.01	.09	.07	.11	---	
29			156	15	.60	.11	.04	.10	.07	.13	---	
30			162	15	.55	.10	.07	.11	.07	.13	---	
31			315	---	.58	---	.07	.11	---	.12	---	
TOTAL			678.95	2201.0	115.43	8.47	2.04	1.23	3.25	2.84	---	
MEAN			21.9	73.4	3.72	.28	.066	.040	.11	.092	---	
MAX			315	425	14	.58	.12	.11	.43	.13	---	
MIN			.15	2.0	.55	.10	.01	.00	.04	.07	---	
AC-FT			1350	4370	229	17	4.0	2.4	6.4	5.6	---	

THE SEASON MARCH TO OCTOBER

AC-FT

5,980

MILK RIVER BASIN

06156000 WHITEWATER CREEK NEAR INTERNATIONAL BOUNDARY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)
MAR 30...	1030	113	135	.0	32	0	3.7	14	1.1	4.2
APR 01...	0930	237	82	.0	26	0	2.5	4.0	.3	5.4
JUL 18...	1800	.07	2150	15.5	250	0	49	430	12	7.2

DATE	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
MAR 30...	44	23	1.8	.0	4.6	80	.11	24.4	--
APR 01...	33	8.7	1.2	.0	6.9	52	.07	33.3	--
JUL 18...	380	740	53	.3	3.8	1490	2.03	.28	.03

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
MAR 30...	--	40	1	0	70	1	0	1	190
APR 01...	--	100	1	0	50	1	0	1	200
JUL 18...	.02	20	2	0	630	1	0	2	70

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 30...	2	5	30	.0	1	0	0	2.0	10
APR 01...	2	0	20	.0	1	0	0	2.0	20
JUL 18...	0	190	10	.0	4	3	0	.0	10

06156500 BELANGER CREEK DIVERSION CANAL NEAR VIDORA, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°29'39", long 109°21'50", in NW¼ sec.19, T.6, R.25 W., third meridian, Hydrologic Unit 10050013, on left bank 0.3 mi (0.5 km) downstream from diversion weir and 12 mi (19 km) 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. Altitude of gage is 3,200 ft (975 m) from Cypress Lake elevation.

REMARKS.--Records fair. Canal diverts water from right bank of Belanger Creek in SW¼ sec.30, T.6, R.25 W., third meridian, for storage in Cypress Lake.

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, 598 ft³/s (16.9 m³/s) May 7, 1975; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	90	81	.00	.00	.00	.00	.00		
2			.00	76	65	.00	.00	.00	.00	.00		
3			.00	33	52	.00	.00	.00	.00	.00		
4			.00	34	44	.00	.00	.00	.00	.00		
5			.00	70	33	.00	.00	.00	.00	.00		
6			.00	92	29	.00	.00	.00	.00	.00		
7			.00	78	27	.00	.00	.00	.00	.00		
8			.00	50	24	.00	.00	.00	.00	.00		
9			.00	55	23	.00	.00	.00	.00	.00		
10			.00	51	22	.00	.00	.00	.00	.00		
11			.00	69	22	.00	.00	.00	1.4	.00		
12			.00	30	21	.00	.00	.00	10	.00		
13			.00	29	19	.00	.00	.00	5.1	.00		
14			.00	34	17	.00	.00	.00	1.0	.00		
15			.00	40	15	.00	.00	.00	.00	.00		
16			.00	47	14	.00	.00	.00	.00	.00		
17			.00	60	14	.00	.00	.00	.00	.00		
18			.00	66	14	.00	.00	.00	.00	.00		
19			.00	60	15	.10	.00	.00	.00	.00		
20			.00	54	13	.30	.00	.00	.00	.00		
21			.00	49	12	.13	.00	.00	.00	.00		
22			.00	45	11	.03	.00	.00	.00	.00		
23			.00	51	11	.09	.00	.00	.00	.00		
24			.00	57	17	.14	.00	.00	.00	.00		
25			.00	53	21	1.3	.00	.00	.00	.00		
26			.00	79	21	6.4	.00	.00	.00	.00		
27			.00	134	15	3.7	.00	.00	.00	.00		
28			.00	96	12	.00	.00	.00	.00	.00		
29			.00	87	12	.00	.00	.00	.00	.00		
30			.00	92	8.1	.00	.00	.00	.00	.00		
31			19	---	.07	---	.00	.00	---	.00		
TOTAL			19.00	1861	704.17	12.19	.00	.00	18.10	.00		
MEAN			.61	62.0	22.7	.41	.000	.000	.60	.000		
MAX			.19	134	81	6.4	.00	.00	10	.00		
MIN			.00	29	.07	.00	.00	.00	.00	.00		
AC-FT			38	3690	1400	24	.00	.00	36	.00		

THE SEASON MARCH TO OCTOBER AC-FT 5,190

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

MILK RIVER BASIN

06157500 CYPRESS LAKE EAST OUTFLOW CANAL NEAR VIDORA, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°29'12", long 109°21'08", in SE¼ sec.19, T.6, R.25 W., third meridian, Hydrologic Unit 10050013, on right bank 500 ft (152 m) upstream from Belanger Creek and 12.3 mi (19.8 km) 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. Altitude of gage is 3,180 ft (969 m), from topographic map. Prior to Sept. 26, 1946, at datum 2.24 ft (0.683 m) higher and Sept. 26, 1946, to May 18, 1950, at datum 1.54 ft (0.469 m) higher.

REMARKS.--Records fair except those for winter period, which are poor. No gage-height record Mar.1 to Apr. 12. Canal diverts water from Cypress Lake for irrigation in 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, 202 ft³/s (5.72 m³/s) Apr. 19, 1952; no flow at times most seasons.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.71	.00	2.4	5.5	4.9	.23	.05	1.3		
2			.71	.00	2.6	4.9	2.8	.21	.05	1.5		
3			.71	.00	4.1	4.4	1.7	.22	.03	1.6		
4			.74	.00	7.5	3.9	1.4	.20	.02	1.7		
5			.74	.25	6.5	3.4	1.5	.20	.01	1.7		
6			.74	.49	6.1	3.2	1.4	.17	.02	1.7		
7			.74	.74	6.3	3.2	1.1	.15	.13	1.6		
8			.74	1.0	6.9	2.8	1.0	.14	.28	1.7		
9			.78	1.3	7.3	2.5	.96	.13	.10	1.6		
10			.78	1.5	8.2	2.0	.88	.12	.12	1.6		
11			.76	1.8	6.7	1.8	1.1	.10	.85	1.5		
12			.78	2.0	12	1.6	.87	.09	2.3	1.6		
13			.81	1.2	14	1.4	.71	.08	1.5	1.7		
14			.81	1.1	14	1.3	.55	.08	1.2	1.7		
15			.81	1.1	13	1.2	.44	.07	2.1	1.7		
16			.81	1.1	12	1.0	.36	.08	1.6	1.7		
17			.85	1.1	11	.89	.35	.09	1.6	1.6		
18			.88	1.2	11	.80	.52	.10	1.6	2.2		
19			.92	.96	10	1.8	.76	.13	1.6	2.2		
20			.95	.79	9.5	.80	2.5	.12	1.6	2.1		
21			.99	.58	9.1	.70	2.3	.12	1.5	2.0		
22			.99	.60	8.5	.69	1.5	.11	1.5	2.0		
23			.99	.55	7.9	.69	.91	.18	1.3	2.0		
24			.99	.53	8.6	.78	.57	.10	1.2	2.1		
25			.99	.74	8.0	.80	.39	.07	1.2	2.3		
26			.99	.98	7.6	.82	.30	.06	1.2	2.6		
27			.49	1.4	7.1	4.3	.26	.04	1.2	2.3		
28			.04	1.6	6.7	9.9	.23	.03	1.2	2.3		
29			.04	2.0	6.5	7.7	.20	.03	1.2	2.3		
30			.04	2.3	6.4	5.9	.19	.04	1.2	2.2		
31			.04	---	5.8	---	.20	.05	---	2.3		
TOTAL			22.38	28.91	255.3	80.67	32.85	3.54	29.66	58.6		
MEAN			.72	.96	8.24	2.69	1.06	.11	.99	1.89		
MAX			.99	2.3	14	9.9	4.9	.23	2.3	2.6		
MIN			.04	.00	2.4	.69	.19	.03	.01	1.3		
AC-FT			44	57	506	160	65	7.0	59	116		

THE SEASON MARCH TO OCTOBER AC-FT 1,020

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06158500 EASTEND CANAL AT EASTEND, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°30'20", long 108°51'05", in NW¼ sec.25, T.6, R.22 W., third meridian, Hydrologic Unit 10050013, on left bank 100 ft (30 m) downstream from headgate and 1.5 mi (2.4 km) 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 2,999.24 ft (914.168 m) above mean sea level (Geodetic Surveys of Canada datum). Prior to Sept. 19, 1949, at sites within 1 mi (2 km) downstream at different datums.

REMARKS.--Records fair. No gage-height record Mar. 1 to May 2 and Sept. 27 to Oct. 31. Canal diverts water from Eastend Reservoir in NW¼ sec.25, T.6, R.22 W., third meridian, on right bank for irrigation of about 3,100 acres (12.5 km²) 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, 84 ft³/s (2.38 m³/s) May 18, 1976; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	.00	.00	51	.00	33	.00	.00		
2			.00	.00	.00	51	.00	22	.00	.00		
3			.00	.00	.00	51	.00	21	.00	.00		
4			.00	.00	.00	47	.00	26	.00	.00		
5			.00	.00	.00	39	.00	33	.00	.00		
6			.00	.00	.01	35	.00	32	.00	.00		
7			.00	.00	.01	31	.00	29	.00	.00		
8			.00	.00	.01	21	.00	31	.00	.00		
9			.00	.00	.01	14	.00	30	.00	.00		
10			.00	.00	.01	8.4	.00	29	.00	.00		
11			.00	.00	.01	3.0	.00	21	.00	.00		
12			.00	.00	.01	.02	.00	5.1	.00	.00		
13			.00	.00	.01	.00	.00	.00	.00	.00		
14			.00	.00	.01	.00	.00	.00	.00	.00		
15			.00	.00	.01	.00	.00	.00	.00	.00		
16			.00	.00	.00	.00	.00	.00	.00	.00		
17			.00	.00	.00	.00	.00	.00	.00	.00		
18			.00	.00	.00	.00	.00	.00	.00	.00		
19			.00	.00	.00	.00	.00	.00	.00	.00		
20			.00	.00	.00	.00	15	.00	.00	.00		
21			.00	.00	.00	.00	47	.00	.00	.00		
22			.00	.00	.00	.00	51	.00	.00	.00		
23			.00	.00	38	.00	51	.00	.00	.00		
24			.00	.00	58	.00	51	.00	.00	.00		
25			.00	.00	58	.00	51	.00	.00	.00		
26			.00	.00	58	.00	51	.00	.00	.00		
27			.00	.00	59	.00	57	.00	.00	.00		
28			.00	.00	59	.00	56	.00	.00	.00		
29			.00	.00	59	.00	56	.00	.00	.00		
30			.00	.00	58	.00	55	.00	.00	.00		
31			.00	---	55	---	53	.00	---	.00		
TOTAL			.00	.00	502.10	351.42	594.00	312.10	.00	.00		
MEAN			.000	.000	16.2	11.7	19.2	10.1	.000	.000		
MAX			.00	.00	59	51	57	33	.00	.00		
MIN			.00	.00	.00	.00	.00	.00	.00	.00		
AC-FT			.00	.00	996	697	1180	619	.00	.00		

THE SEASON MARCH TO OCTOBER

AC-FT

3,490

NOTE.--Differences between figures herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06159500 FRENCHMAN RIVER BELOW EASTEND RESERVOIR, NEAR EASTEND, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°30'54", long 108°50'16", in SE¼ sec.36, T.6, R.22 W., third meridian, Hydrologic Unit 10050013, on left bank 0.8 mi (1.3 km) west of Eastend, 1.7 mi (2.7 km) downstream from Eastend Reservoir, and 100 mi (161 km) upstream from international boundary.

DRAINAGE AREA.--637 mi² (1,650 km²), of which 159 mi² (412 km²) in Cypress Lake basin is generally non-contributing.

PERIOD OF RECORD.--April 1909 to October 1916, March 1918 to May 1931, September 1935, March to July 1936, and April 1939 to current season (seasonal records only). Monthly discharge only for some periods, published in WSP 1309. Published as "at East End" 1909-16. Records prior to April 1939, not equivalent owing to diversion in Eastend Canal since 1937.

REVISED RECORDS.--WSP 1729: 1919, 1941 (monthly figures only), drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 2,960 ft (902 m), from topographic map. Prior to July 1941, nonrecording gages at several sites within 1.5 mi (2.4 km) of present site at various datums.

REMARKS.--Records good except those for winter period and Sept. 14 to Oct. 30 (backwater from beaver dam), which are fair. Natural flow of stream affected by storage reservoirs, diversions for irrigation, and return flow from irrigated areas. Water may be diverted into or from Battle Creek basin through Cypress Lake.

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 discharge, 11,500 ft³/s (326 m³/s) Apr. 16, 1952, gage height, 19.10 ft (5.822 m), from floodmark in gage house; no flow at times.

EXTREMES FOR CURRENT SEASON.--Maximum discharge, 572 ft³/s (16.2 m³/s) Apr. 1, gage height, 6.06 ft (1.846 m), backwater from ice; minimum daily, 3.1 ft³/s (0.088 m³/s) Sept. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1		---	11	459	178	4.8	5.6	4.0	3.5	23		
2		---	11	388	167	4.9	5.7	4.0	3.3	26		
3		---	11	198	155	5.2	6.0	4.2	4.4	27		
4		---	11	88	120	4.8	6.5	4.3	5.2	81		
5		---	11	23	102	4.8	6.5	4.2	4.2	111		
6		---	11	14	83	5.3	5.5	4.1	4.5	59		
7		---	11	14	62	5.2	10	4.1	4.3	47		
8		---	12	85	30	5.0	31	4.0	4.3	45		
9		---	13	169	9.8	5.1	27	3.9	4.6	44		
10		---	13	163	24	4.9	27	4.0	4.9	41		
11		---	13	162	39	4.9	27	3.9	9.8	39		
12		---	14	158	70	4.9	27	3.8	13	38		
13		---	14	134	78	4.8	26	3.8	9.8	34		
14		---	14	97	58	4.9	23	3.8	35	32		
15		---	14	96	47	4.6	17	3.7	41	29		
16		---	14	95	63	4.7	13	3.8	45	27		
17		---	14	95	62	4.9	8.5	3.8	44	37		
18		---	14	103	61	4.6	4.5	3.9	39	48		
19		---	14	135	39	5.2	4.3	3.8	37	32		
20		---	14	143	30	4.6	4.2	4.0	37	21		
21		---	16	135	26	4.9	4.0	4.1	39	16		
22		---	19	119	19	5.5	4.0	3.9	43	14		
23		---	20	117	19	5.9	3.9	3.9	39	28		
24		---	19	95	19	5.7	3.8	3.6	43	15		
25		---	17	83	12	5.7	3.7	3.5	45	13		
26		---	19	88	6.0	5.6	3.6	3.5	20	15		
27		11	23	146	5.5	5.6	3.5	3.4	3.1	17		
28		11	25	224	5.5	5.6	3.5	3.5	5.5	18		
29		---	32	199	5.3	5.4	4.0	3.5	10	19		
30		---	74	173	5.3	5.5	3.9	3.5	16	18		
31		---	162	---	5.0	---	4.0	3.4	---	18		
TOTAL		---	680	4198	1605.4	153.7	327.2	118.9	617.4	1032		
MEAN		---	21.9	140	51.8	5.12	10.6	3.84	20.6	33.3		
MAX		---	162	459	178	5.9	31	4.3	45	111		
MIN		---	11	14	5.0	4.6	3.5	3.4	3.1	13		
AC-FT		---	1350	8330	3180	305	649	236	1220	2050		

THE SEASON MARCH TO OCTOBER AC-FT 17,320

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06161300 VAL MARIE WEST PUMPING CANAL NEAR VAL MARIE, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°22'19", long 107°53'02", in NW¼ sec.7, T.5, R.14 W., third meridian, Hydrologic Unit 10050013, on right bank 50 ft (15 m) downstream from pump discharge outlet, 11 mi (18 km) northwest of Val Marie.

PERIOD OF RECORD.--March 1963 to current season. July 1950 to current season in reports of Department of the Environment, Canada. Seasonal records only.

GAGE.--Water-stage recorder. Prior to 1956 and subsequent to 1960, records obtained from occasional discharge measurements and records of pump operation.

REMARKS.--Records fair. No gage-height record Mar. 1 to Apr. 26. Canal diverts water from Val Marie West Reservoir for irrigation of about 2,100 acres (8.50 km²) 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 ft³/s (0.88 m³/s) May 30 to June 2, June 7-10, 1975, May 5, 6, 7, 9, 1977; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	.00	.00	14	.00	29	.00	.00		
2			.00	.00	.00	11	.00	29	.00	.00		
3			.00	.00	.00	.00	.00	20	.00	.00		
4			.00	.00	.00	.00	.00	15	.00	.00		
5			.00	.00	.00	.00	.00	23	.00	.00		
6			.00	.00	.00	.00	.00	29	.00	.00		
7			.00	.00	.00	.00	.00	25	.00	.00		
8			.00	.00	.00	.00	.00	15	.00	.00		
9			.00	.00	.00	.00	.00	15	.00	.00		
10			.00	.00	.00	.00	.00	15	.00	.00		
11			.00	.00	.00	.00	.00	15	.00	.00		
12			.00	.00	.00	.00	.00	15	.00	.00		
13			.00	.00	.00	.00	.00	15	.00	.00		
14			.00	.00	.00	.00	.00	15	.00	.00		
15			.00	.00	.00	.00	.00	15	.00	.00		
16			.00	.00	.00	.00	.00	13	.00	.00		
17			.00	.00	21	.00	.00	.00	.00	.00		
18			.00	.00	18	.00	.00	.00	.00	.00		
19			.00	.00	21	.00	.00	.00	.00	.00		
20			.00	.00	27	.00	.00	.00	.00	.00		
21			.00	.00	27	.00	.67	.00	.00	.00		
22			.00	.00	26	.00	.00	.00	.00	.00		
23			.00	.00	22	.00	.00	.00	.00	.00		
24			.00	.00	27	.00	19	.00	.00	.00		
25			.00	.00	27	.00	25	.00	.00	.00		
26			.00	.00	21	.00	30	.00	.00	.00		
27			.00	.00	15	.00	30	.00	.00	.00		
28			.00	.00	15	.00	29	.00	.00	.00		
29			.00	.00	15	.00	29	.00	.00	.00		
30			.00	.00	15	.00	29	.00	.00	.00		
31			.00	---	15	---	29	.00	---	.00		
TOTAL			.00	.00	312.00	25.00	220.67	303.00	.00	.00		
MEAN			.000	.000	10.1	.83	7.12	9.77	.000	.000		
MAX			.00	.00	27	14	30	29	.00	.00		
MIN			.00	.00	.00	.00	.00	.00	.00	.00		
AC-FT			.00	.00	619	50	438	601	.00	.00		

THE SEASON MARCH TO OCTOBER AC-FT 1,710

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06161500 VAL MARIE WEST GRAVITY CANAL NEAR VAL MARIE, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°22'10", long 107°53'06", in SW¼ sec.7, T.5, T.14 W., third meridian, Hydrologic Unit 10050013, on right bank at outlet of Val Marie West Reservoir, 11 mi (18 km) northwest of Val Marie.

PERIOD OF RECORD.--March 1946 to current season (seasonal records only). Monthly figures only prior to March 1947, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,662.88 ft (811.646 m) above mean sea level (Geodetic Survey of Canada datum). Prior to Sept. 27, 1949, at site 0.5 mi (0.8 km) downstream at different datum.

REMARKS.--Records fair. No gage-height record Mar. 1 to Apr. 26 and Sept. 19 to Oct. 31. Canal diverts water from Val Marie West Reservoir for irrigation of about 1,900 acres (7.69 km²) in the Frenchman River basin in Saskatchewan. Since 1962, records have been based on gate openings in Val Marie West 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, 55 ft³/s (1.56 m³/s) July 14, 1972; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	.00	.00	28	.00	30	.00	.00		
2			.00	.00	.00	28	.00	25	.00	.00		
3			.00	.00	.00	11	.00	23	.00	.00		
4			.00	.00	.00	6.7	.00	34	.00	.00		
5			.00	.00	.00	13	.00	33	.00	.00		
6			.00	.00	.00	15	.00	21	.00	.00		
7			.00	.00	.00	5.3	.00	15	.00	.00		
8			.00	.00	.00	.00	.00	15	.00	.00		
9			.00	.00	.00	.00	.00	15	.00	.00		
10			.00	.00	.00	.00	.00	13	.00	.00		
11			.00	.00	.00	.00	.00	11	.00	.00		
12			.00	.00	.00	.00	.00	13	.00	.00		
13			.00	.00	.00	.00	.00	13	.00	.00		
14			.00	.00	.00	.00	.00	13	.00	.00		
15			.00	.00	.00	.00	.00	12	.00	.00		
16			.00	.00	14	.00	.00	12	.00	.00		
17			.00	.00	30	.00	.00	6.0	.00	.00		
18			.00	.00	35	.00	.00	.00	.00	.00		
19			.00	.00	35	.00	.00	.00	.00	.00		
20			.00	.00	34	.00	.00	.00	.00	.00		
21			.00	.00	34	.00	.00	.00	.00	.00		
22			.00	.00	27	.00	.00	.00	.00	.00		
23			.00	.00	31	.00	.00	.00	.00	.00		
24			.00	.00	27	.00	10	.00	.00	.00		
25			.00	.00	18	.00	21	.00	.00	.00		
26			.00	.00	12	.00	21	.00	.00	.00		
27			.00	.00	12	.00	21	.00	.00	.00		
28			.00	.00	11	.00	27	.00	.00	.00		
29			.00	.00	15	.00	31	.00	.00	.00		
30			.00	.00	26	.00	31	.00	.00	.00		
31			.00	---	28	---	33	.00	---	.00		
TOTAL			.00	.00	389.00	107.00	195.00	304.00	.00	.00		
MEAN			.000	.000	12.5	3.57	6.29	9.81	.000	.000		
MAX			.00	.00	35	28	33	34	.00	.00		
MIN			.00	.00	.00	.00	.00	.00	.00	.00		
AC-FT			.00	.00	772	212	387	603	.00	.00		

THE SEASON MARCH TO OCTOBER

AC-FT

1,970

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06162500 VAL MARIE MAIN CANAL NEAR VAL MARIE, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°18'18", long 107°48'05", in NE¼ sec.15, T.4, R.14 W., third meridian, Hydrologic Unit 10050013, on right bank about 500 ft (152 m) downstream from Val Marie Reservoir and 5.4 mi (8.7 km) northwest of Val Marie.

PERIOD OF RECORD.--April 1937 to current season (seasonal records only). 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 (799.195 m) above mean sea level (Geodetic Surveys of Canada datum). Prior to May 21, 1963, at several sites within 2 mi (3 km) of present site at different datums.

REMARKS.--Records fair. No gage-height record Mar. 1 to Apr. 26 and Sept. 19 to Oct. 31. Canal diverts water from Val Marie Reservoir for irrigation of about 4,700 acres (19.0 km²) 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, 122 ft³/s (3.46 m³/s) May 26, 27, 1976; no flow at times each season.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1		---	.00	.00	.00	94	.00	94	.00	.00		
2		---	.00	.00	.00	97	.00	101	.00	.00		
3		---	.00	.00	.00	98	.00	100	.00	.00		
4		---	.00	.00	.00	101	.00	98	.00	.00		
5		---	.00	.00	.00	100	.00	100	.00	.00		
6		---	.00	.00	.00	99	.00	97	.00	.00		
7		---	.00	.00	.00	89	.00	90	.00	.00		
8		---	.00	.00	.00	56	.00	89	.00	.00		
9		---	.00	.00	.00	46	.00	80	.00	.00		
10		---	.00	.00	.00	49	.00	75	.00	.00		
11		---	.00	.00	.00	33	.00	75	.00	.00		
12		---	.00	.00	.00	15	.00	59	.00	.00		
13		---	.00	.00	.00	19	.00	40	.00	.00		
14		---	.00	.00	.00	13	.00	32	.00	.00		
15		---	.00	.00	.00	8.5	.00	23	.00	.00		
16		---	.00	.00	.00	5.7	.00	21	.00	.00		
17		---	.00	.00	.00	5.7	.00	7.8	.00	.00		
18		---	.00	.00	.00	3.5	.00	.00	.00	.00		
19		---	.00	.00	.00	.00	.00	.00	.00	.00		
20		---	.00	.00	.00	.00	.00	.00	.00	.00		
21		---	.00	.00	.00	.00	.00	.00	.00	.00		
22		---	.00	.00	.00	.00	.00	.00	.00	.00		
23		---	.00	.00	41	.00	.00	.00	.00	.00		
24		---	.00	.00	36	.00	.00	.00	.00	.00		
25		---	.00	.00	52	.00	.00	.00	.00	.00		
26		.00	.00	.00	62	.00	29	.00	.00	.00		
27		.00	.00	.00	71	.00	68	.00	.00	.00		
28		.00	.00	.00	78	.00	84	.00	.00	.00		
29		---	.00	.00	90	.00	84	.00	.00	.00		
30		---	.00	.00	93	.00	85	.00	.00	.00		
31		---	.00	---	92	---	86	.00	---	.00		
TOTAL		---	.00	.00	615.00	934.40	436.00	1181.80	.00	.00		
MEAN		---	.000	.000	19.8	31.1	14.1	38.1	.000	.000		
MAX		---	.00	.00	93	101	86	101	.00	.00		
MIN		---	.00	.00	.00	.00	.00	.00	.00	.00		
AC-FT		---	.00	.00	1220	1850	865	2340	.00	.00		

THE SEASON MARCH TO OCTOBER

AC-FT

6,280

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06163050 FRENCHMAN RIVER BELOW VAL MARIE RESERVOIR, NEAR VAL MARIE, SASKATCHEWAN

(International gaging station)

LOCATION.--Lat 49°18'08", long 107°48'23", in NW¼ sec.15, T.4, R.14 W., third meridian, Hydrologic Unit 10050013, on left bank about 200 ft (61 m) downstream from spillway for Val Marie Reservoir, about 7 mi (11 km) northwest of Val Marie.

DRAINAGE AREA.--1,460 mi² (3,780 km²).

PERIOD OF RECORD.--May 1976 to current season (operates as a low flow seasonal station only). June to October 1939, July to October 1965, and May 1966 to current season in reports of Department of the Environment, Canada. Seasonal records only.

GAGE.--Water-stage recorder. Datum of gage is 2,606.11 ft (794.342 m) above mean sea level (Geodetic Survey of Canada datum).

REMARKS.--Records good. Natural flow of stream affected by storage reservoirs, diversions for irrigation, and return flow from irrigated areas. Water may be diverted into or from Battle Creek basin through Cypress Lake.

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 discharge, 169 ft³/s (4.79 m³/s) Apr. 18, 1978, gage height, 3.36 ft (1.025 m); minimum, 0.71 ft³/s (0.020 m³/s) Aug. 26, 1978, gage height, 1.97 ft (0.599 m).

EXTREMES FOR CURRENT SEASON.--Maximum discharge, 169 ft³/s (4.79 m³/s) Apr. 18, gage height, 3.36 ft (1.025 m); minimum, 0.71 ft³/s (0.020 m³/s) Aug. 26, gage height, 1.97 ft (0.599 m).

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			1.8	6.8	156	.93	9.1	1.0	.76	.81	11	
2			1.8	8.8	159	.96	9.4	1.0	.77	.85	---	
3			1.8	12	160	.93	9.9	1.0	.78	5.0	---	
4			1.8	14	157	.91	10	1.0	.79	20	---	
5			2.1	16	157	1.0	10	.96	.82	19	---	
6			2.1	17	157	1.4	11	.95	.85	19	---	
7			2.1	17	157	1.3	11	.93	.84	20	---	
8			2.5	16	156	1.2	12	.92	3.7	20	---	
9			2.5	16	154	1.1	11	.91	12	19	---	
10			2.5	17	155	1.0	11	.91	12	19	---	
11			2.8	17	104	1.0	11	.90	12	20	---	
12			2.8	16	74	.99	11	.86	13	20	---	
13			3.2	16	78	.99	11	.85	6.8	19	---	
14			2.9	60	78	.97	11	.81	.86	19	---	
15			2.9	100	78	.95	11	.79	.82	21	---	
16			2.7	109	75	.94	11	.78	.86	26	---	
17			2.9	113	42	.94	12	.85	.83	26	---	
18			2.8	141	.86	.94	12	.88	.85	26	---	
19			2.7	163	.87	.97	11	.86	.90	26	---	
20			2.7	158	.93	.99	11	.83	.87	22	---	
21			2.6	158	.95	.98	7.1	.82	.85	13	---	
22			2.5	166	.89	.99	1.1	.81	.84	12	---	
23			2.6	162	.87	1.0	1.1	.82	.86	12	---	
24			2.4	159	.89	1.0	1.1	6.5	.86	13	---	
25			2.1	157	.87	1.1	1.0	6.6	.84	13	---	
26			2.2	156	.85	1.2	1.0	.72	.76	13	---	
27			2.1	156	.86	3.8	1.1	.71	.72	13	---	
28			2.9	156	.91	4.9	1.1	.72	.81	12	---	
29			8.2	156	.90	15	1.1	.71	.82	13	---	
30			7.0	156	.89	12	1.1	.72	.80	13	---	
31			6.0	---	.93	---	1.0	.72	---	13	---	
TOTAL			90.0	2615.6	2109.47	62.38	234.2	37.84	79.26	507.66	---	
MEAN			2.90	87.2	68.0	2.08	7.55	1.22	2.64	16.4	---	
MAX			8.2	166	160	15	12	6.6	13	26	---	
MIN			1.8	6.8	.85	.91	1.0	.71	.72	.81	---	
AC-FT			179	5190	4180	124	465	75	157	1010	---	

THE SEASON MARCH TO OCTOBER

AC-FT

11,380

NOTE.--Differences between figures published herein and corresponding figures in reports of the Water Survey of Canada are due to variations in automated program techniques.

06164000 FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'01", long 107°18'04", in SE¼ sec.5, T.1, R.10 W., third meridian, Hydrologic Unit 10050013, on left bank 50 ft (15 m) north of international boundary and 22 mi (35 km) northeast of Whitewater, Mt.

DRAINAGE AREA.--2,299 mi² (5,954 km²).

PERIOD OF RECORD.--April 1917 to current season (seasonal records only for most seasons).

REVISED RECORDS.--WSP 1389: 1938(M), 1939-41, 1942(M), 1943, 1950(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder and concrete control since August 1949. Altitude of gage is 2,420 ft (738 m), from topographic map. Prior to June 23, 1937, water-stage recorder at site 0.5 mi (0.8 km) upstream at different datum. June 23, 1937, to October 1952 water-stage recorder at site 100 ft (30 m) downstream at present datum.

REMARKS.--Records good except those for winter period, which are fair. Natural flow of stream affected by several storage reservoirs, diversions for irrigation of about 14,500 acres (58.7 km²), and return flow from irrigated areas. Water may be diverted into or from Battle Creek basin through Cypress Lake.

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 discharge, 22,700 ft³/s (643 m³/s) Apr. 15, 1952, gage height, 19.90 ft (6.066 m), from floodmark, from rating curve extended above 2,300 ft³/s (65.1 m³/s) on basis of slope-area measurement of peak flow; no flow at times most seasons.

EXTREMES FOR CURRENT SEASON.--Maximum discharge, 1,270 ft³/s (36.0 m³/s) Mar. 31, gage height, 9.47 ft (2.886 m), backwater from ice; no flow Sept. 8-11, Oct. 9-11.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			2.3	1130	168	39	.84	16	.28	.07		
2			2.3	1080	162	39	.41	25	.23	.13		
3			2.3	993	155	43	12	23	.18	.09		
4			2.5	754	154	43	10	27	.14	.05		
5			2.6	342	159	42	10	30	.10	.04		
6			2.7	371	163	35	20	32	.06	.03		
7			2.7	359	163	42	29	32	.02	.02		
8			2.6	271	161	44	47	38	.00	.01		
9			3.1	198	160	47	33	36	.00	.00		
10			3.3	167	157	50	25	34	.00	.00		
11			3.2	141	155	40	65	34	.00	.00		
12			3.1	146	154	27	29	37	4.6	7.0		
13			3.0	128	127	32	24	36	2.7	8.8		
14			3.1	112	83	32	14	35	.30	10		
15			3.0	93	78	22	13	35	.42	10		
16			3.0	106	77	12	10	24	.22	11		
17			3.1	160	76	11	18	26	4.8	12		
18			3.0	166	80	9.5	58	19	4.4	16		
19			3.4	162	74	8.7	80	11	2.9	22		
20			3.8	171	36	17	29	7.4	1.7	22		
21			4.4	184	20	28	19	5.6	.81	21		
22			7.7	190	12	13	10	3.6	.52	22		
23			29	181	9.1	7.4	7.4	2.4	.41	22		
24			31	181	15	4.8	6.5	1.6	.39	16		
25			53	178	13	3.2	5.4	1.8	.29	9.6		
26			92	176	6.0	2.1	4.4	2.1	.22	5.5		
27			62	176	14	1.6	3.5	.89	.19	4.3		
28			263	174	12	.87	2.7	.70	.16	5.8		
29			575	176	19	.62	8.6	.60	.14	8.2		
30			866	171	18	.70	7.5	.44	.11	8.6		
31			1150	---	26	---	2.2	.31	---	9.0		
TOTAL			3193.2	8837	2706.1	697.49	604.45	577.44	26.79	251.24		
MEAN			103	295	87.3	23.2	19.5	18.6	.89	8.10		
MAX			1150	1130	168	50	80	38	4.8	22		
MIN			2.3	93	6.0	.62	.41	.31	.00	.00		
AC-FT			6330	17530	5370	1380	1200	1150	53	498		

THE SEASON MARCH TO OCTOBER AC-FT 33,510

NOTE.--Differences between figures published herein and corresponding figures of the Water Survey of Canada are due to variations in automated program techniques.

MILK RIVER BASIN

RESERVOIRS IN FRENCHMAN RIVER BASIN IN SASKATCHEWAN

(International gaging stations)

06157000 CYPRESS LAKE.--Lat 49°28'51", long 109°23'44", in SE¼ sec.23, T.6, R.26 W., third meridian, Hydrologic Unit 10050013, at east dam, 10.6 mi (17.1 km) north of Vidora. DRAINAGE AREA, 159 mi² (412 km²). 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 at east dam. Datum of gage is at mean sea level (Canadian Geodetic Survey datum; subtract 33.67 ft or 10.263 m 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.

This is an offstream reservoir formed by two earthfill dams on a natural lake of the same name which was, at one time, the head of the Frenchman River. There are concrete control works at both dams. The following capacity figures are from capacity table effective February 1970; see previous reports for superseded figures. Total capacity, 105,300 acre-ft (130 hm³) between elevation 3,187.17 ft (971.449 m), bottom of outlet works, and 3,202.17 ft (976.021 m), maximum design level. Dead storage, 25,130 acre-ft (31.0 hm³) below elevation 3,187.17 ft (971.449 m). Water is diverted from Battle Creek on west, 12 mi (19 km) northwest of Consul, and from Belanger Creek, head of Frenchman River, on the east, 12 mi (19 km) north of Vidora. Water is released to the same streams for irrigation. Figures given herein represent total contents. This is one of a number of stations which are maintained jointly by Canada and the United States. Records partly furnished by Prairie Farms Rehabilitation Administration, Canada.

EXTREMES FOR PERIOD OF RECORD: Maximum contents, 117,300 acre-ft (145 hm³) Apr. 21, 1955, elevation, 3,203.36 ft (976.384 m, present datum), by capacity table used prior to 1970 season; minimum since first filling, 32,760 acre-ft (40.4 hm³) Oct. 26, 1964, elevation, 3,188.11 ft (971.736 m, present datum) by capacity table used prior to 1970 season.

EXTREMES FOR CURRENT SEASON: Maximum contents, 49,040 acre-ft (60.5 hm³) May 15, elevation, 3,192.01 ft (972.925 m); minimum observed, 35,720 acre-ft (44.0 hm³) Feb. 20, elevation, 3,189.38 ft (972.123 m).

06159000 EASTEND RESERVOIR.--Lat 49°30'22", long 108°51'08", in NW¼ sec.25, T.6, R.22 W., third meridian, Hydrologic Unit 10050013, at dam on Frenchman River, 1.6 mi (2.6 km) west of Eastend. DRAINAGE AREA, 636 mi² (1,647 km²). 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. Datum of gage is at mean sea level (Canadian Geodetic Survey datum).

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. Usable capacity, 3,300 acre-ft (4.07 hm³) between elevation 3,000.9 ft (914.67 m), bottom of outlet works, and 3,015 ft (919.0 m), spillway crest. Dead storage, 37 acre-ft (45,600 m³) below elevation 3,000.9 ft (914.67 m). Prior to 1963, usable capacity was 3,700 acre-ft (4.56 hm³). Figures given herein represent usable contents. Water is used for irrigation. This is one of a number of stations which are maintained jointly by Canada and the United States. Records partly furnished by Prairie Farms Rehabilitation Administration, Canada. REVISED RECORDS (SEASONS), WSP 1309: 1948(M). WSP 1729: Drainage area. WSP 2116: 1937-65

EXTREMES FOR PERIOD OF RECORD: Maximum contents, about 3,700 acre-ft (4.56 hm³) Apr. 15, 1952, elevation, about 3,015 ft (919.0 m), dam overtopped; no storage at various times.

EXTREMES FOR CURRENT SEASON: Maximum contents observed, 2,500 acre-ft (3.08 hm³) May 12, elevation, 3,013.31 ft (918.457 m); minimum observed, 174 acre-ft (214,500 m³) Mar. 10, elevation, 3,003.56 ft (915.485 m).

06162000 VAL MARIE WEST RESERVOIR.--Lat 49°22'06", long 107°53'22", near center of east line of sec.12, T.5, R.15 W., third meridian, Hydrologic Unit 10050013, at dam on Frenchman River, 11 mi (18 km) northwest of Val Marie. PERIOD OF RECORD, February 1940 to current season (seasonal records only). 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 (Canadian Geodetic Survey datum). May 1952 to May 1954, reference point on control structure. May 1954 to May 10, 1966, nonrecording gages.

Reservoir is formed by earthfill dam with concrete control works completed in 1939. Usable capacity, 3,540 acre-ft (4.36 hm³) between elevation 2,662.8 ft (811.62 m), bottom of outlet works, and 2,676.35 ft (815.75 m), maximum design level. No dead storage. Prior to February 1961, total capacity, 2,270 acre-ft (2.80 hm³); dead storage, 100 acre-ft (123,000 m³) below elevation 2,660.0 ft (810.77 m) and February 1961 to 1963, 8 acre-ft (9,860 m³) below elevation 2,663.0 ft (811.68 m). Figures given herein represent usable contents. Water is used for irrigation. This is one of a number of stations which are maintained jointly by Canada and the United States. Records partly furnished by Prairie Farms Rehabilitation Administration, Canada. REVISED RECORDS (SEASONS), WSP 1309: 1947-50.

EXTREMES FOR PERIOD OF RECORD: Maximum contents, 4,360 acre-ft (5.38 hm³) May 20, 1967, elevation, 2,677.83 ft (816.203 m); no storage Feb. 28, Mar. 31, 1950.

EXTREMES FOR CURRENT SEASON: Maximum contents, 3,790 acre-ft (4.67 hm³) Apr. 13, elevation, 2,676.80 ft (815.889 m); minimum observed, 24 acre-ft (29,600 m³) Mar. 13, elevation, 2,663.50 ft (811.835 m).

RESERVOIRS IN FRENCHMAN RIVER BASIN IN SASKATCHEWAN--Continued

(International gaging stations)

06163000 VAL MARIE RESERVOIR.--Lat 49°18'18", long 107°48'11", in NE¼ sec.15, T.4, R.14 W., third meridian, Hydrologic Unit 10050013, at dam on Frenchman River, 5.4 mi (8.7 km) northwest of Val Marie. PERIOD OF RECORD, February 1937 to current season (seasonal records only). Water-stage recorder. Datum of gage is at mean sea level (Canadian Geodetic Survey datum). Prior to May 11, 1966, nonrecording gages.

Reservoir is formed by earthfill dam with concrete control works; construction began in 1936; storage began in 1937; completed in 1938. Usable capacity, 14,100 acre-ft (17.4 hm³) between elevation 2,619.5 ft (798.42 m), bottom of outlet works, and 2,638.57 ft (804.236 m), top of dam. No dead storage. Prior to February 1966, capacity varied from 11,060 acre-ft (13.6 hm³) to 16,560 acre-ft (20.4 hm³), including dead storage of 829 acre-ft (1.02 hm³). Figures given herein represent usable contents. Water is used for irrigation. This is one of a number of stations which are maintained jointly by Canada and the United States. Records partly furnished by Prairie Farms Rehabilitation Administration, Canada. REVISED RECORDS (SEASONS), WSP 2116: 1937-65. WSP 1729: 1949.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 18,920 acre-ft (23.3 hm³) Apr. 19, 1952, elevation, 2,638.80 ft (804.306 m); no storage at times.

EXTREMES FOR CURRENT SEASON: Maximum contents, 10,670 acre-ft (13.2 hm³) Apr. 18, elevation, 2,636.50 ft (803.605 m); minimum, 696 acre-ft (858,00 m³) Mar. 25, elevation, 2,624.47 ft (799.938 m).

Monthend contents, in acre-feet, year October 1977 to October 1978

Date	Cypress Lake	Eastend Reservoir	Val Marie West Reservoir	Val Marie Reservoir
Oct. 31	35,720	67	1,150	787
Nov. 30	-	-	-	-
Dec. 31	-	-	-	-
Jan. 31	-	-	-	-
Feb. 28	35,720	175	24	994
Mar. 31	36,170	252	2,780	2,460
Apr. 30	47,140	2,260	3,670	9,840
May 31	48,270	1,760	3,210	9,110
June 30	42,840	2,110	3,260	7,880
July 31	41,820	1,540	2,620	6,830
Aug. 31	39,850	974	1,490	4,660
Sept. 30	40,810	865	2,170	4,420
Oct. 31	40,910	183	3,030	3,540

MILK RIVER BASIN

06164510 MILK RIVER AT JUNEBOG BRIDGE, NEAR SACO, MT

LOCATION.--Lat 48°30'32", long 107°13'02", in NE¼NE¼ sec.30, T.32 N., R.35 E., Phillips County, Hydrologic Unit 10050014, on left bank 25 ft (8 m) upstream from Junebog bridge on Phillips County road, 1.5 mi (2.4 km) downstream from Frenchman River, and 6.9 mi (11.1 km) northeast of Saco.

DRAINAGE AREA.--17,670 mi² (45,770 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to September 1978.

GAGE.--Water-stage recorder. Altitude of gage is 2,130 ft (649 m), from topographic map.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Flow increased during irrigation season by water from St. Mary Canal which diverts from the St. Mary River near Babb (see p.33). Flow regulated by Fresno Reservoir (see p.611), two reservoirs in Lodge Creek basin in Saskatchewan (see p. 218), and four reservoirs in Frenchman River basin in Saskatchewan. There are many small dams for the diversion of irrigation canals upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft³/s (351 m³/s) Apr. 3, 1978, gage height, 24.20 ft (7.376 m); minimum observed, 29 ft³/s (0.82 m³/s) Oct. 14, 1977, gage height, 2.66 ft (0.810 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,400 ft³/s (351 m³/s) Apr. 3, gage height, 24.20 ft (7.376 m); minimum observed, 29 ft³/s (0.82 m³/s) Oct. 14, gage height 2.66 ft (0.810 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	72	53	59	58	56	11100	1470	1200	423	274	461
2	41	70	53	59	58	56	11800	1510	1140	396	270	479
3	43	64	54	56	60	56	12300	1520	1080	396	312	475
4	61	61	50	58	61	56	12300	1630	1060	410	388	456
5	57	60	48	58	62	56	12300	1790	1050	518	428	437
6	57	63	45	58	62	58	12200	1810	914	936	465	423
7	53	67	43	58	62	60	11600	1780	757	1150	475	396
8	48	65	42	57	61	64	10800	1830	561	1300	447	383
9	39	62	41	56	61	66	9940	2070	363	1210	437	370
10	38	62	43	56	61	70	9280	2640	270	1150	475	320
11	35	64	45	56	60	73	8790	3010	423	1060	479	277
12	38	69	50	57	58	76	8340	2950	530	990	483	292
13	35	68	52	60	58	78	7790	2730	513	963	492	447
14	29	68	55	63	56	80	7290	2440	483	866	500	1160
15	30	72	57	66	55	84	6660	2210	475	835	465	1210
16	30	70	58	70	54	88	5360	1760	505	767	428	1730
17	178	66	57	70	54	92	4010	1510	509	715	428	2430
18	160	61	55	70	54	95	3090	1520	505	643	437	2540
19	97	61	55	68	55	110	2210	1450	488	625	465	2080
20	78	55	55	66	56	140	1400	1350	447	629	461	1220
21	80	50	55	66	57	180	1660	1330	392	553	465	1010
22	81	48	55	68	58	300	1960	1310	374	496	492	1070
23	86	48	56	72	60	500	1960	1290	388	470	518	1050
24	85	48	56	75	60	1500	1910	1310	470	526	522	1010
25	81	50	57	76	58	2200	1900	1300	526	522	483	952
26	79	50	58	72	57	3300	1930	1330	557	492	475	877
27	76	52	60	69	56	4500	1860	1390	526	447	461	851
28	77	52	60	68	56	7000	1750	1500	496	401	470	835
29	79	52	60	67	---	9500	1620	1520	475	379	465	809
30	80	52	60	63	---	10100	1510	1410	456	366	465	777
31	77	---	59	60	---	10500	---	1300	---	300	461	---
TOTAL	2068	1802	1647	1979	1628	51094	186620	53970	17933	20934	13886	26827
MEAN	66.7	60.1	53.1	63.8	58.1	1648	6221	1741	598	675	448	894
MAX	178	72	60	76	62	10500	12300	3010	1200	1300	522	2540
MIN	29	48	41	56	54	56	1400	1290	270	300	270	277
AC-FT	4100	3570	3270	3930	3230	101300	370200	107000	35570	41520	27540	53210

WTR YR 1978 TOTAL 380388 MEAN 1042 MAX 12300 MIN 29 AC-FT 754500

06164510 MILK RIVER AT JUNEBOURG BRIDGE, NEAR SACO, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1977 to September 1978.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to September 1978.

WATER TEMPERATURES: October 1977 to September 1978.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,220 micromhos Jan. 7, 8; minimum daily, 280 micromhos Apr. 4.

WATER TEMPERATURES: Maximum daily, 25.5°C Aug. 10; minimum daily, 0.0°C on many days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SUMP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT												
05...	1215	57	1340	8.5	370	95	79	41	180	4.1	6.5	330
NOV												
14...	1200	66	--	2.0	410	93	83	48	200	4.3	5.8	380
DEC												
13...	1400	52	2020	.0	540	140	110	64	270	5.1	7.0	490
JAN												
18...	1345	70	1520	.0	470	78	100	54	250	5.0	5.8	480
FEB												
21...	1400	57	1750	.0	470	95	100	54	230	4.6	7.1	460
APR												
10...	1330	9220	345	8.0	94	0	23	8.9	33	1.5	5.0	120
MAY												
18...	1430	1480	780	15.0	220	32	47	25	69	2.6	6.9	230
JUN												
06...	1300	951	600	23.0	250	33	54	27	90	2.5	6.5	260
JUL												
17...	1230	679	780	23.5	220	19	50	24	93	2.7	6.4	250
AUG												
08...	1200	471	1040	24.0	280	13	61	30	120	3.1	7.1	320
SEP												
12...	1500	298	955	16.0	270	54	65	26	94	2.5	5.3	250

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLOU- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT												
05...	450	26	.3	10	956	1.30	147	.00	.01	.01	50	10
NOV												
14...	480	34	.3	7.6	1050	1.43	187	.02	.02	.01	30	50
DEC												
13...	650	21	.4	8.1	1370	1.86	192	.10	.01	.00	20	170
JAN												
18...	550	48	.4	9.8	1260	1.71	238	.57	.03	.01	30	180
FEB												
21...	490	38	.4	12	1160	1.58	179	.85	.02	.01	30	340
APR												
10...	70	3.5	.1	5.7	210	.29	5230	.30	.02	.00	80	20
MAY												
18...	210	9.9	.2	7.9	510	.69	2040	.12	.03	.00	20	10
JUN												
06...	200	12	.2	6.7	525	.71	1350	.03	.00	.00	20	10
JUL												
17...	190	9.5	.2	7.1	504	.69	924	.04	.02	.03	50	0
AUG												
08...	270	15	.3	6.1	668	.91	850	.09	.00	.01	<10	20
SEP												
12...	230	14	.2	6.0	564	.77	454	.02	--	.01	20	40

MILK RIVER BASIN

06164510 MILK RIVER AT JUNEBOURG BRIDGE, NEAR SACO, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHDS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	1780	1990	2060	1550	1680	323	735	780	975	935	788
2	---	1840	1920	2040	1540	1690	305	742	810	988	950	780
3	1410	1870	1910	2080	1540	1730	286	756	810	973	965	791
4	---	1920	1930	2120	1540	1760	280	751	800	988	955	791
5	1390	1980	1920	2200	1540	1750	283	769	800	976	960	795
6	---	1980	1920	2170	1570	1750	298	742	810	965	991	796
7	1400	2030	1930	2220	1580	1760	318	717	830	1110	1000	787
8	1390	2010	1970	2220	1600	1760	330	697	880	1000	1000	770
9	1440	1960	1930	2130	1620	1760	339	763	920	784	946	805
10	1450	1840	1910	2090	1630	1760	371	732	980	852	955	798
11	1470	1710	1950	2070	1650	1720	356	707	1000	662	905	818
12	1530	1630	1950	2010	1670	1720	372	688	980	---	896	881
13	1540	1610	1960	1950	1670	1720	365	699	960	771	868	881
14	1540	1560	1940	1870	1680	1710	378	747	1000	790	851	889
15	1550	1500	1920	1820	1680	1680	397	753	1220	837	850	587
16	1560	1530	1890	1790	1670	1660	418	740	1120	810	850	702
17	1480	1540	1860	1760	1680	1640	461	724	1120	812	843	700
18	1440	1590	1830	1760	1690	1570	494	771	1100	797	842	542
19	1560	1640	1870	1820	1690	1640	523	749	1100	803	830	549
20	1840	1660	1910	1790	1700	1720	573	728	1020	869	830	547
21	1790	1710	1950	1730	1710	1730	641	761	1020	880	825	582
22	1770	1730	1930	1670	1710	1720	673	769	1020	882	842	648
23	1690	1730	1930	1630	1720	1490	649	759	1020	878	825	658
24	1700	1740	1950	1570	1710	900	671	769	1040	871	815	663
25	1650	1800	1970	1560	1700	452	694	767	1020	867	798	673
26	1620	1860	2020	1540	1670	362	718	767	1000	888	797	662
27	1660	1920	2040	1520	1680	317	751	756	1000	902	795	658
28	1680	1920	2010	1520	1680	320	730	796	970	909	778	655
29	1680	1960	2060	1510	---	361	713	753	970	903	772	652
30	1620	1970	2050	1510	---	354	713	749	950	891	762	633
31	1700	---	2120	1540	---	298	---	756	---	941	750	---
MEAN	1580	1780	1950	1850	1650	1370	481	746	968	886	870	716
WTR YR 1978	MEAN	1230	MAX	2220	MIN	280						

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	6.5	.0	.0	.0	.0	2.0	12.0	15.5	24.5	23.0	22.5
2	---	6.5	.5	.0	.0	.0	3.0	13.0	16.0	25.0	20.5	23.0
3	10.5	5.5	.0	.0	.0	.0	4.0	13.0	17.0	25.0	21.5	22.5
4	---	4.5	.0	.0	.0	.0	4.0	13.0	18.5	25.0	23.0	23.0
5	8.5	5.0	.0	.0	.0	.0	4.0	13.0	20.0	24.0	22.5	21.5
6	---	5.0	.0	.0	.0	.0	4.0	13.0	20.0	23.0	24.5	21.5
7	8.0	5.0	.0	.0	.0	.0	6.0	12.0	18.0	23.0	24.5	23.0
8	9.5	4.0	.0	.0	.0	1.0	7.0	12.0	19.0	23.0	24.0	21.0
9	8.0	4.0	.0	.0	.0	1.0	7.0	12.0	21.0	22.0	25.0	20.0
10	7.0	3.5	.0	.0	.0	1.0	7.0	13.0	19.0	21.0	25.5	20.0
11	7.0	3.5	.0	.0	.0	1.0	7.0	14.0	20.0	22.0	25.0	18.5
12	9.5	4.0	.0	.0	.0	1.0	7.0	13.0	18.0	---	23.0	15.5
13	9.5	3.0	.0	.0	1.0	1.0	8.0	14.0	19.5	24.0	24.0	14.5
14	9.0	3.0	2.0	.0	1.0	1.0	8.0	15.0	20.0	22.5	24.0	15.0
15	10.0	3.0	1.0	.0	.5	1.0	8.0	16.0	21.5	23.0	22.0	15.0
16	9.5	2.0	1.0	.0	.0	1.0	8.0	16.0	19.0	24.0	22.5	13.5
17	9.0	1.0	1.0	.0	.0	1.0	8.0	16.0	19.5	24.0	20.5	16.0
18	11.0	.5	1.0	.0	.0	1.0	7.0	15.0	19.5	22.0	20.5	13.0
19	9.0	.0	1.0	.0	1.5	1.0	7.0	14.0	20.0	21.0	20.0	12.0
20	9.5	.0	1.0	.0	1.0	1.0	7.0	15.5	18.5	23.0	20.0	13.0
21	8.5	.0	1.0	.0	1.0	1.0	7.0	16.0	19.5	21.0	20.5	12.0
22	9.0	.0	1.0	.0	1.0	1.0	7.0	17.0	21.0	22.0	20.0	15.5
23	8.5	.0	1.0	.0	1.0	1.0	8.0	18.0	22.0	22.0	21.0	13.0
24	9.5	.0	.0	.0	1.5	2.0	8.0	19.0	22.0	23.5	22.0	15.5
25	9.5	.0	.0	.0	1.0	2.0	9.0	18.5	22.0	23.5	22.5	14.5
26	10.0	1.0	.0	.0	1.0	2.0	10.0	18.0	22.0	24.5	22.5	15.5
27	10.0	.5	.0	.0	.0	2.0	11.0	17.0	22.0	24.0	22.0	15.5
28	9.5	.5	.0	.0	.0	2.0	12.0	18.0	23.0	24.0	21.5	15.5
29	10.0	1.0	.0	.0	---	2.0	12.0	18.0	23.5	22.0	20.5	14.0
30	9.0	1.0	.0	.0	---	2.0	12.0	18.0	23.5	22.0	21.0	15.5
31	7.5	---	.0	.0	---	2.0	---	17.0	---	21.0	22.0	---
MEAN	9.0	2.5	.5	.0	.5	1.0	7.5	15.0	20.0	23.0	22.5	17.0
WTR YR 1978	MEAN	10.0	MAX	25.5	MIN	.0						

MILK RIVER BASIN

251

06164800 BEAVER CREEK ABOVE DIX CREEK, NEAR MALTA, MT

LOCATION.--Lat 48°05'30", long 107°33'18", in SE¼ sec.14, T.27 N., R.32 E., Phillips County, Hydrologic Unit 10050014, on left bank 29 ft (8.8 m) downstream from bridge on county road, 1 mi (2 km) upstream from Dix Creek, and 25 mi (40 km) southeast of Malta.

DRAINAGE AREA.--929 mi² (2,406 km²).

PERIOD OF RECORD.--October 1966 to September 1969, October 1975 to current year.

REVISED RECORDS.--WDR-76-1: (M)605, result of discharge measurement.

GAGE.--Water-stage recorder. Datum of gage is 2,269.18 ft (691.646 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except those for winter period, which are poor. Some regulation by numerous small reservoirs on tributary streams.

AVERAGE DISCHARGE.--6 years (1967-69, 1976-78), 50.6 ft³/s (1.433 m³/s), 36,660 acre-ft/yr (45.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,180 ft³/s (203 m³/s) Mar. 28, 1978, gage height, 19.60 ft (5.974 m), from floodmark; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximums(*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 28	a0700	*7,180 203	*19.60 5.974	July 6	1345	771 21.8	7.82 2.384
May 20	1145	552 15.6	6.74 2.054	Sept. 17	a2000	a1,500 42.5	unknown

a--about

No flow Oct. 1-5, Aug. 21 to Sept. 11.

CORRECTION.--Datum of gage published in error WDR-77-1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.35	1.0	2.9	3.0	2.8	3710	49	78	23	1.6	.00
2	.00	.31	1.0	2.9	3.0	2.8	2420	45	72	8.6	1.4	.00
3	.00	.31	1.3	2.9	3.0	2.7	1540	35	70	40	1.6	.00
4	.00	.35	1.4	2.9	3.1	2.8	1010	34	68	159	1.6	.00
5	.00	.46	1.5	2.9	3.2	2.8	617	39	63	508	1.3	.00
6	22	.40	1.5	2.9	3.2	2.9	422	33	55	751	.49	.00
7	17	.31	1.8	2.9	3.2	2.9	217	77	59	645	.80	.00
8	12	.27	2.0	2.8	3.1	3.0	180	148	61	360	.60	.00
9	6.9	.27	2.3	2.8	3.1	3.0	165	224	86	210	.50	.00
10	3.4	.96	2.3	2.8	3.1	3.0	145	258	55	179	.42	.00
11	2.4	.80	2.3	2.8	3.1	3.1	130	353	38	169	.29	.00
12	1.6	.58	2.4	2.8	3.1	3.1	120	298	33	118	.22	.20
13	1.2	2.1	2.6	3.0	3.0	3.1	116	157	25	91	.15	175
14	.88	17	2.7	3.2	2.9	3.1	109	109	13	63	.13	735
15	.72	1.7	2.8	3.2	2.8	3.1	103	87	9.9	49	.11	1070
16	.80	.72	3.0	3.1	2.8	3.0	98	70	18	39	.13	1060
17	1.1	.46	2.9	3.1	2.7	3.0	95	59	37	35	.15	1370
18	1.2	.35	2.9	3.1	2.8	3.5	114	88	26	33	.09	1250
19	1.1	.27	2.9	3.1	2.8	4.0	187	264	13	27	.07	1000
20	.88	.23	2.9	3.1	2.8	5.0	193	540	9.2	16	.01	841
21	.88	.20	2.9	3.0	2.9	6.3	196	379	7.4	10	.00	.500
22	.65	.15	2.9	3.1	3.0	200	199	193	6.6	7.3	.00	300
23	.58	.15	3.0	3.2	3.0	500	140	178	8.0	5.7	.00	109
24	.65	.14	3.0	3.2	3.0	2000	111	169	8.9	4.7	.00	88
25	.58	.25	3.0	3.2	3.0	2500	90	146	8.3	4.2	.00	70
26	.51	.40	3.1	3.2	2.9	3200	72	141	10	4.3	.00	56
27	.51	.60	3.1	3.0	2.8	4390	63	132	24	3.4	.00	42
28	.51	.70	3.1	3.0	2.8	6460	60	145	58	2.5	.00	35
29	.46	.80	3.2	3.0	---	5940	56	181	52	2.3	.00	30
30	.40	.90	3.2	3.0	---	5260	54	159	39	2.4	.00	26
31	.35	---	3.0	3.0	---	4550	---	101	---	2.1	.00	---
TOTAL	79.46	32.49	77.0	93.1	83.2	35069.0	12732	4891	1131.3	3576.5	12.16	8779.00
MEAN	2.56	1.08	2.48	3.00	2.97	1131	424	158	37.7	115	.39	293
MAX	22	17	3.2	3.2	3.2	6460	3710	540	86	751	1.6	1370
MIN	.00	.14	1.0	2.8	2.7	2.7	54	33	6.6	2.1	.00	.00
CFSM	.003	.001	.003	.003	.003	1.22	.46	.17	.04	.12	.000	.32
IN.	.00	.00	.00	.00	.00	1.40	.51	.20	.05	.14	.00	.35
AC-FT	158	64	153	185	165	69560	25250	9700	2240	7100	24	17410

CAL YR 1977	TOTAL	1997.37	MEAN	5.47	MAX	113	MIN	.00	CFSM	.006	IN	.08	AC-FT	3960
WTR YR 1978	TOTAL	66558.21	MEAN	182	MAX	6460	MIN	.00	CFSM	.20	IN	2.67	AC-FT	132000

06169500 ROCK CREEK BELOW HORSE CREEK, NEAR INTERNATIONAL BOUNDARY

(Hydrologic bench-mark station)

(International gaging station)

LOCATION.--Lat 48°58'10", long 106°50'20", in NE¼NW¼ sec.15, T.37 N., R.37 E., Valley County, Hydrologic Unit 10050015, on right bank 2 mi (3 km) south of international boundary, 3 mi (5 km) downstream from Horse Creek, and 21 mi (34 km) northwest of Opheim, Mt.

DRAINAGE AREA.--328 mi² (850 km²).

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. Altitude of gage is 2,530 ft (771 m), from topographic map. March 1916 to October 1926, nonrecording gages at several sites within 500 ft (152 m) upstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Several small diversions for irrigation above 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, 4,420 ft³/s (125 m³/s) Apr. 7, 1969, gage height, 12.03 ft (3.667 m); maximum gage height, 13.40 ft (4.084 m) Mar. 29, 1978 (backwater from ice); no flow at times most seasons.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 15, 1952, reached a stage of 12.6 ft (3.84 m), from flood-marks, discharge, 5,110 ft³/s (145 m³/s), by slope-area measurement of peak flow.

EXTREMES FOR CURRENT SEASON.--Maximum discharge recorded, 4,010 ft³/s (114 m³/s) Mar. 30, gage height, 11.47 ft (3.496 m); maximum gage height recorded, 13.40 ft (4.084 m) Mar. 29 (backwater from ice); minimum daily discharge recorded, 0.01 ft³/s (<0.001 m³/s) Mar. 1-5, but may have been less during the period the gage was out of operation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	2.4				.01	1680	34	9.3	33	3.5	.67
2	46	2.7				.01	708	29	9.5	19	2.9	.58
3	25	2.7				.01	432	25	9.6	28	2.3	.51
4	14	2.7				.01	416	22	10	26	2.2	.45
5	9.4	2.7				.01	666	21	9.4	45	1.9	.39
6	7.1	2.6				.03	643	23	9.0	35	1.8	.37
7	5.3	2.7				.03	377	37	8.3	30	1.6	.39
8	4.5	2.7				.03	209	34	7.4	48	1.5	.37
9	3.4	2.6				.03	230	31	6.7	63	1.4	.34
10	3.0	2.3				.03	226	26	6.1	55	1.3	.32
11	2.9	---				.03	206	21	7.4	64	1.2	.37
12	2.7	---				.03	196	21	8.0	100	1.1	.79
13	2.6	---				.03	148	37	8.0	52	.95	9.4
14	2.6	---				.05	113	29	7.4	31	.80	20
15	2.4	---				.05	110	23	6.6	21	.80	9.9
16	2.6	---				.05	124	17	6.0	15	.80	7.7
17	2.9	---				.05	115	15	5.4	13	.79	5.1
18	2.7	---				.07	109	55	4.6	11	.67	4.4
19	2.6	---				.07	101	76	4.7	11	.63	3.8
20	2.6	---				.07	79	40	5.0	13	.72	3.2
21	2.4	---				.10	66	25	5.2	16	.84	3.4
22	2.3	---				.13	60	17	5.1	15	.87	3.3
23	2.3	---				.16	56	15	4.8	11	.96	4.1
24	2.1	---				.23	47	14	5.1	8.8	.94	4.8
25	2.1	---				.53	46	15	5.9	7.6	.86	3.8
26	2.0	---				1.7	46	14	8.2	6.2	.80	3.0
27	2.0	---				64	48	14	15	5.2	.79	2.8
28	2.0	---				209	50	13	7.8	4.1	.74	2.6
29	2.0	---				1750	48	11	10	4.1	.74	2.4
30	2.3	---				3390	41	10	33	4.1	.73	2.1
31	2.3	---				3270	---	9.9	---	3.5	.69	---
TOTAL	229.1	---				8686.55	7396	773.9	248.5	798.6	37.82	101.35
MEAN	7.39	---				280	247	25.0	8.28	25.8	1.22	3.38
MAX	61	---				3390	1680	76	33	100	3.5	20
MIN	2.0	---				.01	41	9.9	4.6	3.5	.63	.32
AC-FT	454	---				17230	14670	1540	493	1580	75	201

THE SEASON MARCH TO OCTOBER

AC-FT

35,920

06169500 ROCK CREEK BELOW HORSE CREEK AT INTERNATIONAL BOUNDARY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHO/S)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CAC113)	HARD- NESS, NONCAR- BONATE (MG/L LACU3)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO
MAR 29...	1700	1970	1	132	2.0	23	0	2.8	17	1.5
APR 07...	0900	439	--	168	4.0	52	0	5.9	16	1.0
SEP 28...	1200	2.6	3	1270	13.5	150	0	19	250	8.9
DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-F1)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
MAR 29...	4.2	47	25	1.5	.0	4.4	83	.11	441	--
APR 07...	3.9	62	18	1.4	.1	5.9	103	.14	122	--
SEP 28...	9.8	440	310	7.0	.4	7.5	649	1.15	5.96	.07
DATE	ALUM- INUM, TOTAL RECov- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM TOTAL RECov- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECov- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
MAR 29...	3600	10	3	2	0	80	2	1	20	0
APR 07...	--	20	--	4	0	70	--	5	--	0
SEP 28...	--	0	--	4	0	270	--	2	--	0
DATE	COPPER, TOTAL RECov- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECov- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECov- ERABLE (UG/L AS Pb)	LEAD, DIS- SOLVED (UG/L AS Pb)	LITHIUM TOTAL RECov- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECov- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAR 29...	15	3	6300	140	12	4	20	20	110	30
APR 07...	--	4	--	120	--	2	--	10	--	0
SEP 28...	--	5	--	30	--	14	--	140	--	0
DATE	MERCURY TOTAL RECov- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECov- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECov- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECov- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 29...	.0	.0	2	13	7	0	0	2.0	40	10
APR 07...	--	.2	1	--	1	--	0	2.0	--	0
SEP 28...	--	.1	4	--	2	--	2	1.0	--	10

06174000 WILLOW CREEK NEAR GLASGOW, MT

LOCATION.--Lat 48°06'52", long 106°40'15", in SW¼NW¼NE¼ sec.10, T.27 N., R.39 E., Valley County, Hydrologic Unit 10050012, on right bank 5.8 mi (9.3 km) south of Glasgow and 10.6 mi (17.1 km) upstream from mouth.

DRAINAGE AREA.--538 mi² (1,393 km²)

PERIOD OF RECORD.--October 1953 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,110 ft (640 m), by barometer.

REVISED RECORDS.--WSP 1729: Drainage area. WSP 1916: 1960.

REMARKS.--Records fair. There are more than 270 storage and detention reservoirs upstream. Water-spreader irrigation of about 5,000 acres (20.2 km²) of hay or pasture lands to extent of available flow.

AVERAGE DISCHARGE.--25 years, 60.1 ft³/s (1.702 m³/s), 43,540 acre-ft/yr (53.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft³/s (351 m³/s) July 14, 1962, gage height, 21.70 ft (6.614 m); maximum gage height, 23.0 ft (7.01 m) June 21, 1974; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,720 ft³/s (77.0 m³/s) Mar. 27, gage height, 20.97 ft (6.392 m); maximum gage height, 21.79 ft (6.642 m) Sept. 19 (backwater from willow growth in channel); no flow Oct. 11 to Mar. 15, Aug. 4-15, Aug. 22 to Sept. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	.00	.00	.00	.00	.00	2040	6.5	177	66	.60	.00
2	43	.00	.00	.00	.00	.00	1830	6.5	98	52	.30	.00
3	21	.00	.00	.00	.00	.00	1460	6.3	76	60	.10	.00
4	7.8	.00	.00	.00	.00	.00	1130	5.3	58	109	.00	.00
5	4.0	.00	.00	.00	.00	.00	637	5.0	50	82	.00	.00
6	2.0	.00	.00	.00	.00	.00	707	22	45	92	.00	.00
7	2.0	.00	.00	.00	.00	.00	574	196	39	77	.00	.00
8	1.0	.00	.00	.00	.00	.00	501	499	31	70	.00	.00
9	.50	.00	.00	.00	.00	.00	356	222	28	61	.00	.00
10	.10	.00	.00	.00	.00	.00	195	102	23	49	.00	.00
11	.00	.00	.00	.00	.00	.00	129	69	19	41	.00	.03
12	.00	.00	.00	.00	.00	.00	104	52	15	35	.00	.74
13	.00	.00	.00	.00	.00	.00	77	43	12	27	.00	1060
14	.00	.00	.00	.00	.00	.00	53	33	12	20	.00	1790
15	.00	.00	.00	.00	.00	.00	42	24	8.4	16	.00	1590
16	.00	.00	.00	.00	.00	25	35	15	7.5	13	.10	1370
17	.00	.00	.00	.00	.00	50	27	27	5.8	11	2.5	1150
18	.00	.00	.00	.00	.00	100	25	624	5.3	8.2	1.6	1030
19	.00	.00	.00	.00	.00	150	24	1570	5.1	8.0	1.1	1880
20	.00	.00	.00	.00	.00	350	19	1710	4.6	6.3	.40	1600
21	.00	.00	.00	.00	.00	650	15	822	4.5	4.6	.10	1630
22	.00	.00	.00	.00	.00	900	13	350	5.0	3.7	.00	1460
23	.00	.00	.00	.00	.00	1300	12	200	4.3	3.2	.00	1160
24	.00	.00	.00	.00	.00	1220	12	130	3.3	2.6	.00	785
25	.00	.00	.00	.00	.00	1180	10	72	12	2.2	.00	504
26	.00	.00	.00	.00	.00	1640	8.4	63	190	1.9	.00	385
27	.00	.00	.00	.00	.00	2490	6.9	51	316	1.5	.00	307
28	.00	.00	.00	.00	.00	2350	6.5	44	73	1.1	.00	258
29	.00	.00	.00	.00	---	2060	6.3	37	45	1.2	.00	222
30	.00	.00	.00	.00	---	1960	6.5	33	49	1.3	.00	189
31	.00	---	.00	.00	---	1920	---	63	---	1.0	.00	---
TOTAL	121.40	.00	.00	.00	.00	18345.00	10261.6	7102.6	1421.8	947.6	6.80	18644.03
MEAN	3.92	.000	.000	.000	.000	592	342	229	47.4	30.6	.22	621
MAX	43	.00	.00	.00	.00	2490	2040	1710	316	109	2.5	1880
MIN	.00	.00	.00	.00	.00	.00	6.3	5.0	3.3	1.0	.00	.00
AC-FT	241	.00	.00	.00	.00	36390	20350	14090	2820	1880	13	36980
CAL YR 1977	TOTAL	4879.40	MEAN	13.4	MAX	414	MIN	.00	AC-FT	9690		
WTR YR 1978	TOTAL	56851.03	MEAN	156	MAX	2490	MIN	.00	AC-FT	112800		

06174500 MILK RIVER AT NASHUA, MT

LOCATION.--Lat 48°07'52", long 106°21'50", in NE¼NE¼ 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 (1.0 km) southwest of Nashua, 2.0 mi (3.2 km) upstream from Porcupine Creek, and at mile 24.0 (38.6 km).

DRAINAGE AREA.--22,332 mi² (57,840 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1939 to current year.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,027.75 ft (618.058 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those for winter period, 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, 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 (567 km²) above station.

AVERAGE DISCHARGE.--39 years, 716 ft³/s (20.28 m³/s) 518,700 acre-ft/yr (640 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,300 ft³/s (1,280 m³/s) Apr. 18, 1952, gage height, 31.38 ft (9.565 m); minimum, 0.6 ft³/s (0.017 m³/s) July 15, 1961, gage height, 1.96 ft (0.597 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,900 ft³/s (535 m³/s) Apr. 5, gage height, 28.93 ft (8.818 m); minimum observed, 40 ft³/s (1.13 m³/s) Oct. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	88	111	80	90	126	80	10000	2040	1940	954	596	471
2	75	111	78	90	123	80	12000	1900	1970	1140	412	473
3	190	105	75	90	122	80	14400	1770	1910	803	406	490
4	170	99	72	94	122	80	17900	1700	1690	556	397	514
5	88	91	66	96	123	82	18800	1670	1460	578	391	519
6	72	72	60	100	123	83	18600	1660	1360	823	382	514
7	72	68	58	103	123	85	18100	1730	1290	931	386	501
8	72	68	56	102	118	87	17700	1950	1140	1030	415	492
9	75	72	52	100	117	88	17500	2480	1060	1300	437	484
10	85	77	60	100	116	89	17000	2970	1020	1510	458	470
11	72	94	70	100	110	90	16000	2990	932	1670	455	457
12	70	88	80	110	106	88	15000	2860	825	1810	445	469
13	58	85	83	130	109	88	14000	2830	714	1910	444	519
14	61	85	77	130	104	91	12900	2930	649	1920	444	1300
15	61	99	74	130	98	94	11900	3010	570	1880	450	2760
16	52	99	75	130	90	91	11100	2950	485	1690	452	3200
17	42	91	74	130	85	95	10500	2560	475	1470	445	3370
18	40	75	72	130	87	97	9820	2300	507	1260	440	3600
19	58	74	72	124	90	100	8740	2730	546	1060	440	3740
20	77	72	70	120	87	105	6780	3190	581	842	430	4410
21	190	70	68	127	89	200	4400	3590	608	732	416	5690
22	243	69	74	150	92	400	2860	3340	611	692	415	5740
23	198	68	81	160	91	900	2270	2600	606	683	431	5130
24	141	66	80	162	87	1500	2170	2130	595	630	456	4400
25	91	66	85	165	85	1700	2270	1780	571	514	468	3630
26	83	70	86	160	83	2100	2360	1750	622	447	486	3030
27	94	70	88	150	82	2700	2350	1890	786	440	516	2570
28	111	70	90	137	80	4000	2310	2050	997	436	502	2100
29	111	73	90	135	---	7000	2240	2220	1020	430	489	1680
30	111	80	92	134	---	8300	2150	2200	911	429	476	1410
31	111	---	90	133	---	9000	---	2030	---	404	472	---
TOTAL	3062	2438	2328	3812	2868	39373	304120	73800	28452	30976	13652	64133
MEAN	98.8	81.3	75.1	123	102	1270	10140	2381	948	999	440	2138
MAX	243	111	92	165	126	9000	18800	3590	1970	1920	516	5740
MIN	40	66	52	90	80	80	2150	1660	475	404	382	457
AC-FT	6070	4840	4620	7560	5690	78100	603200	146400	56430	61440	27080	127200
CAL YR 1977 TOTAL	42365.3			116	MAX	590	MIN	6.2	AC-FT	84030		
WTR YR 1978 TOTAL	569014.0			1559	MAX	18800	MIN	40	AC-FT	1129000		

MILK RIVER BASIN

06174500 MILK RIVER AT NASHUA, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949-53, 1959 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1974 to current year.

WATER TEMPERATURES: January 1974 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,540 micromhos Dec. 12, 1977; minimum daily, 246 micromhos Apr. 14, 1974.

WATER TEMPERATURES: Maximum daily, 27.0°C July 20, 21, 1974; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,540 micromhos Dec. 12; minimum daily, 300 micromhos Apr. 8.

WATER TEMPERATURES: Maximum daily, 22.5°C on several days during July to August; minimum daily, 0.0°C on many days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	
OCT 26...	1230	94	1	1800	8.0	17.0	9.0	40	--	9.8	91	
NOV 10...	1145	79	2	1880	8.3	14.0	1.5	15	--	12.4	95	
DEC 15...	1230	74	2	2250	7.8	4.5	.0	9	--	8.8	65	
JAN 23...	1300	160	1	2450	7.4	-1.0	.0	4	--	10.6	79	
FEB 24...	1530	87	1	2050	7.3	-2.0	.0	5	--	6.8	50	
MAR 30...	1100	8300	0	360	7.6	15.0	2.5	1000	--	10.1	80	
APR 14...	1500	12700	0	368	8.0	15.0	7.0	440	--	10.1	89	
MAY 02...	1200	1920	2	873	7.9	18.5	12.0	180	--	9.7	97	
JUN 22...	1400	608	0	1240	8.2	24.0	21.0	--	45	7.8	94	
JUL 26...	1300	443	0	964	8.1	30.0	26.0	--	80	6.9	92	
AUG 31...	1400	474	0	982	8.5	26.0	19.5	--	15	8.6	100	
SEP 25...	1600	3520	0	576	7.9	23.5	12.5	--	1100	8.1	81	
DATE		COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOC FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT 26...	440	K35	450	120	97	51	260	5.3	7.7	410	0	0
NOV 10...	K18	100	430	80	89	51	250	5.2	7.0	430	0	0
DEC 15...	K4	67	550	420	110	67	320	5.9	7.9	160	0	0
JAN 23...	39	27	680	200	140	80	350	5.8	7.6	590	0	0
FEB 24...	440	100	520	120	110	59	260	5.0	7.9	490	0	0
MAR 30...	250	2400	81	23	20	7.5	37	1.8	5.2	71	0	0
APR 14...	1500	2100	100	13	25	10	42	1.8	5.3	110	0	0
MAY 02...	<1	K100	230	66	51	25	100	2.9	7.3	200	0	0
JUN 22...	110	K33	360	110	81	38	150	3.4	7.6	--	--	--
JUL 26...	K32	70	250	44	57	27	120	3.3	7.5	--	--	--
AUG 31...	120	69	270	32	61	29	120	3.2	6.3	--	--	--
SEP 25...	620	K120	120	46	28	11	71	2.9	5.7	--	--	--

06174500 MILK RIVER AT NASHUA, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ALKA- LITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 26...	340	6.6	620	36	.5	9.8	1310	1280	1.78	332	.00
NOV 10...	350	3.4	540	41	.4	9.0	1200	1200	1.63	256	.01
DEC 15...	130	4.1	710	61	.5	9.7	1520	1370	2.07	304	.18
JAN 23...	480	38	860	71	.4	11	1740	1610	2.37	752	.53
FEB 24...	400	39	580	51	.4	12	1330	1320	1.81	312	.96
MAR 30...	58	2.9	110	3.1	.2	5.0	207	223	.28	4640	.52
APR 14...	90	1.8	94	4.7	.1	5.9	234	241	.32	6020	.20
MAY 02...	160	4.0	260	16	.2	7.9	578	566	.79	3000	.22
JUN 22...	250	--	370	25	.3	5.1	835	828	1.14	1370	.01
JUL 26...	210	--	260	16	.3	6.4	640	620	.87	766	.01
AUG 31...	240	--	260	17	.3	5.5	650	643	.88	832	.02
SEP 25...	69	--	200	5.6	.3	7.4	381	372	.52	3620	.10

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC DIS- TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT 26...	--	.00	--	.31	--	.12	.03	6.0	--	--
NOV 10...	--	.03	--	.34	--	.10	.02	5.2	--	--
DEC 15...	--	.36	--	1.1	--	.11	.06	--	--	--
JAN 23...	--	.32	--	1.9	--	.10	.07	5.8	--	--
FEB 24...	.44	.21	.65	.25	1.6	.10	.07	7.1	--	--
MAR 30...	1.9	.10	2.0	.43	2.5	1.1	.05	--	10	7.6
APR 14...	1.5	.11	1.6	.62	1.8	.49	.02	14	--	--
MAY 02...	.96	.14	1.1	.58	1.3	.29	.03	13	--	--
JUN 22...	.89	.01	.90	.54	.91	.12	.02	--	7.0	--
JUL 26...	.87	.03	.90	.68	.91	.14	.02	3.2	--	--
AUG 31...	.74	.01	.75	.66	.77	.08	.02	--	--	--
SEP 25...	2.4	.06	2.5	2.0	2.6	.98	.04	--	5.8	>5.0

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC 15...	1230	2	1	200	100	8	4	0	0
MAR 30...	1100	8	2	200	0	2	1	30	0
JUN 22...	1400	3	2	200	200	1	1	5	0
SEP 25...	1600	8	2	300	0	1	5	40	0

MILK RIVER BASIN

06174500 MILK RIVER AT NASHUA, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	CUBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)
DEC 15...	0	0	14	3	700	50	8	3	270
MAR 30...	10	1	50	4	34000	160	36	3	800
JUN 22...	0	0	15	2	2400	20	11	7	160
SEP 25...	14	3	50	13	55000	1100	27	2	630

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 15...	230	.1	.0	1	1	0	0	60	20
MAR 30...	50	.0	.0	3	1	0	1	180	10
JUN 22...	5	.1	.0	1	1	0	0	30	10
SEP 25...	40	.4	.0	2	1	0	0	210	40

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
31...	1000	988	8.5	23.5	19.0	8.4	94
31...	1100	980	8.5	22.0	19.0	8.5	99
31...	1200	990	8.5	25.0	19.5	8.6	101
31...	1300	988	8.5	26.0	19.5	8.6	101
31...	1400	982	8.5	26.0	19.5	8.6	100
31...	1500	975	8.6	28.0	20.0	8.7	104
31...	1600	960	8.6	28.0	20.0	8.7	104
31...	1700	968	8.6	23.5	20.0	8.5	101
31...	1800	984	8.6	22.0	20.0	8.6	102
31...	1900	992	8.6	21.0	20.0	8.5	101
31...	2000	986	8.6	19.5	20.0	8.3	99
31...	2100	986	8.5	18.0	20.0	8.2	98
31...	2200	980	8.6	17.5	20.0	8.1	96
31...	2300	975	8.6	17.0	20.0	8.1	96
31...	2400	988	8.7	15.0	20.0	8.1	96
SEP							
01...	0100	990	8.5	13.5	20.0	8.1	96
01...	0200	985	8.5	13.0	19.5	8.2	96
01...	0300	988	8.5	13.0	19.5	8.2	96
01...	0400	990	8.5	13.0	19.5	8.3	98
01...	0500	990	8.5	13.0	19.0	8.3	97
01...	0600	995	8.5	13.0	19.0	8.3	97
01...	0700	985	8.5	13.5	19.0	8.3	97
01...	0800	1010	8.5	14.0	19.0	8.5	99
01...	0900	1080	8.6	16.5	19.0	8.6	100
01...	1000	1070	8.6	26.0	19.5	8.8	104

06174500 MILK RIVER AT NASHUA, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1450	1670	2170	2280	2500	1930	322	910	941	1120	1050	988
2	1550	1680	2230	2270	2520	1920	347	904	938	1110	1070	987
3	1640	1720	2280	2270	2530	1920	351	903	960	896	1070	982
4	1660	1710	2310	2260	2520	1920	314	890	971	939	1080	972
5	1650	1730	2360	2260	2520	1930	311	903	984	910	1100	959
6	1480	1770	2470	2250	2420	1960	317	922	1040	1100	1110	947
7	1110	1770	2530	2250	2440	1950	306	932	1040	1010	1110	943
8	1250	1780	2490	2230	2420	1980	300	929	997	965	1140	938
9	1390	1780	2370	2200	2250	1970	301	894	1020	1060	1140	944
10	1560	1740	2360	2200	2230	2000	311	863	1030	1120	1150	930
11	1600	1730	2340	2240	2230	2000	327	960	1000	1290	1120	940
12	1620	1710	2340	2240	2130	2010	342	1060	985	1170	1080	929
13	1630	1710	2230	2280	2130	2020	359	985	1010	1220	1100	891
14	1660	1750	2210	2310	2170	2020	378	929	1040	990	1110	894
15	1680	1820	2160	2290	2160	2040	414	998	1080	783	1120	619
16	1670	1910	2130	2290	2170	2030	392	997	1150	801	1100	642
17	1670	2000	2100	2280	2160	2020	394	920	1200	788	1110	690
18	1680	1980	2140	2320	2150	2020	413	976	1270	851	1150	724
19	1690	1950	2160	2320	2030	2020	439	922	1320	862	1160	628
20	1750	1970	2210	2360	2030	2050	457	887	1290	871	1110	623
21	1850	2020	2250	2360	1940	1280	510	851	1230	891	1080	628
22	1860	2050	2240	2360	1970	1130	560	979	1220	941	1090	728
23	1760	2060	2260	2420	1960	763	593	998	1220	939	1080	632
24	1750	2050	2260	2350	1910	661	653	1160	1230	911	1070	612
25	1790	2080	2280	2440	1900	633	717	1060	1280	920	1060	570
26	1850	2070	2310	2440	1890	758	769	1000	1300	940	1030	570
27	1780	2070	2360	2420	1930	762	823	1150	1210	969	999	583
28	1770	2060	2390	2420	1930	720	831	1090	1240	1000	999	620
29	1760	2080	2370	2410	---	427	932	976	1180	1030	908	643
30	1700	2120	2360	2460	---	367	878	958	1180	1050	976	698
31	1680	---	2390	2460	---	328	---	998	---	1050	988	---
MEAN	1640	1680	2300	2320	2180	1530	479	965	1120	983	1080	782
WTR YR 1978	MEAN	1440	MAX	2540	MIN	300						

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.5	7.0	.0	.0	.0	.0	3.5	10.5	15.0	22.5	20.5	20.0
2	10.0	7.0	.0	.0	.0	.0	4.0	11.0	15.0	22.5	19.5	20.5
3	11.0	5.0	.0	.0	.0	.0	4.0	12.0	15.5	22.0	18.5	20.5
4	10.0	4.0	.0	.0	.0	.0	4.5	12.0	16.0	22.0	18.0	21.5
5	10.0	4.0	.0	.0	.0	.0	4.5	13.0	17.0	22.0	19.0	21.5
6	9.5	4.0	.0	.0	.0	.0	5.0	14.0	18.0	22.0	20.5	21.5
7	9.5	4.0	.0	.0	.0	.0	5.0	13.5	17.0	21.0	20.0	20.5
8	9.5	2.0	.0	.0	.0	.0	5.5	13.0	17.5	22.0	21.0	21.0
9	9.5	1.0	.0	.0	.0	.0	6.0	13.5	18.0	20.5	22.0	19.5
10	6.5	1.0	.0	.0	.0	.0	7.0	13.5	18.0	20.0	22.5	20.0
11	4.0	.5	.0	.0	.0	.0	7.5	13.5	18.0	21.0	22.0	19.5
12	5.0	1.0	.0	.0	.0	.0	6.5	13.5	18.0	21.5	22.0	18.0
13	5.5	.5	.0	.0	.0	.0	7.5	14.0	18.0	21.5	21.5	17.0
14	6.5	.5	.0	.0	.0	.0	7.5	14.0	18.5	21.5	21.0	15.0
15	4.5	.5	.0	.0	.0	.0	7.0	14.5	18.5	21.5	20.5	12.0
16	4.5	1.0	.0	.0	.0	.0	7.0	14.5	18.0	22.0	20.0	12.5
17	5.0	.0	.0	.0	.0	.0	7.0	14.0	18.5	22.0	20.0	13.0
18	5.0	.0	.0	.0	.0	.0	6.5	13.5	19.0	21.5	19.5	12.0
19	7.5	.0	.0	.0	.0	.0	7.0	13.0	18.5	20.5	---	11.0
20	9.0	.0	.0	.0	.0	.0	6.0	13.0	18.0	19.5	---	10.5
21	9.0	.0	.0	.0	.0	.0	6.0	13.0	17.5	20.0	---	9.0
22	7.0	.0	.0	.0	.0	.0	6.0	15.0	19.0	19.5	---	11.0
23	7.0	.0	.0	.0	.0	.0	7.0	16.0	20.0	20.5	---	10.0
24	8.0	.0	.0	.0	.0	.0	7.5	16.5	20.5	21.5	---	12.0
25	4.5	.0	.0	.0	.0	.0	8.0	17.0	21.0	22.0	---	13.0
26	7.0	.0	.0	.0	.0	.0	8.5	17.0	20.0	22.5	---	14.0
27	7.0	.0	.0	.0	.0	.0	9.0	17.5	20.0	22.5	19.0	13.5
28	8.0	.0	.0	.0	.0	.0	9.5	18.0	21.0	22.5	19.5	14.5
29	8.0	.0	.0	.0	---	1.0	10.0	17.5	21.5	21.5	19.5	14.5
30	8.5	.0	.0	.0	---	2.0	10.5	17.5	22.0	20.5	19.5	14.0
31	7.5	---	.0	.0	---	4.0	---	16.0	---	20.0	20.0	---
MEAN	7.5	1.5	.0	.0	.0	.0	6.5	14.5	18.5	21.5	20.0	16.0
WTR YR 1978	MEAN	8.5	MAX	22.5	MIN	.0						

MILK RIVER BASIN

06174500 MILK RIVER AT NASHUA, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
UC1						
26...	1230	9.0	94	143	36	96
NOV						
10...	1145	1.5	79	85	18	94
DEC						
15...	1230	.0	74	153	31	83
JAN						
23...	1500	.0	160	132	57	77
MAR						
30...	1100	2.5	8300	2040	45700	99
APR						
07...	1000	--	18200	863	42400	99
14...	1500	7.0	12700	800	27400	98
MAY						
02...	1200	12.0	1920	380	1970	99
JUN						
22...	1400	21.0	608	143	235	98
JUL						
26...	1300	26.0	443	180	215	99
AUG						
31...	1400	19.5	474	45	58	--
SEP						
25...	1600	12.5	3520	1950	18500	100

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPOS- URE (DAYS)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)
AUG						
31...	1400	36	21.6	21.3	2.90	.150

06174500 MILK RIVER AT NASHUA, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 10, 77 1145	MAR 30, 78 1100	MAY 2, 78 1200
TOTAL CELLS/ML	39000	860	4800
DIVERSITY: DIVISION	1.1	0.9	1.7
..CLASS	1.1	0.9	1.7
..ORDER	1.3	0.9	2.2
...FAMILY	1.8	0.9	2.5
....GENUS	2.9	1.6	0.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....UOOCYSTACEAE						
.....GLUEOACTINIUM	7600#	20	--	-	--	-
...CHARACIACEAE						
....SCHRADERIA	*	0	--	-	--	-
...MICRACINIACEAE						
.....GOLENKINIA	*	0	--	-	--	-
...MICRACINIUM	*	0	--	-	270	6
....UOOCYSTACEAE						
.....ANKISTRODESMUS	9000#	23	--	-	99	2
...DICTYOSPHAERIUM	560	1	--	-	--	-
....UOOCYSTIS	*	0	--	-	65	1
...SELENASTRUM	2300	6	--	-	33	1
...SCENEDESMACEAE						
....CRUCIGENIA	4000	10	--	-	270	6
...SCENEDESMUS	280	1	--	-	200	4
..VOLVOCALES						
...CHLAMYDOMONADACEAE	--	-	--	-	130	3
....CHLAMYDOMONAS	280	1	--	-	--	-
CHRYSOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
....COSCINODISCAEAE						
.....CYCLOTELLA	--	-	--	-	2200#	45
..PENNALES						
...NAVICULACEAE						
....CALONEIS	--	-	290#	33	--	-
...GYROSIGMA	--	-	290#	33	--	-
...NITZSCHIAEAE						
....NITZSCHIA	--	-	--	-	130	3
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
...CRYPTOMONADALES						
....CRYPTOMONADACEAE						
.....CRYPTOMONAS	*	0	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROOCOCCALES						
....CHROOCOCCACEAE						
.....AGMENELLUM	6800#	17	--	-	--	-
...ANACYSTIS	5100	13	--	-	800#	17
...HORMOGONALES						
...NOSTOCACEAE	--	-	--	-	330	7
...OSCILLATORIAEAE						
....LYNGBYA	1600	4	--	-	--	-
EUGLENOPHYTA (EUGLENDIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
....EUGLENACEAE						
.....EUGLENA	*	0	--	-	300	6
....PHACUS	*	0	--	-	--	-
....TRACHELOMONAS	1100	3	290#	33	33	1

MILK RIVER BASIN

06174500 MILK RIVER AT NASHUA, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON						
DATE TIME	JUL 26,78 1300	AUG 31,78 1400	SEP 25,78 1600			
TOTAL CELLS/ML	360	8300	550			
DIVERSITY: DIVISION	0.5	0.9	1.0			
..CLASS	0.5	0.9	1.0			
...ORDER	0.6	1.1	1.0			
...FAMILY	2.5	1.9	1.0			
....GENUS	2.6	2.8	1.5			
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...HYDRODICTYACEAE						
....PEDIASTRUM	--	-	280	3	--	-
....OOCYSTACEAE						
....ANKISTRODESUMUS	14	4	220	3	--	-
....DICTYOSPHAERIUM	--	-	3000#	36	--	-
....FRANCEIA	--	-	*	0	--	-
....OOCYSTIS	14	4	320	4	--	-
....TETRAEDRON	--	-	*	0	--	-
....TREUBARIA	--	-	320	4	--	-
...SCENEDESMACEAE						
....CRUCIGENIA	--	-	160	2	--	-
...SCENEDESMUS	--	-	990	12	--	-
....TETRASTRUM	--	-	630	8	--	-
..TETRASPORALES						
...PALMELLACEAE						
....SPHAEROCYSTIS	--	-	160	2	--	-
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	14	4	--	-	--	-
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINDISCACEAE						
....CYCLOTELLA	--	-	*	0	220#	40
..PENNALES						
...ACHNANTHACEAE						
....COCCONEIS	14	4	--	-	--	-
...CYMBELLACEAE						
....CYMBELLA	14	4	--	-	--	-
...DIATOMACEAE						
....DIATOMA	140#	38	--	-	--	-
...GOMPHONEMACEAE						
....GOMPHONEMA	55#	15	--	-	--	-
...NAVICULACEAE						
....NAVICULA	69#	19	--	-	--	-
...NITZSCHACEAE						
....NITZSCHIA	27	8	*	0	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
...CHROCOCCACEAE						
....ANACYSTIS	--	-	2000#	24	--	-
...COCCOCHLORIS	--	-	*	0	--	-
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
....EUGLENA	--	-	79	1	110#	20
....PHACUS	--	-	*	0	--	-
....TRACHELOMONAS	--	-	--	-	220#	40

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06175540 PRAIRIE ELK CREEK NEAR OSWEGO, MT

LOCATION (REVISED).--Lat 47°59'54", long 105°52'02", in SW¼SW¼ sec.13, T.26 N., R.45 E., McCone County, Hydrologic Unit 10060001, on left bank 460 ft (140 m) downstream from bridge on FAS 528, 0.9 mi (1.4 km) upstream from mouth and 4 mi (6 km) south of Oswego.

DRAINAGE AREA.--352 mi² (912 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,180 ft (664 m), from topographic map. Prior to June 5, 1978, at site 385 ft (117 m) upstream at datum 2.00 ft (0.610 m) higher.

REMARKS.--Water-discharge records fair except those for winter period and period of no gage-height record Mar. 21-27, which are poor. Diversions for irrigation of about 230 acres (931,000 m²) above station of which 170 acres (688,000 m²) is flood irrigated. Some storage in stock ponds upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 2,980 ft³/s (84.4 m³/s) Mar. 21, 1978, gage height, 5.52 ft (1.682 m), from floodmark, site and datum then in use; maximum gage height, 5.66 ft (1.725 m) June 15, 1978; no flow part of Feb. 22, 1978, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 450 ft³/s (12.7 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 21	unknown	*2,980 84.4	5.52 1.682	July 5	0130	841 23.8	4.38 1.335
May 31	1100	530 15.0	3.06 0.933	July 30	0115	601 17.0	3.98 1.213
June 15	0445	1,970 55.8	*5.66 1.725	Sept. 12	0845	685 19.4	4.15 1.265
June 26	1215	453 12.8	3.68 1.122	Sept. 18	2400	841 23.8	4.40 1.341
July 1	0430	1,470 41.6	5.16 1.573				

a--From floodmark.

No flow part of Feb. 22, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	1.7	.80	.10	.10	.10	45	3.1	171	348	11	1.1
2	32	1.8	.80	.10	.10	.10	21	3.1	64	57	6.8	1.1
3	9.2	1.5	.80	.10	.10	.10	13	3.1	34	70	4.5	.99
4	4.7	1.5	.80	.10	.10	.15	12	3.1	16	174	3.1	.99
5	3.1	1.7	.70	.10	.10	.20	10	3.4	11	494	2.5	.99
6	2.4	1.6	.60	.10	.10	.20	8.9	24	9.7	132	2.1	.99
7	2.1	1.6	.40	.10	.10	.20	7.2	111	15	42	1.9	.99
8	1.9	2.2	.30	.10	.10	.20	5.9	87	22	20	1.7	1.1
9	1.7	2.2	.40	.10	.10	.30	5.0	46	9.3	17	1.6	1.1
10	1.5	2.0	.40	.10	.10	.50	4.5	15	7.3	8.6	1.6	1.1
11	2.6	1.8	.50	.10	.10	5.0	4.4	9.6	7.9	6.6	1.5	1.3
12	1.9	1.6	.60	.10	.10	10	3.9	7.1	6.4	5.5	1.5	348
13	1.8	2.8	.70	.10	.10	50	3.8	5.4	5.4	4.9	1.5	294
14	1.6	1.9	.80	.10	.10	200	3.6	4.8	33	4.2	1.5	123
15	1.7	1.6	.80	.10	.10	300	3.4	4.0	1130	3.8	1.6	21
16	1.6	.91	.70	.10	.10	500	3.4	3.2	89	3.3	1.5	6.4
17	1.3	.80	.60	.10	.10	750	3.4	6.4	16	3.1	1.5	3.8
18	1.3	.70	.50	.10	.10	1000	13	77	7.6	3.1	1.5	85
19	1.4	.60	.40	.10	.10	1400	22	266	19	3.0	1.6	565
20	1.4	.60	.30	.10	.10	1500	9.5	115	34	3.5	1.5	301
21	1.5	.60	.30	.10	.10	1800	5.1	40	13	2.6	1.4	74
22	1.5	.60	.30	.15	.10	1700	4.0	17	6.3	3.0	1.4	14
23	1.5	.60	.30	.20	.15	950	3.7	10	4.7	3.2	1.4	5.9
24	1.5	.60	.20	.15	.20	400	3.6	8.0	4.1	3.0	1.2	3.5
25	1.5	.60	.20	.15	.20	150	3.4	6.5	6.8	2.2	1.2	2.6
26	1.5	.80	.10	.10	.15	180	3.2	5.3	284	1.9	1.2	2.1
27	1.5	.80	.10	.10	.10	250	3.0	4.4	125	1.9	1.1	1.8
28	1.5	.80	.10	.10	.10	140	3.1	4.3	20	1.9	1.1	1.8
29	1.6	1.0	.10	.10	---	85	3.2	4.2	12	17	1.1	1.6
30	1.7	1.0	.10	.10	---	76	3.2	49	7.9	155	1.2	1.5
31	1.9	---	.10	.10	---	68	---	430	---	25	1.1	---
TOTAL	133.4	38.51	13.80	3.35	3.10	11516.05	238.4	1376.0	2191.4	1620.3	65.4	1885.75
MEAN	4.30	1.28	.45	.11	.11	371	7.95	44.4	73.0	52.3	2.11	62.9
MAX	41	2.8	.80	.20	.20	1800	45	430	1130	494	11	585
MIN	1.3	.60	.10	.10	.10	.10	3.0	3.1	4.1	1.9	1.1	.99
CFSM	.01	.004	.001	.000	.000	1.05	.02	.13	.21	.15	.006	.18
IN.	.01	.00	.00	.00	.00	1.22	.03	.15	.23	.17	.01	.20
AC-FT	265	76	27	6.6	6.1	22840	473	2730	4350	3210	130	3740

CAL YR 1977 TOTAL 1259.86 MEAN 3.45 MAX 76 MIN .02 CFSM .01 IN .13 AC-FT 2500
WTR YR 1978 TOTAL 19085.46 MEAN 52.3 MAX 1800 MIN .10 CFSM .15 IN 2.02 AC-FT 37860

PRAIRIE ELK CREEK BASIN

06175540 PRAIRIE ELK CREEK NEAR OSWEGO, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHQS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
21...	1230	1.5	1	2330	8.8	13.0	9.0	55	12.2	113
NOV										
09...	1300	2.4	0	2680	8.7	4.5	5.5	60	13.4	100
DEC										
13...	1430	.72	0	3200	8.5	2.0	0.0	85	10.8	80
JAN										
26...	1130	.10	3	2290	7.8	-23.0	0.0	15	8.0	59
MAR										
21...	1300	1630	0	180	7.6	18.0	1.0	900	10.8	81
APR										
28...	1430	3.0	3	1850	8.8	13.5	13.5	40	10.6	109
MAY										
12...	1100	7.0	3	1180	7.9	9.0	12.5	2000	9.8	99
JUN										
05...	1400	11	0	1600	8.6	28.0	28.0	65	9.0	123
JUL										
25...	1200	2.1	0	2050	8.5	33.0	27.5	1	7.4	100
AUG										
23...	1300	1.6	0	2430	9.0	25.0	22.0	45	7.9	96
SEP										
13...	1300	217	60	616	8.6	12.0	11.0	7700	6.8	66

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS, (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT									
21...	1.5	120	0	24	15	540	21	4.4	830
NOV									
09...	1.4	130	0	24	17	590	23	4.0	940
DEC									
13...	.7	170	0	33	22	760	25	5.1	1200
JAN									
26...	2.6	310	0	72	32	430	11	6.0	650
MAR									
21...	7.8	--	--	--	--	--	--	--	81
APR									
28...	1.7	170	0	40	17	390	13	5.0	620
MAY									
12...	1.6	73	0	19	6.2	220	11	5.5	340
JUN									
05...	2.4	180	0	36	23	320	10	7.6	330
JUL									
25...	1.7	150	0	26	21	450	16	7.8	630
AUG									
23...	--	110	0	18	16	540	22	7.4	760
SEP									
13...	6.1	--	--	--	--	--	--	--	180

06175540 PRAIRIE ELK CREEK NEAR OSWEGO, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)
OCT 21...	49	760	2.4	500	6.8	.9	9.3	1560	2.12
NOV 09...	44	840	3.3	570	7.3	1.1	8.8	1730	2.35
DEC 13...	18	1010	6.3	740	9.8	1.2	15	2200	2.99
JAN 26...	0	530	16	700	7.7	.7	14	1580	2.15
MAR 21...	0	66	3.3	45	2.9	.8	1.8	--	--
APR 28...	33	560	1.7	420	5.5	.6	7.0	1220	1.66
MAY 12...	0	280	6.8	290	3.8	.4	7.9	721	.98
JUN 05...	14	290	1.4	520	21	.4	7.0	1110	1.51
JUL 25...	14	540	3.3	510	28	.7	11	1380	1.86
AUG 23...	39	690	1.3	550	8.2	.9	7.2	1560	2.12
SEP 13...	--	150	.7	--	--	--	--	--	--

DATE	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 21...	6.32	.17	.01	.32	.33	.50	.06	560	40
NOV 09...	11.2	.03	.04	.56	.60	.63	.04	630	30
DEC 13...	4.28	.18	.28	.23	.51	.69	.05	750	70
JAN 26...	.43	.02	.23	.00	.22	.24	.06	270	80
MAR 21...	--	.35	.38	2.7	3.1	3.5	2.0	110	--
APR 28...	9.88	.10	.04	.41	.45	.55	.04	310	60
MAY 12...	13.6	3.0	.04	3.2	3.2	6.2	1.3	190	840
JUN 05...	33.0	.00	.01	1.1	1.1	1.1	.06	280	60
JUL 25...	7.82	.01	.01	.69	.70	.71	.04	500	40
AUG 23...	6.74	.00	.03	.67	.70	.70	.07	650	80
SEP 13...	--	.88	.14	2.3	2.4	3.3	2.3	170	--

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECUV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECUV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECUV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC 13...	1430	20	--	4	--	0	--	2	--	0
MAR 21...	1300	--	6	--	0	--	0	--	40	--
JUN 05...	1400	20	--	2	--	0	--	3	--	0

PRAIRIE ELK CREEK BASIN

06175540 PRAIRIE ELK CREEK NEAR OSWEGO, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
DEC 13...	--	9	--	--	2	--	190	--	140	--
MAR 21...	90	--	40000	10	--	40	--	930	--	.4
JUN 05...	--	6	--	--	20	--	50	--	10	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 13...	.1	2	--	4	--	0	.8	--	20
MAR 21...	--	--	70	--	2	--	2.0	240	--
JUN 05...	.4	3	--	4	--	1	.0	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINE THAN .062 MM
OCT 21...	1230	9.0	1.5	152	.62	99
NOV 09...	1300	.5	2.4	164	1.1	98
DEC 13...	1430	.0	.72	271	.53	99
JAN 26...	1130	.0	.10	252	.07	91
MAR 21...	1300	1.0	1630	2740	12100	90
APR 28...	1430	13.5	3.0	134	1.1	95
MAY 12...	1100	12.5	7.0	3640	69	100
JUN 05...	1400	28.0	11	184	5.5	99
JUL 25...	1200	27.5	2.1	114	.65	--
AUG 23...	1300	22.0	1.6	178	.77	99
SEP 13...	1300	11.0	217	12600	7380	100

06177000 MISSOURI RIVER NEAR WOLF POINT, MT

LOCATION.--Lat 48°03'57", long 105°32'12", in SW¼NW¼ sec.28, T.27 N., R.48 E., McCone County, Hydrologic Unit 10060001, on right bank 500 ft (150 m) downstream from bridge on State Highway 13, 5 mi (8 km) southeast of Wolf Point, 7.8 mi (12.6 km) downstream from Wolf Creek, and at mile 1,701.4 (2,737.6 km).

DRAINAGE AREA.--82,290 mi² (213,131 km²).

PERIOD OF RECORD.--September 1928 to current year.

REVISED RECORDS.--WSP 1146: 1931. WSP 1729: Drainage area.

GAGE.--Water-stage recorder and nonrecording gage. Datum of gage is 1,958.57 ft (596.972 m) National Geodetic Vertical Datum of 1929. Prior to Apr. 13, 1930, nonrecording gages at Wolf Point ferry landing 5.5 mi (8.8 km) upstream at different datum.

REMARKS.--Records good except those for winter period, which are fair. Flow partly regulated by Fort Peck Lake and many other reservoirs above station. Diversions for irrigation of about 1,010,400 acres (4,090 km²) above station.

AVERAGE DISCHARGE.--11 years (1928-39, prior to Fort Peck Lake reaching operational level), 7,219 ft³/s (204.4 m³/s), 5,230,000 acre-ft/yr (6.45 km³/yr); 35 years (1943-78, after operational level was reached), 10,510 ft³/s (297.6 m³/s), 7,614,000 acre-ft/yr (9.39 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66,800 ft³/s (1,890 m³/s) Mar. 25, 1939, gage height, 14.4 ft (4.39 m), ice present, from rating curve extended above 59,000 ft³/s (1,100 m³/s); maximum gage height, 15.64 ft (4.767 m) Mar. 27, 1960 (backwater from ice); minimum daily discharge, 320 ft³/s (9.06 m³/s) Dec. 10, 1941.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 14, 1908, reached a stage of about 20 ft (6.1 m), present site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22,400 ft³/s (634 m³/s) Apr. 13, gage height, 7.57 ft (2.307 m); maximum gage height, 8.77 ft (2.673 m) Dec. 14 (backwater from ice); minimum daily discharge, 4,680 ft³/s (133 m³/s) Nov. 14, 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5650	5160	11100	9250	15000	13500	18500	9280	13200	11300	13600	12900
2	5420	5250	10900	16900	15800	14200	17700	9030	13500	11300	13300	14000
3	5260	4920	11100	10400	15300	12200	15900	9050	13400	11200	14000	14600
4	5350	4970	11100	16700	15100	13000	17300	9360	13300	11400	14100	14800
5	5190	5060	9870	11300	15100	13800	19900	8850	13300	11500	14100	14900
6	5030	4840	8700	11000	13500	13900	21000	8950	13300	10700	14200	15000
7	5210	4900	8100	11000	12600	13000	19500	9620	12600	10700	14200	15100
8	5190	4890	7650	11000	15900	13600	19100	9340	12500	10900	14100	14600
9	5160	5020	7300	11700	15000	13500	19700	9340	12700	10500	14100	14700
10	5150	5080	7500	12000	15000	13500	19200	9850	12700	10600	13900	14700
11	5210	5500	8280	12100	15000	13700	20000	10100	12300	11300	14100	14800
12	5320	5300	8900	12200	15000	14000	21300	9910	12500	11400	13800	15500
13	5100	5110	9500	12000	15000	14500	21900	9800	12700	11600	14300	16100
14	5060	4680	10500	12300	14100	14400	21900	9930	12400	11600	14300	13800
15	5100	4810	10400	12200	13900	15000	21800	9930	12600	11700	14400	11900
16	5280	4890	10200	12900	14400	14200	20700	9930	12700	11900	14400	12800
17	5280	4680	10100	12800	14900	12000	19400	9800	12200	11800	14500	15200
18	5170	5130	10100	12900	15200	10000	18800	9830	12100	11700	14400	17500
19	5220	6020	9650	13300	15600	8470	19600	10100	12200	11300	14400	19100
20	5050	7000	9170	13900	15000	8500	18400	11100	11900	11100	14500	19200
21	4990	7400	10100	14800	14800	8100	16700	11500	11000	10200	14800	18600
22	4870	8100	10800	14000	14200	9000	14800	10400	10900	9170	14500	19300
23	4840	8850	10500	12900	15800	14200	12700	7870	10800	10800	13600	16700
24	4820	9760	10300	10900	14800	10500	11500	7900	10300	12600	13800	13400
25	5270	10200	10200	12600	13800	10600	10500	8930	10400	13700	14400	13300
26	5060	9790	10600	10900	14000	11000	9990	9570	10900	14200	14500	17400
27	4860	10400	9570	12100	13800	12100	9850	9390	11000	14100	14300	17000
28	5320	10300	10200	13200	13500	13100	9860	9460	10900	14200	14700	16700
29	5560	10300	10100	14700	---	18000	9800	9750	11100	14000	14700	15600
30	4980	11100	10200	14100	---	19800	10300	10100	11100	13500	14700	15300
31	5110	---	9400	14300	---	17800	---	11500	---	13000	14100	---
TOTAL	160080	199390	302090	380350	411100	398970	507340	299470	362300	364970	441000	464700
MEAN	5164	6646	9745	12270	14680	12870	16910	9660	12080	11770	14230	15490
MAX	5650	11100	11100	14800	15900	19800	21900	11500	13400	14200	14800	19300
MIN	4820	4680	7300	9250	12600	8100	9800	7870	10300	9170	13300	11900
AC-FT	317500	395500	599200	754400	815400	791400	1006000	594000	718600	723900	874700	921700
CAL YR 1977 TOTAL	3170860		MEAN	8687	MAX	20000	MIN	4680	AC-FT	6289000		
WTR YR 1978 TOTAL	4291760		MEAN	11760	MAX	21900	MIN	4680	AC-FT	8513000		

REDWATER RIVER BASIN

06177500 REDWATER RIVER AT CIRCLE, MT

LOCATION.--Lat 47°24'51", long 105°34'30", in SW¼SW¼ sec.11, T.19 N., R.48 E., McCone County, Hydrologic Unit 10060002, on left bank at Circle, 1 mi (2 km) upstream from Horse Creek, and at mile 79.6 (128.1 km).

DRAINAGE AREA.--547 mi² (1,417 km²).

WATER-DISCHARGE RECORDS

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. Altitude of gage is 2,380 ft (725 m), by barometer. Prior to June 1, 1941, and Mar. 23, 1943, to Feb. 16, 1948, nonrecording gage at site 0.3 mi (0.5 km) upstream at same datum. June 1, 1941, to Mar. 22, 1943, nonrecording gage at site 200 ft (61 m) upstream at datum 2.8 ft (0.85 m) lower. Feb. 26, 1948, to May 7, 1950, nonrecording gage at site 200 ft (61 m) upstream at present datum.

REMARKS.--Water-discharge records fair except those prior to Mar. 27, which are poor. Few minor diversions for irrigation of hay meadows above station.

AVERAGE DISCHARGE.--40 years (1931-32, 1935-36, 1937-71, 1975-78), 13.9 ft³/s (0.393 m³/s), 10,070 acre-ft/yr (12.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,730 ft³/s (191 m³/s) July 14, 1957, gage height, 12.77 ft (3.892 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 80 ft³/s (227 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 21	0100	ice jam	*10.92 3.328	June 1	1600	166 4.70	6.14 1.871
Mar. 21	unknown	1,200 34.0	unknown	June 26	0545	511 14.5	7.72 2.353
Mar. 27	1145	319 9.03	7.19 2.192	July 5	1200	2,050 58.1	10.63 3.240

Minimum daily discharge, 0.60 ft³/s (0.002 m³/s) Dec. 7-10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.21	.11	.12	.10	.10	.12	108	6.4	124	29	5.8	.49
2	.13	.11	.12	.10	.10	.12	69	6.4	117	24	5.8	.45
3	.11	.11	.10	.10	.10	.12	53	6.4	71	20	7.3	.45
4	.11	.11	.10	.10	.10	.12	43	6.4	43	19	8.0	.45
5	.11	.11	.10	.10	.10	.12	39	6.4	30	499	6.7	.45
6	.11	.11	.08	.10	.10	.12	37	6.7	25	781	6.4	.45
7	.11	.11	.06	.10	.10	.12	32	7.7	23	323	5.8	.45
8	.11	.11	.06	.10	.10	.14	28	11	22	141	4.5	.42
9	.09	.11	.06	.10	.10	.23	25	14	19	84	3.0	.42
10	.09	.11	.06	.10	.10	.34	22	16	18	53	2.2	.42
11	.09	.11	.08	.10	.10	1.8	22	16	17	36	1.8	.45
12	.11	.13	.10	.10	.10	4.0	20	14	16	30	1.4	1.1
13	.09	.13	.10	.10	.10	7.0	17	12	14	25	1.2	2.4
14	.09	.13	.10	.10	.10	20	16	12	14	21	1.1	3.7
15	.09	.13	.10	.10	.10	17	15	12	20	18	1.2	3.3
16	.09	.12	.10	.10	.10	15	13	10	28	16	1.1	3.9
17	.09	.10	.10	.10	.10	20	12	12	24	14	1.0	2.6
18	.09	.10	.10	.10	.10	25	12	15	23	12	.92	5.0
19	.09	.10	.10	.10	.10	30	11	26	22	12	.92	16
20	.09	.10	.10	.10	.10	320	10	44	20	10	.63	29
21	.09	.10	.10	.10	.10	800	10	49	18	9.6	.79	19
22	.11	.12	.10	.10	.10	900	9.3	31	17	9.3	.71	15
23	.11	.12	.10	.10	.10	250	8.6	25	15	12	.67	12
24	.11	.10	.10	.10	.10	140	7.7	21	14	10	.67	10
25	.11	.12	.10	.10	.10	100	7.0	17	15	8.3	.63	8.6
26	.11	.12	.10	.10	.10	140	5.8	16	241	7.7	.56	7.7
27	.11	.14	.10	.10	.10	277	6.4	15	68	6.7	.56	6.7
28	.13	.14	.10	.10	.11	183	6.1	13	28	6.1	.56	6.1
29	.11	.12	.10	.10	---	134	6.4	13	27	6.4	.56	5.3
30	.13	.12	.10	.10	---	120	6.1	16	29	6.7	.52	4.5
31	.11	---	.10	.10	---	135	---	42	---	6.1	.52	---
TOTAL	3.33	3.45	2.94	3.10	2.81	3640.37	677.4	518.4	1162	2255.9	73.72	166.80
MEAN	.11	.12	.095	.10	.10	117	22.6	16.7	38.7	72.8	2.38	5.56
MAX	.21	.14	.12	.10	.11	900	108	49	241	781	8.0	.29
MIN	.09	.10	.06	.10	.10	.12	5.8	6.4	14	6.1	.52	.42
AC-FT	6.6	6.8	5.8	6.1	5.6	7220	1540	1030	2300	4470	146	331
CAL YR 1977	TOTAL	265.61	MEAN	.73	MAX	9.6	MIN	.00	AC-FT	527		
WTR YR 1978	TOTAL	8510.22	MEAN	23.3	MAX	900	MIN	.06	AC-FT	16880		

06177500 REDWATER RIVER AT CIRCLE, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHDS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTJ)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
19...	1000	.09	0	3350	8.4	20.0	7.0	40	10.2	91
NOV										
07...	1600	.11	3	3410	8.6	7.0	6.0	25	11.6	101
DEC										
13...	1000	.10	3	3900	7.9	4.0	.0	4	4.2	32
JAN										
12...	1500	.10	3	3900	7.9	-14.0	.0	3	5.1	38
MAR										
22...	1000	1060	3	336	7.2	7.0	1.0	460	11.9	76
APR										
25...	1200	7.1	3	3000	8.2	14.0	12.0	9	9.8	100
MAY										
09...	1600	15	1	5660	8.4	20.0	14.0	8	10.2	107
JUN										
08...	1500	21	0	3290	8.1	19.0	22.0	10	7.6	95
JUL										
12...	1030	30	3	1980	7.8	22.0	21.0	35	6.4	74
AUG										
09...	1400	2.6	0	3410	8.2	33.0	24.5	15	7.7	100

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT									
19...	3.2	490	0	46	92	660	13	8.9	720
NOV									
07...	3.1	490	0	51	88	670	13	8.0	780
DEC									
13...	1.0	690	0	96	110	700	12	7.6	1000
JAN									
12...	1.1	700	0	97	110	690	11	7.0	950
MAR									
22...	6.0	120	36	24	14	23	.9	6.9	100
APR									
25...	1.6	830	470	100	140	420	6.4	9.7	430
MAY									
09...	1.5	980	560	130	160	560	7.8	13	500
JUN									
08...	1.5	390	0	130	15	440	9.7	12	510
JUL									
12...	2.3	640	350	100	95	240	4.1	12	360
AUG									
09...	1.6	960	480	120	160	530	7.5	13	580

REDWATER RIVER BASIN

06177500 REDWATER RIVER AT CIRCLE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINEITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 19...	39	660	5.1	1200	16	1.7	6.1	2430	3.30
NOV 07...	54	730	3.6	1200	20	1.8	6.3	2480	3.37
DEC 13...	0	820	20	1400	21	2.0	13	2840	3.86
JAN 12...	0	800	20	1300	23	2.1	15	2730	3.71
MAR 22...	0	82	10	91	1.8	.1	5.4	216	.29
APR 25...	0	350	4.3	1300	10	.4	6.2	2200	2.99
MAY 09...	9	430	3.3	1600	13	.5	4.9	2740	3.73
JUN 08...	0	420	6.5	1500	9.9	--	--	--	--
JUL 12...	0	300	9.1	810	6.6	.3	10	1450	1.97
AUG 09...	0	480	5.9	1500	11	.7	7.6	2630	3.58

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 19...	.54	.01	.05	.67	.72	.73	.06	560	30
NOV 07...	.74	.01	.02	.64	.66	.67	.05	550	30
DEC 13...	.77	.03	.53	.18	.71	.74	.02	580	10
JAN 12...	.74	.04	.79	.21	1.0	1.0	.02	540	30
MAR 22...	616	.40	.28	1.3	1.6	2.0	.61	110	140
APR 25...	42.3	.13	.01	.65	.66	.79	.02	450	20
MAY 09...	111	.01	.03	.69	.72	.73	.04	560	20
JUN 08...	--	.02	.01	.79	.80	.82	.01	760	40
JUL 12...	117	.00	.03	.89	.92	.92	.06	470	40
AUG 09...	18.5	.01	.05	.71	.76	.77	.00	720	20

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC 13...	1000	0	--	2	--	0	--	6	--	10
MAR 22...	1000	60	6	2	0	0	0	2	0	0
JUN 08...	1500	0	--	2	--	10	--	4	--	0

06177500 REDWATER RIVER AT CIRCLE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
DEC 13...	--	6	--	--	1	--	60	--	420	--
MAR 22...	19	7	11000	7	0	10	10	430	60	.2
JUN 08...	--	1	--	--	21	--	40	--	40	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 13...	.0	4	--	5	--	0	.0	--	30
MAR 22...	.2	0	13	3	1	0	1.0	40	20
JUN 08...	.1	0	--	20	--	0	.0	--	20

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 19...	1000	7.0	.09	96	.02	96
NOV 07...	1600	6.0	.11	156	.05	99
DEC 13...	1000	.0	.10	100	.03	--
JAN 12...	1500	.0	.10	132	.04	--
MAR 22...	1000	1.0	1060	1300	3720	77
APR 25...	1200	12.0	7.1	124	2.4	69
MAY 09...	1600	14.0	15	130	5.3	90
JUN 08...	1500	22.0	21	157	8.9	--
JUL 12...	1030	21.0	30	100	8.1	--
AUG 09...	1400	24.5	2.6	152	1.1	--
SEP 14...	1000	13.0	3.6	129	1.3	--

REDWATER RIVER BASIN

06177520 HORSE CREEK NEAR CIRCLE, MT

LOCATION.--Lat 47°25'29", long 105°36'54", in NW¼NW¼ sec.9, T.19 N., R.48 E., McCone County, Hydrologic Unit 10060002, at road bridge on Fas 252, 1.0 mi (1.6 km) northwest of Circle and 2.5 mi (4.0 km) upstream from mouth.

DRAINAGE AREA.--101.3 mi² (262.4 km²).

PERIOD OF RECORD.--Water years 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 19...	0805	.03	0	13300	9.0	13.5	7.0	20	10.2	91
MAR 22...	1830	150	0	489	7.4	2.0	.5	110	10.6	80
APR 25...	1100	1.0	0	4900	8.5	14.0	13.0	3	10.5	109
MAY 09...	1300	2.4	0	6700	8.7	17.0	16.0	3	11.0	120
JUN 08...	1230	1.6	0	5500	8.7	18.5	23.0	2	14.6	187
JUL 12...	0900	1.8	0	2510	8.2	21.0	20.0	2	6.0	71
AUG 09...	1130	.27	0	4900	8.6	24.0	23.0	2	5.5	71

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT 19...	7.1	2300	1500	85	510	3200	29	30	760
MAR 22...	5.6	140	55	25	20	45	1.6	6.8	110
APR 25...	2.7	1100	470	120	190	860	11	13	700
MAY 09...	4.2	1400	700	120	270	1300	15	17	760
JUN 08...	1.5	990	350	85	190	1100	15	11	650
JUL 12...	1.7	760	420	74	140	360	5.7	11	410
AUG 09...	2.3	1000	510	41	220	900	12	17	540

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CaCO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SJM DF CONSTI- TUENTS, DIS- SOLVED (MG/L AS SOLVED PER AL-FT)	SOLIDS, DIS- SOLVED (TONS PER AL-FT)
OCT 19...	120	820	1.6	7900	21	.5	.2	12200	16.6
MAR 22...	0	90	7.0	140	1.2	.1	5.8	298	.41
APR 25...	22	610	3.8	2300	7.1	.3	4.2	3860	5.25
MAY 09...	50	710	2.8	3300	7.5	.3	.1	5440	7.40
JUN 08...	66	640	2.5	2600	4.6	--	--	--	--
JUL 12...	0	340	4.1	1100	3.4	.2	2.8	1890	2.57
AUG 09...	32	500	2.4	2400	4.1	.2	.3	3880	5.28

06177520 HORSE CREEK NEAR CIRCLE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

		SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	
DATE											
OCT 19...		.99	.01	.18	3.4	3.6	3.6	.10	300	50	
MAR 22...		121	.49	.25	.64	.89	1.4	.21	130	60	
APR 25...		10.5	.02	.00	.96	.96	.98	.04	1100	30	
MAY 09...		55.3	.01	.01	1.4	1.4	1.4	.08	1600	30	
JUN 08...		--	.08	.01	1.1	1.1	1.2	.00	1900	50	
JUL 12...		9.19	.00	.03	1.1	1.1	1.1	.04	900	50	
AUG 09...		2.83	.04	.10	1.4	1.5	1.5	.02	1400	60	
DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	
MAR 22...	1830	2700	0	5	1	0	0	22	10	0	
JUN 08...	1230	--	0	--	5	--	0	1	--	5	
DATE	TIME	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS Pb)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
MAR 22...	14	1	5900	2	0	9	10	160	80	.0	
JUN 08...	--	1	--	--	10	--	110	--	10	--	
DATE	TIME	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 22...	.0	4	0	10	1	2	0	1.0	30	10	
JUN 08...	.1	--	0	--	1	--	0	.4	--	20	

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 19...	0805	7.0	.03	59	.00	92
MAR 22...	1830	.5	150	173	70	97
APR 25...	1100	13.0	1.0	138	.37	--
MAY 09...	1300	16.0	2.4	111	.72	--
JUN 08...	1230	23.0	1.6	47	20	--
JUL 12...	0900	20.0	1.8	26	.13	--
AUG 09...	1130	23.0	.27	12	.01	--
SEP 13...	1600	13.0	.66	66	.12	--

REDWATER RIVER BASIN

06177825 REDWATER RIVER NEAR VIDA, MT

LOCATION.--Lat 47°54'07", long 105°12'54", in SW¼ sec.24, T.25 N., R.50 E., McCone County, Hydrologic Unit 10060002, on right bank at downstream side of bridge on FAS Highway 201, 400 ft (122 m) downstream from East Redwater River and 13.7 mi (22.0 km) northeast of Vida post office.

DRAINAGE AREA.--1,974 mi² (5,113 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,100 ft (640 m), from topographic map.

REMARKS.--Water-discharge records fair except those for winter periods, which are poor. Diversions for irrigation of about 4,500 acres (18.2 km²) above station and many stock ponds and small reservoirs on upstream tributaries.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,000 ft³/s (113 m³/s) Mar. 21, 1978, gage height, 6.00 ft (1.829 m); maximum gage height, 6.03 ft (1.838 m) June 12, 1976; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 21	2200	*4,000 113	a*6.00 1.829	July 6	0600	1,800 53.2	4.63 1.411

a--from floodmark

No flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JUL	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	1.8	1.2	.00	.00	.00	307	30	269	117	27	4.9
2	1.1	1.9	1.1	.00	.00	.00	288	28	311	116	26	3.5
3	1.1	1.9	1.1	.00	.00	.00	247	27	291	142	21	4.9
4	1.1	1.8	.90	.00	.00	.00	188	24	223	186	21	4.9
5	1.1	1.9	.50	.00	.00	.00	157	23	173	669	21	4.3
6	1.1	1.9	.30	.00	.00	.00	143	24	141	1400	21	3.9
7	1.3	1.9	.20	.00	.00	.00	122	37	124	992	20	3.9
8	1.3	1.9	.20	.00	.00	.10	110	45	104	539	17	4.3
9	1.3	1.9	.10	.00	.00	.40	104	40	100	353	17	3.1
10	1.3	1.9	.50	.00	.00	3.5	100	39	80	270	19	3.5
11	1.3	1.9	.50	.00	.00	6.5	90	34	67	221	16	4.3
12	1.3	1.9	.70	.00	.00	20	100	33	62	161	15	25
13	1.3	1.9	.60	.00	.00	90	75	34	59	170	16	27
14	1.3	1.9	.60	.00	.00	350	68	34	56	151	12	26
15	1.3	2.3	.60	.00	.00	450	64	40	68	138	12	20
16	1.3	2.3	.60	.00	.00	370	55	36	96	126	12	14
17	1.4	2.3	.50	.00	.00	300	53	59	82	115	11	12
18	1.4	2.3	.50	.00	.00	430	53	77	113	102	7.4	14
19	1.4	2.3	.40	.00	.00	1000	53	86	92	96	8.6	76
20	1.4	2.3	.30	.00	.00	1200	50	94	77	86	8.6	136
21	1.5	1.8	.30	.00	.00	1900	46	73	67	77	6.4	136
22	1.5	1.4	.30	.00	.00	2990	43	68	60	57	7.4	89
23	1.6	1.3	.20	.00	.00	1960	43	73	53	45	6.4	75
24	1.6	1.2	.20	.00	.00	1010	43	106	50	41	6.4	63
25	1.5	1.0	.10	.00	.00	609	43	115	48	39	7.4	54
26	1.6	1.2	.10	.00	.00	550	43	96	69	34	5.6	44
27	1.6	1.3	.10	.00	.00	579	36	72	89	32	4.3	37
28	1.6	1.2	.10	.00	.00	718	32	56	84	30	4.3	33
29	1.6	1.3	.10	.00	---	561	32	55	149	27	4.3	28
30	1.8	1.3	.00	.00	---	423	30	102	129	29	4.3	25
31	1.8	---	.00	.00	---	349	---	250	---	27	4.9	---
TOTAL	43.2	53.2	12.70	.00	.00	15869.50	2818	1919	3386	6590	390.3	981.5
MEAN	1.39	1.77	.41	.000	.000	512	93.9	61.9	113	213	12.6	32.7
MAX	1.8	2.3	1.2	.00	.00	2990	307	250	311	1400	27	136
MIN	1.1	1.0	.00	.00	.00	.00	50	23	48	27	4.3	3.1
AC=FT	86	106	25	.00	.00	31480	5590	3810	6720	13070	774	1950
CAL YR 1977 TOTAL	1401.19			MEAN 3.84		MAX 24	MIN .00	AC=FT 2780				
WTR YR 1978 TOTAL	32063.40			MEAN 87.8		MAX 2990	MIN .00	AC=FT 63600				

06177825 REDWATER RIVER NEAR VIDA, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEDUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 20...	1645	1.4	1	2880	8.5	14.5	9.5	35	9.7	92
NOV 07...	1300	2.0	3	3050	8.5	9.0	5.5	15	9.4	80
DEC 12...	1430	.66	0	4050	8.2	5.0	.0	4	9.2	69
MAR 22...	1500	2830	0	430	7.7	7.0	2.0	360	11.4	90
APR 28...	1130	32	3	2560	8.5	12.0	13.5	9	9.2	96
MAY 10...	1230	38	3	2720	8.4	18.0	15.0	9	9.0	97
JUN 09...	1200	92	0	3310	8.4	21.0	24.0	25	7.6	99
JUL 13...	1230	175	0	1650	6.2	26.0	20.5	60	7.7	93
AUG 10...	1230	17	0	2620	8.5	30.0	25.0	35	6.6	87
SEP 15...	1300	19	0	2450	8.7	22.0	5.0	7	9.2	78

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT 20...	1.4	370	0	38	67	540	12	8.9	590
NOV 07...	1.0	410	0	39	75	580	13	8.4	630
DEC 12...	.8	640	0	74	110	840	14	12	1020
MAR 22...	5.0	110	12	21	14	49	2.0	7.0	120
APR 28...	.6	500	25	67	81	440	8.6	8.6	550
MAY 10...	1.0	510	3	69	81	490	9.5	11	570
JUN 09...	1.9	760	340	91	130	500	7.9	11	510
JUL 13...	2.1	410	130	70	58	240	5.1	11	350
AUG 10...	1.8	490	41	58	85	480	9.4	11	510
SEP 15...	1.8	440	0	46	80	480	9.9	11	480

REDWATER RIVER BASIN

06177825 REDWATER RIVER NEAR VIDA, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 20...	30	530	3.3	970	7.7	.6	3.8	1960	2.67
NOV 07...	28	560	3.5	1100	14	.6	3.3	2160	2.94
DEC 12...	0	840	10	1600	23	.8	10	3170	4.31
MAR 22...	0	98	3.8	110	3.8	.1	5.1	270	.37
APR 28...	15	480	2.9	930	9.7	.6	6.4	1830	2.49
MAY 10...	21	500	3.9	1000	11	.6	5.1	1970	2.68
JUN 09...	0	420	3.2	1300	12	.4	6.1	2300	3.13
JUL 13...	0	290	3.5	590	7.8	.3	11	1160	1.58
AUG 10...	21	450	2.8	1000	10	.6	9.8	1930	2.62
SEP 15...	32	450	1.7	990	14	.6	8.0	1900	2.58

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 20...	7.41	.01	.06	.50	.56	.57	.06	330	50
NOV 07...	11.7	.01	.01	.54	.55	.56	.03	330	20
DEC 12...	5.65	.05	.19	.16	.35	.40	.02	420	10
MAR 22...	2060	.45	.28	2.0	2.3	2.8	.50	90	120
APR 28...	158	.08	.05	.56	.61	.69	.04	280	40
MAY 10...	202	.01	.01	.85	.86	.87	.05	290	20
JUN 09...	571	--	--	--	--	--	.04	540	30
JUL 13...	548	.01	.03	1.1	1.1	1.1	.09	280	100
AUG 10...	89.1	.03	.07	.76	.83	.86	.03	420	20
SEP 15...	97.5	.01	.01	.69	.70	.71	.03	350	20

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC 12...	1430	10	--	1	--	0	--	1	--	0
MAR 22...	1500	80	4	600	0	0	1	8	20	0
JUN 09...	1200	20	--	3	--	10	--	3	--	10
SEP 15...	1300	10	--	3	--	0	--	4	--	10

06177825 REDWATER RIVER NEAR VIDA, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
DEC 12...	--	5	--	--	1	--	90	--	80	--
MAR 22...	23	3	14000	14	2	20	10	410	60	.0
JUN 09...	--	2	--	--	20	--	60	--	20	--
SEP 15...	--	2	--	--	29	--	60	--	0	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 12...	.0	3	--	4	--	0	.0	--	20
MAR 22...	.1	3	14	1	8	0	1.0	110	20
JUN 09...	.1	4	--	0	--	0	.0	--	20
SEP 15...	.1	5	--	0	--	0	5.0	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
ULT 20...	1645	9.5	1.4	126	.48	99
NOV 07...	1300	5.5	2.0	54	.29	97
DEC 12...	1430	.0	.66	102	.18	--
MAR 22...	1500	2.0	2830	1140	8710	--
APR 28...	1130	13.5	32	145	13	86
MAY 10...	1230	15.0	38	158	16	98
JUN 09...	1200	24.0	92	150	37	--
JUL 13...	1230	20.5	175	103	49	98
AUG 10...	1230	25.0	17	134	6.2	--
SEP 15...	1300	5.0	19	96	4.9	--

POPLAR RIVER BASIN

06178000 POPLAR RIVER AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 48°59'30", long 105°41'40", in SE¼ sec.6, T.37 N., R.46 E., Daniels County, Hydrologic Unit 10060003, on left bank 0.5 mi (0.8 km) south of international boundary, 1.5 mi (2.4 km) upstream from Coal Creek, and 18.5 mi (29.8 km) northwest of Soby, Mt.

DRAINAGE AREA.--362 mi² (938 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1931 to current season (seasonal records only for most seasons). 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.

GAGE.--Water-stage recorder and concrete control since September 1977. Altitude of gage is 2,460 ft (750 m), from topographic map.

REMARKS.--Water discharge records good except those for winter period, which are poor. A few small diversions for irrigation above 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 ft³/s (360 m³/s) Apr. 6, 1954, gage height, 10.25 ft (3.124 m), from floodmark, from rating curve extended above 2,500 ft³/s (70.8 m³/s) on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES FOR CURRENT SEASON.--Maximum discharge, 869 ft³/s (24.6 m³/s) Mar. 31, gage height, 5.64 ft (1.719 m); maximum gage height, 6.46 ft (1.969 m) Mar. 22 (backwater from ice); no flow Mar. 1-8.

DISCHARGE, IN CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY 1978 TO DECEMBER 1978
MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			.00	709	20	17	291	1.0	.11	6.4		
2			.00	370	19	16	92	1.0	.07	5.9		
3			.00	171	18	16	35	.75	.08	5.9		
4			.00	100	17	14	24	.60	.09	6.9		
5			.00	67	17	12	31	.57	.10	6.9		
6			.00	56	22	11	53	.40	.10	6.9		
7			.00	65	39	11	42	.24	.10	6.4		
8			.00	69	52	10	31	.10	.12	5.9		
9			.30	53	56	9.2	22	.11	.12	5.9		
10			9.8	40	40	8.7	17	.10	.12	5.9		
11		39		34	34	6.4	34	.10	14	5.4		
12		36		31	45	9.5	34	.10	36	5.0		
13		45		35	47	9.4	21	.11	45	5.0		
14		48		36	36	8.3	16	.13	31	5.0		
15		39		34	28	8.0	13	.19	21	5.4		
16		46		31	24	6.9	10	.21	16	5.4		
17		35		30	23	5.8	9.3	.21	11	5.4		
18		78		30	26	4.8	9.3	.16	10	5.9		
19		253		35	29	6.4	9.9	.14	22	6.4		
20		449		32	27	8.2	8.8	.16	22	6.4		
21		707		30	22	7.7	7.6	.16	19	6.4		
22		697		29	18	7.8	6.5	.21	14	5.9		
23		471		26	18	24	5.5	.14	11	5.9		
24		271		24	17	21	4.7	.11	9.3	5.9		
25		256		23	15	17	3.5	.11	8.8	5.4		
26		461		22	15	28	2.3	.12	7.8	5.4		
27		722		21	14	18	1.9	.13	6.9	5.4		
28		508		20	13	14	1.4	.11	6.9	5.0		
29		466		20	12	9.4	1.4	.10	6.9	5.0		
30		541		20	12	9.7	1.3	.10	6.4	5.4		
31		807		---	16	---	1.1	.10	---	5.4		
TOTAL		6985.10		2263	793	357.2	840.5	7.79	324.01	179.4		
MEAN		225		75.4	25.6	11.9	27.1	.25	10.8	5.79		
MAX		807		709	56	28	291	1.0	43	6.9		
MIN		.00		20	12	4.8	1.1	.10	.07	5.0		
AC-FT		13850		4490	1570	709	1670	15	643	356		

THE SEASON MARCH TO OCTOBER

AC-FT

23,310

06178000 POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-65, 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
18...	1600	4.1	--	1120	8.3	20.5	10.0	15	11.2	109
NOV										
08...	1100	4.9	0	1120	8.6	-1.0	1.0	8	11.8	91
DEC										
15...	1200	1.6	3	1500	8.0	.0	.5	3	9.5	72
JAN										
10...	1530	.22	0	1690	7.6	-20.0	.5	4	11.2	85
MAR										
24...	1500	264	2	275	7.7	3.5	.5	25	11.4	86
APR										
20...	1100	33	--	786	8.3	3.0	4.5	2	9.5	79
MAY										
25...	1600	15	2	1260	8.6	20.0	20.0	1	9.6	116
JUN										
13...	1100	9.2	--	1260	8.4	21.5	17.5	3	8.3	95
JUL										
18...	1530	9.3	2	1090	8.4	16.0	19.0	7	9.1	107
AUG										
16...	1140	.22	2	1570	8.2	22.0	19.0	8	5.2	60
SEP										
21...	1200	19	0	1110	8.3	13.5	10.0	10	8.5	82

DATE	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT										
18...	K35	K47	320	0	48	48	160	3.9	7.7	560
NOV										
06...	K6	K30	320	0	50	47	170	4.1	7.1	570
DEC										
15...	K12	K28	390	0	67	54	240	5.3	8.8	790
JAN										
10...	<1	K6	310	0	55	42	270	6.7	6.9	700
MAR										
24...	K13	<1	91	1	21	9.3	23	1.1	9.5	110
APR										
20...	<1	<1	290	0	51	40	84	2.1	8.2	440
MAY										
25...	<1	53	390	0	50	64	180	4.0	10	660
JUN										
13...	<1	92	330	0	40	55	200	4.8	9.6	620
JUL										
18...	<1	270	310	0	47	46	170	4.2	9.4	560
AUG										
16...	270	320	270	0	40	41	290	7.7	8.8	720
SEP										
21...	--	--	260	0	41	38	180	4.9	9.9	480

POPLAR RIVER BASIN

06178000 POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued
 WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CU3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLOO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)		
OCT											
18...	0	4.5	180	6.7	.5	6.4	734	1.00	8.13		
NOV											
08...	1	2.3	180	5.9	.6	7.3	751	1.02	9.94		
DEC											
15...	0	13	240	9.2	.7	16	1030	1.40	4.45		
JAN											
10...	0	28	310	12	.6	17	1060	1.44	.63		
MAR											
24...	0	3.5	37	2.1	.1	7.3	164	.22	117		
APR											
20...	0	3.5	100	3.4	.3	11	515	.70	45.9		
MAY											
25...	14	2.8	190	4.4	.3	8.8	848	1.15	34.3		
JUN											
13...	9	4.1	190	4.7	.4	1.5	817	1.11	20.3		
JUL											
18...	30	4.0	160	5.2	.5	11	757	1.03	19.0		
AUG											
16...	0	7.3	300	10	.6	6.9	1050	1.43	.62		
SEP											
21...	0	3.8	230	5.7	.3	12	755	1.03	38.7		
DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)		
OCT											
18...	.00	.02	.36	.38	.38	.04	.01	1000	30		
NOV											
08...	.01	.01	.29	.30	.31	.02	.00	1000	50		
DEC											
15...	.04	.15	.69	.84	.68	.02	.02	1300	20		
JAN											
10...	.05	.50	1.3	1.8	1.9	.04	.02	1400	20		
MAR											
24...	.41	.06	1.3	1.4	1.8	.23	.09	190	100		
APR											
20...	.04	.01	.29	.30	.34	.04	.02	460	120		
MAY											
25...	.01	.01	1.1	1.1	1.1	.02	.01	1100	80		
JUN											
13...	.01	.04	.71	.75	.76	.02	.01	1100	20		
JUL											
18...	.00	.00	.98	.98	.98	.09	.02	1300	110		
AUG											
16...	.00	.00	.71	.71	.71	.07	.01	1700	10		
SEP											
21...	.00	.01	.98	.99	.99	.10	.04	1100	110		
DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC											
15...	1200	0	0	2	0	0	0	0	0	0	10
MAR											
24...	1300	1000	10	2	1	0	0	12	0	10	0
JUN											
13...	1100	--	0	--	2	--	0	--	1	--	0
SEP											
21...	1200	--	10	--	5	--	0	--	0	--	0

06178000 POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued
 WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
DEC 15...	2	0	400	3	0	120	110	60	60	.0
MAR 24...	4	0	1200	8	2	10	20	30	20	.0
JUN 13...	--	2	--	--	3	--	100	--	20	--
SEP 21...	--	3	--	--	0	--	90	--	10	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 15...	.0	2	1	8	2	0	0	.1	30	10
MAR 24...	.0	4	0	5	0	2	0	2.0	20	10
JUN 13...	.0	--	3	--	3	--	0	.0	--	20
SEP 21...	.0	--	2	--	2	--	0	2.3	--	0

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDIM- ENT, SUS- PENDED (MG/L)	SEDIM- ENT DIS- CHARGE, SUS- PENDED (1/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 18...	1600	10.0	4.1	81	.90	98
NOV 08...	1100	1.0	4.9	48	.64	75
DEC 15...	1200	.5	1.6	96	.41	--
MAR 24...	1300	.5	264	44	31	93
APR 20...	1100	4.5	33	25	2.2	--
MAY 25...	1600	20.0	15	22	.89	--
JUN 13...	1100	17.5	9.2	36	.89	--
JUL 18...	1530	19.0	9.3	32	.80	--
AUG 16...	1140	18.0	.22	62	.04	--
SEP 21...	1200	10.0	19	16	.82	--

POPLAR RIVER BASIN

06178150 POPLAR RIVER NEAR SCOBEEY, MT

LOCATION.--Lat 48°52'23", long 105°29'50", in NE&SE& sec.13, T.36 N., R.47 E., Daniels County, Hydrologic Unit 10060004, 200 ft (61 m) upstream from county road crossing, approximately 6 mi (10 km) upstream from mouth and 6.4 mi (10.3 km) northwest of Scobey.

DRAINAGE AREA.--572 mi² (1,480 km²).

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WFO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTJ)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
17...	1500	0.5	0	1420	8.6	15.0	8.5	30	10.4	96
NOV										
07...	1500	8.2	3	1340	8.4	10.0	3.5	20	10.0	86
DEC										
14...	1430	6.0	2	1850	8.1	2.0	.5	4	9.2	69
JAN										
09...	1500	5.1	3	1740	7.7	-23.0	.0	4	8.4	63
MAR										
25...	1100	300	2	230	7.8	-2.0	.5	35	10.8	82
APR										
26...	1330	34	0	860	8.4	17.0	12.0	10	10.6	107
MAY										
26...	1000	29	2	1170	8.5	16.0	17.5	30	7.6	85
JUN										
13...	1430	14	2	1190	8.5	22.0	18.5	30	7.6	87
JUL										
18...	1930	16	2	1000	8.5	14.0	21.0	30	7.6	93
AUG										
16...	1510	1.9	2	1300	8.6	24.5	20.5	20	7.8	94
SEP										
21...	1530	30	0	790	8.2	22.0	12.0	120	6.3	84

DATE	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-WF (COLS./ 100 ML)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT										
17...	K6	K3	270	0	38	42	260	6.9	7.9	610
NOV										
07...	<1	K46	280	0	41	43	240	6.2	7.7	590
DEC										
14...	K4	K27	460	0	77	66	310	6.3	11	950
JAN										
09...	K2	K12	370	0	62	52	290	6.6	8.5	840
MAR										
25...	K10	<1	75	0	16	8.5	18	.9	8.5	110
APR										
26...	<1	<1	270	0	46	37	100	2.6	7.5	440
MAY										
26...	--	--	390	0	57	59	180	4.0	9.8	620
JUN										
13...	<1	110	360	0	45	59	180	4.2	8.9	590
JUL										
18...	<1	80	270	0	44	38	150	4.0	9.0	490
AUG										
16...	200	K27	230	0	33	36	230	6.6	9.8	560
SEP										
21...	--	--	130	0	22	19	140	5.3	8.9	310

POPLAR RIVER BASIN

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06178150 POPLAR RIVER NEAR SCOBEEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CU3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLOR- IDE, DIS- SOLVED (MG/L AS CL)	FLUOR- IDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)
OCT 17...	24	2.6	250	6.2	.6	4.0	935	1.27	16.4
NOV 07...	12	3.9	250	9.9	.6	5.4	902	1.23	20.0
DEC 14...	0	12	320	13	.8	14	1280	1.74	20.7
JAN 09...	0	27	310	15	.7	18	1170	1.59	16.1
MAR 25...	0	2.8	23	2.1	.1	7.1	138	.19	112
APR 26...	9	2.9	100	4.6	.4	11	535	.73	49.1
MAY 26...	19	3.3	240	5.4	.4	9.0	886	1.21	69.4
JUN 13...	5	3.0	220	6.3	.5	5.3	822	1.12	31.1
JUL 18...	33	2.8	110	5.0	.4	15	647	.88	28.0
AUG 16...	24	2.4	200	8.9	.6	9.6	830	1.13	4.26
SEP 21...	0	3.1	160	6.3	.2	8.0	518	.70	42.0

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 17...	.04	.09	.50	.59	.63	.06	.01	1500
NOV 07...	.01	.01	.56	.57	.58	.04	.00	1400
DEC 14...	.04	.13	.48	.61	.65	.02	.02	1800
JAN 09...	.11	.33	.47	.80	.91	.05	.02	1600
MAR 25...	.45	.13	2.1	2.2	2.7	.27	.10	170
APR 26...	.00	.03	.51	.54	.54	.05	.00	560
MAY 26...	.01	.04	1.3	1.3	1.3	.04	.01	1100
JUN 13...	.00	.01	.84	.85	.85	.02	.00	1100
JUL 18...	.01	.03	1.7	1.7	1.7	.11	.02	1200
AUG 16...	.01	.03	.90	.93	.94	.08	.01	1600
SEP 21...	.11	.21	1.3	1.5	1.6	.25	.05	810

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC 14...	1430	100	20	2	1	0	0	1	1	0	0
MAR 25...	1100	1300	130	2	2	0	0	15	6	10	0
JUN 13...	1430	--	10	--	3	--	5	--	1	--	10
SEP 21...	1530	--	70	--	5	--	0	--	1	--	0

POPLAR RIVER BASIN

06178150 POPLAR RIVER NEAR SCOBEEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
DEC 14...	1	0	740	8	2	140	140	50	40	.0
MAR 25...	4	5	1500	7	1	9	10	40	20	.0
JUN 13...	--	2	--	--	4	--	100	--	0	--
SEP 21...	--	6	--	--	0	--	60	--	0	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 14...	.0	2	2	6	3	0	0	.0	20	10
MAR 25...	.0	4	2	4	2	0	0	2.0	20	20
JUN 13...	.0	--	3	--	2	--	0	1.0	--	20
SEP 21...	.1	--	1	--	3	--	0	5.0	--	0

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 17...	1500	8.5	6.5	82	1.4	97
NOV 07...	1500	3.5	8.2	92	2.0	97
DEC 14...	1430	.5	6.0	96	1.6	--
JAN 09...	1500	.0	5.1	77	1.1	--
APR 26...	1330	12.0	34	65	6.0	--
MAY 26...	1000	17.5	29	144	11	--
JUN 13...	1430	18.5	14	104	3.9	--
JUL 18...	1930	21.0	16	68	2.9	--
SEP 21...	1530	12.0	30	119	9.6	--

06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'00", long 105°24'30", in SW¼ sec.3, T.1, R.26 W., second meridian, Hydrologic Unit 10060003, on left bank 10 ft (3 m) north of international boundary, 400 ft (122 m) southwest of Canadian East Poplar Port of Entry, 20 mi (32 km) upstream from mouth, and 14 mi (23 km) north of Scobey, Mt.

DRAINAGE AREA.--534 mi² (1,383 km²).

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. WSP 1729: Drainage area.

GAGE.--Water-stage recorder, and concrete control since July 1978. Rock and concrete control used July, 1968 to July 1978. Datum of gage is 2,410.92 ft (734.848 m) National Geodetic Vertical Datum of 1929. (International Boundary Survey Datum). Prior to Oct. 5, 1963, water-stage recorder at site 80 ft (24.4 m) upstream at same datum.

REMARKS.--Water-discharge records good except those for winter periods and June 14 to July 19, which are poor. Several diversions for irrigation above 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 discharge, 4,020 ft³/s (114 m³/s) Apr. 23, 1975, gage height, 12.01 ft (3.661 m); maximum gage height, 12.8 ft (3.90 m) Mar. 25, 1943, from floodmark (backwater from ice); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 7.0 ft³/s (0.20 m³/s) July 4, but may have been higher during period June 14 to July 19; no flow part of July 20 (due to filling of gage pool after construction of weir).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	2.1	2.1	1.8	1.5	1.5	2.8	2.6	3.0	3.0	2.2	1.7
2	2.0	2.3	2.0	1.8	1.5	1.5	2.7	2.6	3.0	3.0	2.1	1.7
3	2.1	2.1	2.0	1.8	1.5	1.5	2.8	2.8	2.7	4.0	2.0	1.8
4	1.9	2.1	1.9	1.8	1.6	1.5	2.8	2.7	2.5	7.0	2.0	2.1
5	1.9	2.1	1.9	1.8	1.7	1.5	3.2	2.7	2.5	5.0	2.0	2.1
6	1.7	2.2	1.9	1.8	1.7	1.5	3.0	2.9	2.6	4.0	2.0	2.0
7	2.1	2.2	1.9	1.8	1.7	1.5	2.4	3.2	2.6	3.5	2.1	1.9
8	2.1	2.2	1.8	1.6	1.7	2.0	2.5	3.9	2.5	3.5	1.9	2.1
9	2.3	2.1	1.8	1.6	1.7	3.0	3.0	3.0	2.4	3.0	1.9	2.1
10	2.2	2.2	1.8	1.8	1.7	4.1	2.5	2.9	2.4	2.8	1.9	2.1
11	1.7	2.3	1.6	1.8	1.7	4.7	3.3	3.0	2.5	2.6	1.9	2.2
12	2.0	2.3	1.8	1.8	1.7	5.5	2.5	3.4	2.4	2.5	1.9	3.3
13	2.2	2.3	2.0	1.8	1.7	4.7	2.5	3.0	2.3	2.5	1.9	3.7
14	2.1	2.3	2.0	1.8	1.7	4.3	2.7	2.8	2.4	2.4	1.9	3.5
15	2.0	2.4	1.8	1.7	1.5	3.5	2.4	2.8	2.4	2.4	1.9	2.9
16	2.3	2.2	1.7	1.6	1.5	3.0	2.5	3.0	2.4	2.4	2.0	2.7
17	2.1	2.2	1.7	1.5	1.5	2.7	2.8	3.2	2.5	2.4	2.0	2.5
18	2.1	2.3	1.5	1.5	1.5	3.0	3.0	3.2	2.5	2.0	2.0	2.7
19	2.2	2.2	1.5	1.5	1.5	3.7	2.7	3.1	2.6	.80	1.9	3.9
20	2.3	2.1	1.5	1.5	1.5	4.5	2.5	2.8	4.0	1.4	2.0	3.2
21	2.2	1.9	1.5	1.6	1.7	5.5	2.5	2.8	5.0	1.9	2.0	2.8
22	2.1	1.8	1.7	1.8	1.8	6.2	2.8	2.9	5.5	2.1	2.1	2.7
23	2.1	2.0	1.7	1.8	1.8	5.9	2.9	3.1	6.0	2.1	2.1	2.3
24	2.1	2.0	1.7	1.8	1.8	5.0	2.7	3.0	6.2	2.2	2.1	1.6
25	2.2	2.0	1.8	1.6	1.5	3.7	2.6	2.8	6.5	2.2	2.0	2.1
26	2.1	2.1	1.8	1.5	1.5	3.9	2.5	3.0	6.9	2.1	2.1	1.9
27	2.1	2.2	1.8	1.5	1.5	4.1	2.6	2.8	6.9	2.0	1.9	1.4
28	2.1	2.2	1.8	1.5	1.5	4.1	2.7	2.8	6.9	2.2	2.0	1.5
29	2.1	2.5	1.8	1.5	---	4.3	2.7	2.8	6.5	2.1	2.1	2.1
30	2.2	3.0	1.8	1.5	---	4.5	2.6	3.2	4.0	2.3	1.9	1.6
31	2.2	---	1.8	1.5	---	4.3	---	3.7	---	2.2	1.6	---
TOTAL	65.0	65.9	55.6	51.7	45.2	110.7	81.2	92.5	112.6	83.60	61.6	70.2
MEAN	2.10	2.20	1.79	1.67	1.61	3.57	2.71	2.98	3.75	2.70	1.99	2.34
MAX	2.3	3.0	2.1	1.8	1.8	6.2	3.3	3.9	6.9	7.0	2.2	3.9
MIN	1.7	1.8	1.5	1.5	1.5	1.5	2.3	2.6	2.3	.80	1.8	1.4
AC-FT	129	131	110	103	90	220	161	183	223	166	122	139
CAL YR 1977	TOTAL	1579.90	MEAN 4.33	MAX 58	MIN 1.3	AC-FT 3130						
WTR YR 1978	TOTAL	895.80	MEAN 2.45	MAX 7.0	MIN .80	AC-FT 1780						

POPLAR RIVER BASIN

06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-65, 1975 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: June 1975 to current year.

INSTRUMENTATION.--Temperature recorder since June 17, 1975.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 29.5°C July 6, 1975, July 25, 26, 1978; minimum, 0.0°C on many days during winter period.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum recorded, 29.5°C July 25, 26; minimum, 0.0°C on many days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (JTJ)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)
OCT												
20...	1200	2.3	3	1360	8.1	7.0	8.0	12	9	9.7	89	K3
NOV												
10...	1000	2.0	3	1440	8.1	3.0	2.5	9	6	12.9	104	<1
DEC												
13...	1130	2.1	0	1370	7.3	-9.0	.5	5	3	5.0	38	<1
JAN												
11...	1600	1.9	0	1420	7.3	-20.0	.5	5	3	5.2	39	K8
FEB												
16...	1200	1.5	0	1350	7.3	-1.0	.0	4	4	3.2	24	K3
19...	1600	1.5	3	1490	7.2	-4.5	.0	--	3	--	--	--
20...	1000	1.5	--	--	--	--	--	--	--	--	--	--
MAR												
28...	1530	4.0	3	955	7.5	10.0	1.5	17	10	12.5	97	--
APR												
19...	1300	2.8	2	1350	8.3	3.0	6.5	8	7	11.2	98	<1
MAY												
25...	1100	2.7	0	1480	8.1	20.0	19.0	8	6	5.3	62	K35
JUN												
15...	2000	2.4	0	1390	8.3	20.5	20.5	6	4	9.2	111	<1
JUL												
20...	1100	1.3	0	1340	8.3	22.0	19.0	5	5	7.4	86	250
AUG												
17...	1200	2.1	2	1380	8.3	16.0	19.5	7	7	7.6	89	<1
SEP												
20...	1300	3.3	0	1400	8.3	10.5	9.0	25	4	10.7	100	--

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT											
20...	<1	370	0	64	51	190	4.3	7.5	630	0	240
NOV											
10...	<1	400	0	77	50	220	4.8	8.0	690	0	270
DEC											
13...	K14	390	0	81	46	190	4.2	7.6	690	0	260
JAN											
11...	K4	390	0	81	46	190	4.2	8.1	690	0	270
FEB											
16...	K4	380	0	79	45	180	4.0	7.3	660	0	230
19...	--	390	0	82	46	190	4.2	7.5	670	0	240
20...	--	--	--	--	--	--	--	--	--	--	--
MAR											
28...	--	260	0	54	31	130	3.5	6.3	420	0	180
APR											
19...	<1	360	0	65	49	210	4.8	8.0	600	0	280
MAY											
25...	83	340	0	57	49	240	5.6	8.9	660	0	270
JUN											
15...	K24	370	0	65	50	220	5.0	8.5	610	0	320
JUL											
20...	110	350	0	55	51	220	5.1	7.9	580	0	300
AUG											
17...	150	340	0	50	52	200	4.7	8.6	530	10	290
SEP											
20...	--	360	0	63	48	220	5.1	7.9	610	0	310

06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)
OCT 20...	5.7	.4	12	883	1.20	5.48	.07	.22	1.2	1.4	1.5
NOV 10...	5.6	.4	13	986	1.34	5.32	.09	.44	.21	.65	.74
DEC 13...	5.0	.4	17	949	1.29	5.38	.28	.90	.00	.84	1.1
JAN 11...	5.6	.4	20	963	1.31	4.94	.16	1.2	.00	1.0	1.2
FEB 16...	5.1	.4	16	890	1.21	3.60	.11	.73	.15	.88	.99
19...	15	.4	17	931	1.27	3.77	.14	.94	.06	1.0	1.1
20...	--	--	--	--	--	--	--	--	--	--	--
MAR 28...	4.1	.2	9.5	624	.85	6.74	.13	.47	.37	.84	.97
APR 19...	6.1	1.3	9.2	926	1.26	7.00	.13	.17	.59	.76	.89
MAY 25...	5.8	.3	5.6	964	1.31	7.03	.01	.04	.93	.97	.98
JUN 15...	5.7	.3	10	982	1.34	6.36	.01	.14	.61	.75	.76
JUL 20...	5.9	.3	12	940	1.28	3.30	.00	.00	.97	.97	.97
AUG 17...	6.3	.3	8.6	889	1.21	5.04	.02	.02	.50	.52	.54
SEP 20...	6.3	.2	9.0	967	1.32	8.62	.07	.04	.59	.63	.70
DATE	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P)	OIL AND GREASE, TOTAL RECOVERABLE GRAVIMETRIC (MG/L)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, INORGANIC TOTAL (MG/L AS C)	CHLOROPHYLL A PHYTOPLANKTON, UNCORR. (UG/L)	CHLOROPHYLL B PHYTOPLANKTON, UNCORR. (UG/L)	CHLOROPHYLL C PHYTOPLANKTON, UNCORR. (UG/L)	CHLOROPHYLL D PHYTOPLANKTON, UNCORR. (UG/L)
OCT 20...	.03	.01	--	1900	20	--	--	--	--	--	--
NOV 10...	.01	.00	--	2000	30	--	--	--	--	--	--
DEC 13...	.02	.00	--	1800	20	3.2	111	--	--	--	--
JAN 11...	.02	.03	--	1900	60	--	--	--	--	--	--
FEB 16...	.02	.00	--	1800	100	--	--	--	--	--	--
19...	.02	--	0	1800	60	--	--	--	--	--	--
20...	--	--	0	--	--	--	--	--	--	--	--
MAR 28...	.05	.00	--	1100	60	5.1	81	--	--	--	--
APR 19...	.05	.02	--	1800	30	--	--	--	--	--	--
MAY 25...	.04	.01	--	2000	90	--	--	--	--	--	--
JUN 15...	.02	.00	--	2000	0	6.0	110	--	--	--	--
JUL 20...	.04	.00	--	1900	30	--	--	--	--	4.27	.322
AUG 17...	.05	.01	--	2000	<10	--	--	--	--	--	--
SEP 20...	.03	.02	--	1800	50	1.8	120	2.20	.743	--	--

06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC 13...	1130	--	10	--	2	--	0	--	0	--	0
FEB 19...	1600	0	10	2	2	0	0	3	6	0	0
MAR 28...	1530	--	20	--	3	--	0	--	0	--	0
JUN 15...	2000	--	0	--	4	--	0	--	1	--	10
SEP 20...	1300	--	0	--	5	--	0	--	0	--	0

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
DEC 13...	--	2	--	--	2	--	110	--	260	--
FEB 19...	22	22	880	16	29	110	110	260	270	.0
MAR 28...	--	0	--	--	0	--	80	--	150	--
JUN 15...	--	2	--	--	4	--	120	--	10	--
SEP 20...	--	2	--	--	0	--	110	--	20	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, TOTAL RECOV- ERABLE (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 13...	.0	--	0	--	1	--	0	.0	--	10
FEB 19...	.0	2	2	10	2	0	0	.0	10	10
MAR 28...	.0	--	2	--	0	--	8	.0	--	30
JUN 15...	.1	--	2	--	0	--	0	1.0	--	20
SEP 20...	.0	--	2	--	0	--	1	.5	--	0

06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	5.5	4.0	4.5	1.0	.5	1.0	.5	.5	.5
2	---	---	---	6.0	3.5	4.5	1.0	.5	1.0	1.0	.5	.5
3	---	---	---	5.0	3.0	4.0	1.0	.5	.5	.5	.5	.5
4	---	---	---	4.5	2.5	3.5	1.0	.5	.5	.5	.5	.5
5	---	---	---	4.5	3.0	3.5	.5	.5	.5	.5	.5	.5
6	---	---	---	5.0	3.0	4.0	.5	.5	.5	.5	.5	.5
7	---	---	---	5.0	3.5	4.0	.5	.5	.5	.5	.5	.5
8	---	---	---	3.0	2.0	2.5	.5	.5	.5	.5	.5	.5
9	---	---	---	3.5	2.0	2.5	.5	.5	.5	.5	.5	.5
10	---	---	---	---	2.5	---	.5	.5	.5	.5	.5	.5
11	---	---	---	---	---	---	---	---	---	.5	.5	.5
12	---	---	---	---	---	---	---	---	---	.5	.5	.5
13	---	---	---	---	---	---	---	---	---	.5	.5	.5
14	---	---	---	---	---	---	---	---	---	.5	.5	.5
15	---	---	---	---	---	---	---	---	---	.5	.5	.5
16	---	---	---	---	---	---	---	---	---	.5	.5	.5
17	---	---	---	---	---	---	---	---	---	.5	.5	.5
18	---	---	---	---	---	---	.5	.5	.5	.5	.5	.5
19	---	---	---	---	---	---	.5	.5	.5	.5	.5	.5
20	---	---	---	---	---	---	1.0	.5	.5	.5	.5	.5
21	8.0	5.5	6.5	.0	.0	.0	.5	.5	.5	.5	.5	.5
22	8.5	6.0	7.0	.0	.0	.0	.5	.5	.5	1.0	.5	.5
23	9.0	5.5	7.5	.0	.0	.0	.5	.5	.5	.5	.5	.5
24	9.5	6.5	8.0	.0	.0	.0	.5	.5	.5	.5	.5	.5
25	9.5	7.5	8.5	.0	.0	.0	.5	.5	.5	.5	.5	.5
26	9.5	7.5	8.5	.0	.0	.0	.5	.5	.5	.5	.5	.5
27	8.5	6.0	7.0	1.0	1.0	1.0	.5	.5	.5	.5	.0	.5
28	8.5	6.0	7.0	1.0	1.0	1.0	.5	.5	.5	.5	.5	.5
29	8.5	6.5	7.5	1.0	1.0	1.0	.5	.5	.5	.5	.5	.5
30	8.0	6.0	7.0	1.0	.5	.5	.5	.5	.5	.5	.5	.5
31	6.5	4.5	5.5	---	---	---	.5	.5	.5	.5	.5	.5
MONTH	9.5	4.5	7.5	6.0	.0	2.0	1.0	.5	.5	1.0	.0	.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	.5	.5	.5	.5	.5	.5	---	---	---	15.0	12.0	13.5
2	.5	.0	.5	.5	.5	.5	---	---	---	16.5	11.5	13.5
3	.5	.0	.5	.5	.5	.5	---	---	---	15.5	13.0	14.0
4	.5	.0	.5	1.0	.5	.5	---	---	---	13.0	11.5	12.0
5	.5	.0	.5	.5	.5	.5	---	---	---	14.0	10.5	12.0
6	.5	.5	.5	.5	.5	.5	---	---	---	15.0	11.0	12.5
7	.5	.5	.5	.5	.5	.5	---	---	---	13.0	11.0	12.0
8	.5	.5	.5	.5	.5	.5	---	---	---	14.0	10.0	12.0
9	.5	.5	.5	.5	.5	.5	---	---	---	15.5	10.0	13.0
10	.5	.5	.5	.5	.5	.5	---	---	---	16.0	13.0	14.0
11	.5	.5	.5	1.0	.5	.5	---	---	---	15.0	12.5	13.5
12	.5	.5	.5	1.0	.0	.5	---	---	---	15.5	11.5	13.0
13	.5	.5	.5	.5	.5	.5	---	---	---	17.0	11.0	14.0
14	.5	.5	.5	---	---	---	---	---	---	17.5	13.5	15.5
15	.5	.5	.5	---	---	---	---	---	---	21.0	14.5	18.0
16	.5	.5	.5	---	---	---	---	---	---	18.5	16.0	17.5
17	.5	.5	.5	---	---	---	---	---	---	16.0	12.5	14.0
18	1.0	.5	.5	---	---	---	---	---	---	12.5	11.0	11.5
19	1.0	.5	.5	---	---	---	---	---	---	15.5	10.0	12.5
20	.5	.5	.5	---	---	---	9.5	5.0	7.0	18.0	12.0	15.0
21	.5	.5	.5	---	---	---	8.5	5.0	7.0	20.5	14.0	17.0
22	1.0	.5	.5	---	---	---	8.5	7.0	7.5	23.5	17.0	20.0
23	.5	.5	.5	---	---	---	8.5	7.0	7.5	24.0	18.0	21.0
24	1.0	.5	.5	---	---	---	10.5	7.0	9.0	22.5	18.5	20.5
25	.5	.5	.5	---	---	---	13.0	8.0	10.5	22.5	17.0	19.5
26	.5	.0	.5	1.5	.5	1.0	15.0	10.0	12.5	21.0	16.5	18.5
27	.5	.5	.5	1.5	.5	1.0	15.5	11.0	13.5	21.5	16.5	18.5
28	.5	.5	.5	1.5	.5	1.0	13.5	12.0	12.5	22.0	17.0	19.5
29	---	---	---	3.0	1.0	1.5	14.5	11.0	13.0	21.0	17.5	19.0
30	---	---	---	3.5	1.0	2.0	14.5	11.5	13.0	18.5	11.5	15.0
31	---	---	---	---	---	---	---	---	---	11.5	10.5	11.0
MONTH	1.0	.0	.5	3.5	.0	.5	15.5	5.0	10.5	24.0	10.0	15.0

POPLAR RIVER BASIN

06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	11.5	9.5	10.5	---	---	---	24.0	22.0	23.5	20.5	17.5	19.0
2	17.0	10.5	13.5	---	---	---	21.5	19.5	20.5	21.5	17.0	19.5
3	21.5	14.0	17.5	---	---	---	23.0	18.5	20.5	22.5	18.5	20.0
4	24.5	17.5	21.0	---	---	---	25.0	20.0	22.5	23.0	19.5	21.5
5	24.5	19.0	21.5	---	---	---	26.0	22.0	24.0	22.0	21.0	21.5
6	21.5	16.5	19.5	---	---	---	27.5	23.5	25.0	22.0	20.0	20.5
7	19.5	14.5	17.0	---	---	---	28.0	24.5	26.0	21.0	19.0	20.0
8	22.0	16.0	19.0	---	---	---	27.0	24.0	25.5	21.5	19.0	20.0
9	23.0	18.0	20.5	---	---	---	28.0	24.0	26.0	20.0	17.0	18.5
10	20.5	17.5	19.0	---	---	---	28.5	25.0	26.5	20.5	17.0	19.0
11	19.0	17.0	17.5	---	---	---	27.5	25.0	26.5	19.5	15.0	17.5
12	20.5	15.5	18.0	---	---	---	27.5	24.0	25.5	15.0	12.0	13.0
13	21.5	16.5	19.0	---	---	---	29.0	25.5	27.0	12.0	11.0	11.5
14	---	19.0	---	---	---	---	26.5	25.5	26.0	11.5	10.5	11.0
15	---	---	---	---	---	---	26.5	23.5	25.0	15.0	11.0	12.5
16	---	---	---	---	---	---	24.5	23.0	24.0	14.5	13.0	14.0
17	---	---	---	---	---	---	23.5	17.5	20.5	14.5	11.5	13.0
18	---	---	---	---	---	---	19.0	15.5	17.0	13.0	10.0	12.0
19	---	---	---	---	---	---	19.5	16.0	17.5	10.0	8.5	9.0
20	---	---	---	26.5	22.0	24.0	20.0	17.5	18.5	10.5	8.0	9.5
21	---	---	---	27.0	23.0	24.5	20.0	17.5	18.5	12.0	8.5	10.5
22	---	---	---	28.0	24.5	26.0	19.5	18.0	18.5	13.0	10.5	11.5
23	---	---	---	28.5	24.5	26.5	20.5	17.0	18.5	14.5	11.5	13.0
24	---	---	---	29.0	26.0	27.5	21.0	17.5	19.0	14.0	12.0	13.0
25	---	---	---	29.5	26.0	27.5	21.5	19.0	20.0	16.0	12.0	14.0
26	---	---	---	29.5	26.0	27.5	21.0	19.5	20.0	15.0	13.0	14.0
27	---	---	---	27.5	26.0	26.5	19.5	18.0	18.5	14.5	11.5	13.0
28	---	---	---	26.0	23.5	24.5	19.5	17.0	18.0	13.5	12.0	13.0
29	---	---	---	24.5	22.5	23.5	20.0	16.5	16.5	14.5	12.0	13.0
30	---	---	---	25.5	22.5	24.0	20.0	17.0	16.5	15.0	12.0	13.0
31	---	---	---	25.5	22.5	24.0	19.5	17.5	16.5	---	---	---
MONTH	24.5	9.5	16.0	24.5	22.0	25.5	29.0	15.5	21.5	23.0	6.0	15.0
YEAR	29.5	.0	9.5									

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLW, IN- STANTANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SED- IMENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. & FINE THAN .062 MM
OCT						
20...	1200	8.0	2.3	37	.23	97
NOV						
10...	1000	2.5	2.0	42	.23	81
DEC						
13...	1130	.5	2.1	142	.81	--
MAR						
28...	1530	1.5	4.0	43	.46	82
APR						
19...	1300	6.5	2.8	95	.72	--
MAY						
25...	1100	19.0	2.7	56	.41	--
JUN						
15...	2000	20.5	2.4	54	.35	--
JUL						
20...	1100	19.0	1.3	26	.09	--
AUG						
17...	1200	19.5	2.1	51	.29	--
SEP						
20...	1300	9.0	3.3	309	2.8	--

06179000 EAST FORK POPLAR RIVER NEAR SCOBEEY, MT

LOCATION.--Lat 48°51'08", long 105°25'15", in NE¼NW¼ sec.27, T.36 N., R.48 E., Daniels County, Hydrologic Unit 10060003, on right bank at downstream side of bridge on State Highway 13, 2.5 mi (4.0 km) upstream from mouth, and 4 mi (6 km) north of Scobee.

DRAINAGE AREA.--722 mi² (1,870 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1935 to October 1939 (no winter records some years), June 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,370.47 ft (722.519 m) National Geodetic Vertical Datum of 1929 (International Boundary Survey datum). Apr. 2, 1935 to Oct. 31, 1939, nonrecording gage on downstream side of old bridge 300 ft (91 m) southeast of present site and at present datum. June 6, 1975 to Aug. 7, 1975, nonrecording gage at present site and datum.

REMARKS.--Water-discharge records fair except those for winter period, which are poor. Flow partially regulated by Coronach Dam, located approximately 2 mi (3 km) north of international boundary, after Sept. 18, 1975. A few small diversions for irrigation above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, about 2,930 ft³/s (83.0 m³/s) Mar. 22, 1939, gage height, 9.6 ft (2.93 m), from floodmarks (backwater from ice); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 23, 1975, reached a stage of 6.9 ft (2.10 m), from floodmark, discharge, 3,960 ft³/s (112 m³/s), from rating based on step-backwater analysis at site.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, about 220 ft³/s (6.23 m³/s) Mar. 24; maximum gage height observed, 4.88 ft (1.487 m) Mar. 12 (backwater from ice); minimum daily discharge, 0.28 ft³/s (0.008 m³/s) Jan. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	2.4	1.9	.30	.27	.30	80	6.0	9.6	5.8	1.2	1.9
2	3.2	2.4	1.9	.33	.27	.30	70	5.6	7.8	4.4	.70	2.0
3	3.2	2.4	1.8	.32	.28	.29	76	5.2	6.7	3.4	.97	1.7
4	3.1	2.5	1.8	.31	.29	.30	62	5.0	3.2	11	1.1	1.1
5	3.1	2.5	1.6	.30	.30	.31	52	4.8	4.4	25	1.0	.70
6	2.7	2.2	1.5	.29	.31	.33	44	4.8	3.9	14	.58	.64
7	2.4	2.3	1.4	.28	.31	.40	40	5.6	4.0	9.1	.51	.64
8	2.4	2.3	1.3	.28	.31	.50	29	9.1	4.2	7.1	.49	.59
9	2.4	2.0	1.2	.28	.31	.70	25	10	3.5	6.0	.64	.44
10	2.4	2.0	1.3	.29	.31	2.0	22	6.3	3.4	5.4	1.5	.54
11	2.5	2.4	1.7	.30	.31	15	20	8.8	3.4	4.5	1.6	.96
12	2.4	2.4	1.8	.31	.31	70	21	7.6	3.2	4.6	1.1	11
13	2.2	2.4	1.9	.32	.31	95	16	7.3	2.8	4.6	.72	19
14	4.4	2.4	1.9	.33	.31	80	16	6.4	2.5	4.0	.46	11
15	7.0	2.4	1.5	.32	.30	56	15	5.8	2.4	3.5	.71	7.6
16	2.8	2.5	1.2	.31	.29	36	13	5.8	2.5	3.2	.94	5.8
17	1.5	2.6	1.0	.31	.29	30	12	6.0	2.5	3.4	.68	4.6
18	1.2	2.6	.80	.31	.30	24	12	6.4	2.3	3.7	.77	6.2
19	1.2	2.6	.70	.30	.32	30	12	9.1	2.8	3.9	.71	16
20	1.5	2.5	.62	.31	.32	60	12	7.6	3.9	3.2	.67	11
21	1.5	2.5	.62	.32	.33	110	11	6.4	4.2	2.8	.74	7.6
22	1.6	2.2	.62	.33	.34	160	9.6	5.4	3.2	2.5	1.1	6.2
23	1.7	2.0	.56	.32	.34	200	9.6	5.2	5.0	2.1	1.4	5.6
24	1.8	1.9	.50	.30	.33	220	9.6	5.2	5.8	2.3	1.4	4.6
25	2.0	1.9	.50	.27	.32	200	9.6	4.2	5.0	1.9	1.5	3.5
26	2.1	1.8	.50	.27	.31	180	8.8	4.2	9.6	1.5	1.1	3.5
27	2.1	1.8	.50	.27	.31	150	7.8	4.4	9.6	1.4	1.1	3.2
28	2.1	1.9	.50	.26	.30	130	6.9	3.7	6.9	1.1	1.1	2.9
29	2.0	1.9	.50	.27	---	120	6.9	3.2	5.8	.98	1.1	2.8
30	2.1	2.0	.45	.27	---	100	6.7	3.7	5.2	1.5	1.1	2.5
31	2.2	---	.40	.27	---	90	---	6.1	---	1.4	1.4	---
TOTAL	76.0	68.5	34.47	9.31	8.60	2161.43	735.5	188.9	139.3	149.38	30.31	145.83
MEAN	2.45	2.28	1.11	.30	.31	69.7	24.5	6.09	4.64	4.82	.98	4.86
MAX	7.0	2.6	1.9	.36	.34	220	80	10	9.6	25	1.6	19
MIN	1.2	1.8	.40	.26	.27	.29	6.7	3.2	2.3	.98	.48	.44
AC-FT	151	136	68	18	17	4290	1460	375	276	296	60	289

CAL YR 1977 TOTAL 1841.37 MEAN 5.04 MAX 164 MIN .05 AC-FT 3650
 WTR YR 1978 TOTAL 3747.53 MEAN 10.3 MAX 220 MIN .26 AC-FT 7450

POPLAR RIVER BASIN

06179000 EAST FORK POPLAR RIVER NEAR SCOBAY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1975 to current year.

INSTRUMENTATION.--Temperature recorder since October 14, 1975.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 27.5°C July 15, 1978; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 27.5°C July 15; minimum, 0.0°C on many days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
20...	1500	1.6	3	1460	8.5	12.0	8.5	20	9.6	88
NOV										
10...	1400	2.8	0	1750	8.5	4.0	1.5	10	11.4	88
DEC										
13...	1500	1.9	0	2200	8.1	3.5	.5	15	8.2	62
JAN										
12...	1530	.29	76	2470	7.8	-25.0	.5	9	10.0	76
MAR										
30...	1630	103	2	434	8.0	19.0	2.0	25	9.0	71
APR										
19...	1600	12	0	933	8.3	3.5	7.5	35	8.8	79
MAY										
25...	1000	4.4	2	1440	8.5	14.5	16.5	35	6.6	73
JUN										
15...	1600	2.6	2	1510	8.6	20.0	19.5	35	7.1	84
JUL										
20...	1300	3.3	1	1360	9.0	23.0	20.0	45	7.7	92
AUG										
16...	1630	1.1	2	1520	8.8	25.5	20.0	40	7.4	88
SEP										
21...	1800	7.3	0	1210	8.8	18.0	13.5	40	10.1	105

DATE	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-FE (COLS./ 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TISE RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT										
20...	110	160	300	0	29	55	260	6.5	9.6	610
NOV										
10...	<1	<1	350	0	41	59	270	6.3	11	680
DEC										
13...	<1	240	540	0	65	91	380	7.1	12	1010
JAN										
12...	<1	K420	600	0	98	86	360	6.4	14	1120
MAR										
30...	--	--	130	0	25	16	45	1.7	8.1	180
APR										
19...	K8	K9	260	0	47	35	120	3.2	9.9	400
MAY										
25...	<1	K27	330	0	46	52	240	5.8	11	630
JUN										
15...	<1	K370	310	0	34	54	280	7.0	9.5	620
JUL										
20...	--	370	250	0	27	44	260	7.2	7.9	520
AUG										
16...	K24	400	280	0	30	51	280	7.2	10	580
SEP										
21...	--	--	280	0	30	49	200	5.2	9.3	530

06179000 EAST FORK POPLAR RIVER NEAR SCOBEE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CARBONATE (MG/L AS CO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)
OCT 20...	20	3.3	290	8.1	.3	5.0	980	1.33	4.23
NOV 10...	16	3.6	340	9.0	.4	3.3	1090	1.48	8.24
DEC 13...	0	13	500	11	.5	6.8	1570	2.14	8.05
JAN 12...	0	28	470	14	.5	18	1620	2.20	1.27
MAR 30...	0	2.9	73	2.2	.1	9.6	268	.36	74.5
APR 19...	0	3.2	170	4.9	.2	7.9	593	.81	19.2
MAY 25...	15	3.3	290	7.0	.5	11	985	1.34	11.7
JUN 15...	13	2.6	360	7.0	.4	6.1	1070	1.46	7.51
JUL 20...	19	.9	300	15	.3	5.6	937	1.27	8.35
AUG 16...	32	1.6	340	7.4	.3	5.0	1040	1.41	3.09
SEP 21...	1	1.3	250	7.0	.3	6.0	816	1.11	16.1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHOPHOSPHATE, DIS- SOLVED (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 20...	.01	.04	.71	.75	.76	.08	.00	1900	30
NOV 10...	.01	.04	.78	.82	.83	.06	.00	2000	30
DEC 13...	.08	.16	.50	.66	.74	.04	.05	2700	30
JAN 12...	.24	.36	.84	1.2	1.4	.11	.01	2900	20
MAR 30...	.16	.09	.67	.76	.92	.08	.00	320	230
APR 19...	.07	.06	.76	.82	.89	.10	.01	670	30
MAY 25...	.03	.01	1.4	1.4	1.4	.07	.01	1700	40
JUN 15...	.01	.10	1.2	1.3	1.3	.04	.00	1800	10
JUL 20...	.00	.01	1.4	1.4	1.4	.13	.00	1900	40
AUG 16...	.01	.03	1.4	1.4	1.4	.11	.01	2000	20
SEP 21...	.01	.01	1.1	1.1	1.1	.09	.01	1600	50

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	ALUMINUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE)	BERYLLIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	CHROMIUM, DIS- SOLVED (UG/L AS CR)
DEC 13...	1500	240	20	2	2	0	0	0	3	0	0
MAR 30...	1630	1800	0	2	2	10	10	50	0	10	10
JUN 15...	1600	--	10	--	5	--	0	--	2	--	0
SEP 21...	1800	--	10	--	7	--	0	--	0	--	0

POPLAR RIVER BASIN

06179000 EAST FORK POPLAR RIVER NEAR SCOBEE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS Pb)	LEAD, DIS- SOLVED (UG/L AS Pb)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
DEC 13...	2	1	750	6	6	180	190	60	40	.0
MAR 30...	3	2	1000	15	0	20	20	80	60	.0
JUN 15...	--	3	--	--	4	--	120	--	40	--
SEP 21...	--	3	--	--	0	--	100	--	0	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 13...	.0	2	1	6	2	0	0	.4	20	30
MAR 30...	.0	3	0	3	7	0	0	2.0	20	10
JUN 15...	.1	--	3	--	1	--	0	1.0	--	5
SEP 21...	.1	--	1	--	3	--	0	2.8	--	0

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	9.5	7.5	8.5	5.0	3.5	4.5	.0	.0	.0	.0	.0	.0
2	10.5	7.0	8.5	5.5	3.5	4.5	.0	.0	.0	.0	.0	.0
3	10.0	7.5	9.0	4.0	2.5	3.5	.0	.0	.0	.0	.0	.0
4	8.5	6.5	7.5	3.0	1.5	2.5	.0	.0	.0	.0	.0	.0
5	8.5	5.5	7.0	3.5	1.5	2.5	.0	.0	.0	.0	.0	.0
6	7.0	5.5	6.0	4.0	2.0	3.0	.0	.0	.0	.0	.0	.0
7	6.0	5.5	5.5	3.5	2.5	3.0	.0	.0	.0	.0	.0	.0
8	7.5	5.5	6.5	2.5	1.5	2.0	.0	.0	.0	.0	.0	.0
9	7.0	5.0	6.5	2.0	1.0	1.5	.0	.0	.0	.0	.0	.0
10	5.0	2.5	3.0	2.0	1.0	1.5	.0	.0	.0	.0	.0	.0
11	4.5	2.0	3.0	2.0	.5	1.5	.0	.0	.0	.0	.0	.0
12	7.0	3.0	5.0	3.0	1.0	2.0	.0	.0	.0	.0	.0	.0
13	8.0	6.0	7.0	2.5	1.5	2.0	.0	.0	.0	.0	.0	.0
14	8.0	6.0	7.0	2.5	1.5	2.0	.0	.0	.0	.0	.0	.0
15	8.5	5.5	6.5	2.5	1.5	2.0	.0	.0	.0	.0	.0	.0
16	8.5	5.5	7.0	2.0	1.0	1.5	.0	.0	.0	.0	.0	.0
17	8.0	5.5	7.0	1.5	.5	1.0	.0	.0	.0	.0	.0	.0
18	9.0	5.0	7.0	1.0	.5	.5	.0	.0	.0	.0	.0	.0
19	9.5	6.0	7.5	.5	.0	.5	.0	.0	.0	.0	.0	.0
20	8.5	6.5	7.5	.5	.0	.0	.0	.0	.0	.0	.0	.0
21	7.5	5.0	6.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
22	8.0	5.5	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	8.5	6.0	7.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	8.5	7.0	8.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	9.0	7.0	8.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	9.0	7.5	8.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	7.5	5.5	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	8.0	5.5	7.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	8.0	6.5	7.0	.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
31	6.0	4.5	5.0	--	--	--	.0	.0	.0	.0	.0	.0
MONTH	10.5	2.0	6.5	5.5	.0	1.5	.0	.0	.0	.0	.0	.0

POPLAR RIVER BASIN

06179000 EAST FORK POPLAR RIVER NEAR SCOBEEY, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 20...	1500	8.5	1.6	49	.21	91
NOV 10...	1400	1.5	2.8	43	.33	92
DEC 13...	1500	.5	1.9	136	.70	--
MAR 30...	1630	2.0	103	68	19	95
APR 19...	1600	7.5	12	65	2.1	--
MAY 25...	1000	16.5	4.4	107	1.3	96
JUN 15...	1600	19.5	2.6	132	.93	--
JUL 20...	1300	20.0	3.3	82	.73	--
AUG 16...	1630	20.0	1.1	57	.17	--
SEP 21...	1800	13.5	7.3	59	1.2	--

06179200 POPLAR RIVER ABOVE WEST FORK, NEAR BREDETTE, MT

LOCATION.--Lat 48°33'05", long 105°21'55", in NW¼SW¼SW¼ sec.4, T.32 N., R.49 E., Roosevelt County, Hydrologic Unit 10060004, on county road bridge, 3.8 mi (6.1 km) upstream from mouth, and 4.4 mi (7.1 km) northwest of Bredette.

DRAINAGE AREA (Revised).--1,745 mi² (4,520 km²).

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
19...	1130	17	0	1630	8.2	14.5	7.5	20	9.0	83
NOV										
09...	1100	13	0	1600	8.7	1.5	1.0	6	12.2	94
DEC										
14...	1100	10	3	2040	8.1	5.0	.5	6	9.3	70
JAN										
12...	1100	7.7	3	2300	7.4	-25.0	.5	3	10.4	79
MAR										
25...	1430	796	1	285	8.0	3.0	.5	65	11.3	86
APR										
25...	1400	81	2	988	8.5	16.0	11.0	9	10.1	101
MAY										
23...	1530	72	1	1460	8.5	24.5	23.0	9	8.4	108
JUN										
12...	1630	39	2	1380	8.6	22.5	20.5	10	9.5	116
JUL										
20...	1600	34	2	1170	8.5	22.5	23.0	40	8.8	113
AUG										
15...	1520	8.0	2	1500	8.8	26.5	23.0	30	9.0	115
SEP										
19...	1300	65	60	1420	8.8	8.5	10.0	40	8.9	85

DATE	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT										
19...	K15	K7	270	0	33	46	310	8.2	6.7	680
NOV										
09...	K8	K4	290	0	38	48	300	7.6	8.3	670
DEC										
14...	<1	K8	480	0	81	68	360	7.1	11	970
JAN										
12...	<1	<1	470	0	67	74	400	8.0	11	1010
MAR										
25...	K13	K10	84	0	18	9.5	24	1.1	9.1	130
APR										
25...	<1	<1	260	0	43	37	140	3.8	7.6	440
MAY										
23...	<1	88	340	0	47	53	230	5.5	10	620
JUN										
12...	K6	K24	300	0	37	50	240	6.0	10	560
JUL										
20...	73	K41	240	0	37	36	180	5.1	8.5	510
AUG										
15...	60	170	250	0	24	45	280	7.8	11	580
SEP										
19...	340	980	200	0	27	33	280	8.5	9.1	570

POPLAR RIVER BASIN

06179200 POPLAR RIVER ABOVE WEST FORK, NEAR BREDETTE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)
OCT 19...	0	6.9	320	15	.6	7.7	1080	1.47	49.6
NOV 09...	11	2.2	330	21	.6	7.5	1100	1.50	38.6
DEC 14...	0	12	400	21	.7	9.6	1430	1.94	38.6
JAN 12...	0	64	500	24	.7	13	1590	2.16	33.1
MAR 25...	0	2.1	37	2.5	.1	7.0	172	.23	370
APR 25...	12	2.3	160	7.6	.3	9.6	635	.86	139
MAY 23...	17	3.3	260	9.3	.4	9.7	943	1.28	183
JUN 12...	23	2.4	270	11	.5	7.6	927	1.26	97.6
JUL 20...	18	2.8	170	7.7	.4	14	724	.98	66.5
AUG 15...	24	1.6	300	17	.5	6.5	996	1.35	21.5
SEP 19...	17	1.5	300	4.6	.5	5.2	959	1.30	168

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORPHO, DIS- SOLVED (MG/L AS P)	BURON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 19...	.00	.00	.66	.66	.66	.05	.00	1700	30
NOV 09...	.03	.00	.54	.54	.57	.03	.00	1600	30
DEC 14...	.16	.22	.33	.55	.71	.04	.00	1900	40
JAN 12...	.11	.06	.62	.68	.79	.04	.04	1900	30
MAR 25...	.47	.10	1.1	1.2	1.7	.30	.07	220	130
APR 25...	.02	.01	.74	.75	.77	.05	.01	680	30
MAY 23...	.08	.03	1.2	1.2	1.3	.04	.01	1200	40
JUN 12...	.00	.05	.83	.88	.88	.01	.02	1300	10
JUL 20...	.00	.00	1.1	1.1	1.1	.09	.00	1200	50
AUG 15...	.01	.00	2.3	2.3	2.3	.06	.00	1700	10
SEP 19...	.00	.07	1.1	1.2	1.2	.09	.00	1500	50

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC 14...	1100	120	10	2	2	0	0	1	0	0	0
MAR 25...	1430	2600	190	2	2	0	0	2	3	20	0
JUN 12...	1630	--	0	--	3	--	0	--	0	--	0
SEP 19...	1300	--	50	--	4	--	0	--	1	--	0

06179200 POPLAR RIVER ABOVE WEST FORK, NEAR BREDETTE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
DEC 14...	5	4	450	6	1	140	150	40	40	.0
MAR 25...	7	5	3400	19	4	10	10	100	30	.0
JUN 12...	--	4	--	--	2	--	100	--	5	--
SEP 19...	--	4	--	--	5	--	90	--	0	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 14...	.0	3	2	8	3	0	0	.0	20	20
MAR 25...	.0	4	2	6	4	4	3	2.0	30	20
JUN 12...	.0	--	4	--	5	--	0	.0	--	20
SEP 19...	.0	--	3	--	5	--	0	.0	--	40

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (1/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 19...	1130	7.5	17	85	3.9	97
NOV 09...	1100	1.0	13	59	2.1	96
DEC 14...	1100	.5	10	127	3.4	--
MAR 25...	1430	.5	796	121	260	94
APR 25...	1400	11.0	81	53	12	--
MAY 23...	1530	23.0	72	81	16	--
JUN 12...	1650	20.5	39	84	8.8	--
JUL 20...	1600	23.0	34	68	6.2	--
AUG 15...	1520	23.0	8.0	41	.89	--
SEP 19...	1300	10.0	65	116	20	100

POPLAR RIVER BASIN

06179500 WEST FORK POPLAR RIVER AT INTERNATIONAL BOUNDARY

LOCATION.--Lat 49°00'00", long 106°22'00", in SE¼ sec.5, T.1 N., R.3 W., third meridian, Hydrologic Unit 10060004, at West Poplar River Canadian Customs Post, 100 ft (30.5 m) north of international boundary, 8.0 mi (12.9 km) upstream from Roanwood Coulee, and 10 mi (16 km) north of Opheim.

DRAINAGE AREA.--139 mi² (360 km²).

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 21...	1300	.40	0	1340	8.4	5.0	6.5	10	9.0	81
NOV 11...	1000	.30	0	1600	8.6	-3.0	2.0	--	9.2	74
DEC 12...	1430	.20	--	2540	7.9	-2.0	.5	5	--	--
MAR 30...	1400	959	--	150	7.7	18.0	2.0	130	10.2	82
APR 26...	1600	3.2	0	721	8.5	18.0	14.0	6	11.3	120
MAY 18...	1200	7.8	60	1450	8.5	8.5	10.0	5	9.4	91
JUN 16...	1100	.30	2	1770	8.9	15.5	16.5	5	10.2	116
JUL 16...	1130	3.8	60	1980	8.8	16.0	17.5	3	4.7	54
SEP 22...	1200	.30	0	1280	8.7	15.0	12.5	4	10.0	104

DATE	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT 21...	<1	<1	150	0	21	24	290	10	8.5	650
NOV 11...	<1	<1	--	--	--	--	--	--	--	--
DEC 12...	<1	<1	350	0	56	51	510	12	15	1340
MAR 30...	--	--	47	0	11	4.7	11	.7	6.0	84
APR 26...	--	--	160	0	28	22	110	3.8	8.6	370
MAY 18...	K59	K60	200	0	30	31	290	8.9	11	740
JUN 16...	<1	K34	260	0	33	44	380	10	12	870
JUL 18...	K87	350	220	0	19	41	440	13	13	990
SEP 22...	--	--	170	0	20	29	270	9.0	11	630

06179500 WEST FORK POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)
OCT 21...	15	4.3	190	6.9	.4	7.9	886	1.21	.96
NOV 11...	--	--	--	--	--	--	--	--	--
DEC 12...	0	27	380	11	.7	20	1710	2.33	.92
MAR 30...	0	2.7	9.1	1.6	.1	6.0	91	.12	236
APR 26...	4	1.9	85	2.9	.2	12	454	.62	3.92
MAY 18...	15	3.9	200	4.4	.4	9.2	957	1.30	20.2
JUN 16...	--	1.8	330	4.5	.4	1.1	1240	1.67	1.00
JUL 18...	43	2.7	280	5.1	.6	7.9	1340	1.82	13.7
SEP 22...	16	2.1	190	5.4	.4	3.5	858	1.17	.69

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS Fe)	IRON, DIS- SOLVED (UG/L AS Fe)
JCT 21...	.00	.05	1.5	1.5	1.5	.05	.00	1100	320
NOV 11...	--	--	--	--	--	--	--	--	--
DEC 12...	.04	.23	1.4	1.6	1.6	.02	.01	1800	270
MAR 30...	.76	.31	2.4	2.7	3.5	.39	--	100	130
APR 26...	.02	.05	.91	.96	.98	.06	.01	410	60
MAY 18...	.00	.05	1.9	1.9	1.9	.08	.00	960	150
JUN 16...	.00	.05	1.7	1.7	1.7	.03	.00	1300	90
JUL 18...	.00	.01	2.9	2.9	2.9	.08	.01	1700	170
SEP 22...	.06	.04	1.4	1.4	1.5	.05	.01	1200	270

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC 12...	1430	160	10	3	3	0	0	0	0	0	0
MAR 30...	1400	5000	50	3	2	0	0	1	0	10	0
JUN 16...	1100	--	10	--	4	--	0	--	1	--	10
SEP 22...	1200	--	30	--	5	--	0	--	1	--	10

POPLAR RIVER BASIN

06179500 WEST FORK POPLAR RIVER AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
DEC 12...	1	0	660	1	2	270	280	550	460	.0
MAR 30...	11	4	5300	7	0	10	10	160	20	.0
JUN 16...	--	1	--	--	4	--	190	--	10	--
SEP 22...	--	3	--	--	2	--	140	--	0	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MU)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 12...	.0	2	0	3	2	0	0	.6	30	20
MAR 30...	.0	--	2	9	7	0	0	2.0	30	30
JUN 16...	.1	--	0	--	1	--	0	1.0	--	10
SEP 22...	.0	--	0	--	3	--	0	3.6	--	0

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 21...	1300	6.5	.40	10	.01	86
NOV 11...	1000	2.0	.30	40	.03	84
DEC 12...	1430	.5	.20	139	.08	--
APR 26...	1600	14.0	3.2	12	.10	--
MAY 18...	1200	10.0	7.8	25	.53	--
JUN 16...	1100	16.5	.30	26	.02	--
JUL 18...	1130	17.5	3.8	11	.11	--
SEP 22...	1200	12.5	.30	12	.01	--

06180400 WEST FORK POPLAR RIVER NEAR BREDETTE, MT

LOCATION.--Lat 48°33'01", long 105°25'42", in SW¼SW¼ sec.1, T.32 N., R.48 E., Roosevelt County, Hydrologic Unit 10060004, at bridge on State Highway 13, 5.9 mi (9.5 km) upstream from mouth and 6.6 mi (10.6 km) northwest of Bredette.

DRAINAGE AREA.--1,010 mi² (2,616 km²).

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MH/US)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	DOXYGEN, DIS- SOLVED (MG/L)	DOXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
19...	1430	13	--	1120	8.5	20.5	8.5	20	10.5	98
NOV										
09...	1300	16	0	1180	8.7	1.5	1.0	10	12.0	92
DEC										
16...	1100	10	60	1290	8.2	-5.0	.5	4	9.9	75
MAR										
24...	1600	473	60	250	7.8	5.0	.5	70	10.8	82
29...	1700	1450	2	218	8.1	15.0	3.0	110	10.4	85
APR										
25...	1600	53	2	807	8.5	17.5	13.5	4	10.0	105
MAY										
23...	1625	55	1	1000	8.6	23.0	24.0	35	9.0	118
JUN										
12...	1930	21	2	1030	8.6	19.5	21.0	30	8.8	109
JUL										
20...	1730	7.0	2	1050	8.7	24.0	25.0	30	9.2	123
AUG										
15...	1710	2.4	2	1240	8.9	25.0	24.5	35	8.7	115
SEP										
19...	1530	197	2	578	8.5	10.5	9.5	400	9.5	90

DATE	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT										
19...	K7	K7	130	0	22	18	240	9.2	4.3	570
NOV										
09...	<1	K5	140	0	25	19	250	9.2	4.0	620
DEC										
16...	<1	K8	130	0	25	17	280	11	3.4	680
MAR										
24...	<1	K5	54	0	13	5.2	33	2.0	6.8	110
29...	--	--	58	0	13	6.3	23	1.3	5.7	110
APR										
25...	<1	<1	130	0	25	16	150	5.8	5.4	420
MAY										
23...	<1	110	200	0	46	20	210	6.5	6.0	510
JUN										
12...	70	170	120	0	20	17	230	9.1	6.3	550
JUL										
20...	110	160	130	0	23	18	230	8.7	5.9	600
AUG										
15...	68	230	98	0	13	16	270	12	5.9	600
SEP										
19...	1900	K3400	72	0	15	8.4	110	5.6	5.0	280

POPLAR RIVER BASIN

06180400 WEST FORK POPLAR RIVER NEAR BREDETTE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CARBONATE (MG/L AS CO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)
OCT 19...	21	3.1	120	6.6	.5	7.9	722	.98	25.3
NOV 09...	10	2.0	140	6.5	.5	9.5	771	1.05	33.3
DEC 16...	0	6.9	170	7.1	.5	11	850	1.16	23.0
MAR 24...	0	2.8	31	2.4	.1	5.9	152	.21	194
29...	0	1.4	17	2.3	.1	7.8	130	.18	509
APR 25...	10	2.2	87	4.6	.4	8.3	514	.70	73.6
MAY 23...	15	2.2	100	5.4	.4	8.7	663	.90	98.5
JUN 12...	19	2.4	120	5.5	.5	7.9	698	.95	39.6
JUL 20...	0	1.9	130	6.0	.5	9.3	719	.98	13.6
AUG 15...	32	1.3	130	7.7	.6	7.5	779	1.06	5.05
SEP 19...	0	1.4	79	5.3	.2	9.8	372	.51	198

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHOPHOSPHATE, DIS- SOLVED (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 19...	.03	.00	.33	.33	.36	.04	.00	580	40
NOV 09...	.01	.00	.25	.25	.26	.02	.00	560	30
DEC 16...	.01	.07	.09	.16	.17	.02	.00	530	40
MAR 24...	.48	.09	1.4	1.5	2.0	.28	.05	120	190
29...	.64	.10	1.1	1.2	1.8	.18	.03	150	240
APR 25...	.02	.01	.46	.47	.49	.03	.01	330	30
MAY 23...	.05	.08	1.0	1.1	1.2	.04	.01	490	40
JUN 12...	.02	.05	1.1	1.1	1.1	.00	.02	510	20
JUL 20...	.00	.01	.57	.58	.58	.04	.00	670	120
AUG 15...	.01	.05	.70	.75	.76	.05	.01	780	40
SEP 19...	.10	.07	1.3	1.4	1.5	.14	.02	320	240

DATE	TIME	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	ALUMINUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE)	BERYLLIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	CHROMIUM, DIS- SOLVED (UG/L AS CR)
DEC 16...	1100	100	0	1	1	0	0	2	0	0	0
MAR 24...	1600	2700	160	2	1	10	0	4	0	10	0
29...	1700	--	60	3	1	0	0	6	1	10	10
JUN 12...	1930	--	0	--	2	--	0	--	0	--	0
SEP 19...	1530	--	150	--	5	--	0	--	1	--	10

06180400 WEST FORK POPLAR RIVER NEAR BREDETTE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
DEC 16...	2	0	300	13	2	120	120	30	10	.0
MAR 24...	8	0	4900	15	2	20	20	100	20	.0
29...	9	5	4900	8	15	10	10	140	30	.0
JUN 12...	--	3	--	--	3	--	100	--	10	--
SEP 19...	--	8	--	--	0	--	50	--	20	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 16...	.0	2	0	9	4	0	0	.1	20	20
MAR 24...	.0	4	1	9	0	2	3	2.0	30	0
29...	.1	3	1	7	4	0	0	2.0	30	30
JUN 12...	.0	--	3	--	4	--	0	1.0	--	10
SEP 19...	.0	--	2	--	0	--	0	4.2	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINE R THAN .062 MM
OCT 19...	1430	8.5	13	60	2.1	97
NOV 09...	1300	1.0	16	50	2.2	96
DEC 16...	1100	.5	10	35	.95	--
MAR 24...	1600	.5	473	124	158	86
29...	1700	3.0	1450	347	1360	89
APR 25...	1600	13.5	53	16	2.3	--
MAY 23...	1625	24.0	55	55	8.2	--
JUN 12...	1930	21.0	21	72	4.1	--
JUL 20...	1730	25.0	7.0	48	.91	--
SEP 19...	1530	9.5	197	310	165	100

06181000 POPLAR RIVER NEAR POPLAR, MT

LOCATION.--Lat 48°10'15", long 105°10'42", in NE¼NE¼ sec.19, T.28 N., R.51 E., Roosevelt County, Hydrologic Unit 10060003, on right bank 4 mi (6 km) north of Poplar and 11 mi (18 km) upstream from mouth.

DRAINAGE AREA.--3,174 mi² (8,221 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1908 to October 1924, August 1947 to September 1969, June 1975 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1176. 1948. WSP 1389: 1911. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,970 ft (600 m), from topographic map. Prior to May 1, 1911, nonrecording gage at site 4.2 mi (6.8 km) upstream at different datum. May 1, 1911, to Oct. 4, 1913, nonrecording gage at site 14 mi (23 km) upstream at different datum. Oct. 5, 1913, to Oct. 31, 1924, nonrecording gage at site 2.2 mi (3.5 km) 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 winter period, which are poor. Diversions for irrigation of about 5,500 acres (22.3 km²) above station.

AVERAGE DISCHARGE.--41 years (1908-24, 1947-69, 1975-78), 135 ft³/s (3.823 m³/s), 97,810 acre-ft/yr (121 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,400 ft³/s (1,060 m³/s) Apr. 6, 1954, gage height, 17.86 ft (5.44 m), from floodmark; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 10, 1946, reached a stage of 18.1 ft (5.52 m), from floodmark, discharge, 40,000 ft³/s (1,130 m³/s), from slope-area measurement of peak flow made at site 20 mi (32 km) upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 24	1630	Ice jam	*12.99 3.959	Apr. 2	0100	*4,970 141	12.13 3.697
Mar. 24	unknown	4,900 140	--- ---	July 5	1500	668 18.9	4.83 1.472

Minimum daily discharge, 1.0 ft³/s (0.028 m³/s) on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	28	12	7.0	1.0	1.5	4650	135	257	127	36	12
2	36	27	12	7.0	1.0	1.5	3890	131	188	118	32	12
3	37	26	12	6.0	1.0	1.5	1720	127	160	309	31	11
4	37	27	11	7.0	1.0	1.0	1060	124	141	303	30	10
5	37	27	11	7.0	1.0	1.5	889	123	123	594	29	10
6	36	26	10	8.0	1.0	1.5	716	123	110	413	27	10
7	35	29	12	8.0	1.0	1.5	610	129	101	282	26	10
8	36	30	10	8.0	1.0	1.5	549	145	100	254	25	9.6
9	37	25	9.0	7.0	1.0	2.0	471	153	93	186	19	9.0
10	37	22	12	7.0	1.0	3.0	401	156	85	153	22	9.6
11	38	23	13	7.0	1.0	3.0	349	184	82	139	20	12
12	37	27	14	6.0	1.0	3.0	330	205	78	123	18	32
13	37	31	13	5.0	1.0	3.0	293	202	77	109	16	48
14	36	33	14	4.0	1.0	4.0	267	182	77	98	17	48
15	35	31	13	4.0	1.0	2.0	245	162	94	89	17	51
16	35	31	12	3.0	1.0	5.0	233	145	168	80	17	93
17	34	28	11	3.0	1.0	8.0	228	151	145	84	16	131
18	33	24	10	2.0	1.0	10.0	233	147	101	82	16	137
19	33	16	10	2.0	1.0	17.0	225	149	89	77	15	162
20	33	10	10	2.0	2.0	35.0	209	153	89	67	15	267
21	35	9.0	9.0	1.5	2.0	70.0	195	191	82	63	15	276
22	35	10	9.0	1.5	3.0	160.0	188	173	80	60	15	191
23	33	11	8.0	1.5	3.0	300.0	182	168	72	55	14	155
24	31	10	6.0	1.5	3.0	350.0	177	149	70	51	13	131
25	30	9.0	8.0	1.5	2.0	410.0	168	149	74	47	13	116
26	30	12	7.0	1.0	2.0	260.0	160	147	91	44	12	105
27	29	16	7.0	1.0	2.0	357.0	151	127	129	42	12	93
28	29	14	8.0	1.0	2.0	440.0	147	110	166	41	13	85
29	28	14	8.0	1.0	---	461.0	143	100	141	38	12	78
30	29	14	7.0	1.0	---	353.0	139	107	125	38	12	72
31	28	---	6.0	1.0	---	363.0	---	199	---	37	12	---
TOTAL	1056	644.0	316.0	123.5	40.0	36039.5	19198	4661	3368	4193	587	2406.2
MEAN	34.1	21.5	10.2	3.98	1.43	1163	640	150	112	135	18.9	80.2
MAX	38	33	14	8.0	3.0	4610	4630	205	237	584	36	276
MIN	28	9.0	6.0	1.0	1.0	1.0	139	100	70	37	12	9.0
AC-FT	2090	1280	627	245	79	71480	38080	9250	6680	8320	1160	4770

CAL YR 1977	TOTAL	13329.2	MEAN	36.5	MAX	210	MIN	3.4	AC-FT	26440
WTR YR 1978	TOTAL	72632.2	MEAN	199	MAX	4630	MIN	1.0	AC-FT	144100

06181000 POPLAR RIVER NEAR POPLAR, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
28...	1200	29	0	1930	8.5	11.0	8.0	20	10.2	93
NOV										
15...	1300	30	0	1690	8.3	4.0	2.0	20	12.8	100
DEC										
21...	1300	9.0	3	2530	7.7	-5.0	.0	2	11.0	81
JAN										
09...	1300	7.0	2	2650	7.9	-25.0	.0	3	10.4	77
FEB										
13...	1500	1.0	3	2510	7.9	-9.0	.0	2	7.9	59
MAR										
24...	1500	5500	60	271	7.4	5.0	1.0	60	10.4	79
APR										
18...	1330	237	60	882	8.4	6.0	7.0	20	10.4	92
MAY										
11...	1300	184	1	1180	8.6	15.0	14.5	50	9.7	102
JUN										
12...	1400	77	1	1390	8.7	21.0	19.5	30	9.0	105
JUL										
21...	1230	63	2	1180	8.5	23.0	21.5	50	8.0	98
AUG										
15...	1400	17	0	1680	8.6	25.0	22.0	25	8.2	100
SEP										
18...	1300	139	60	1180	8.8	9.5	12.5	40	8.8	89

DATE	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD- NESS (MG/L AS CACU3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACU3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT										
28...	K4	K15	230	0	31	36	380	11	7.6	600
NOV										
15...	77	K3	210	0	29	34	310	9.3	6.7	620
DEC										
21...	K6	K6	340	0	54	51	460	11	9.5	800
JAN										
09...	K4	K3	410	0	66	60	470	10	8.6	840
FEB										
13...	<1	<1	480	0	83	65	430	8.6	7.8	660
MAR										
24...	K47	--	68	0	15	7.5	26	1.4	8.7	130
APR										
18...	K80	<1	180	0	34	24	140	4.5	7.0	380
MAY										
11...	K27	--	210	0	32	31	200	6.0	7.6	480
JUN										
12...	<1	K36	230	0	29	38	260	7.5	9.4	590
JUL										
21...	--	--	200	0	31	30	210	6.4	8.9	500
AUG										
15...	K14	K19	210	0	26	36	300	8.9	9.2	500
SEP										
18...	1100	1700	120	0	18	19	230	9.0	6.2	460

POPLAR RIVER BASIN

06181000 POPLAR RIVER NEAR POPLAR, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)
OCT 28...	15	3.2	260	190	.6	7.7	1220	1.66	95.5
NOV 15...	0	5.0	240	96	.5	8.3	1030	1.40	83.4
DEC 21...	0	26	330	240	.5	11	1550	2.11	37.7
JAN 09...	0	17	340	250	.6	12	1620	2.20	30.6
FEB 13...	0	13	310	360	.4	13	1620	2.20	4.37
MAR 24...	0	8.3	34	4.1	.1	7.0	167	.23	1560
APR 18...	11	2.6	140	24	.3	8.7	577	.78	369
MAY 11...	20	2.1	180	22	.4	7.0	737	1.00	366
JUN 12...	25	2.0	200	49	.4	7.4	910	1.24	189
JUL 21...	0	2.5	170	51	.4	12	761	1.04	129
AUG 15...	19	2.2	210	150	.5	6.7	1010	1.37	46.4
SEP 18...	28	1.3	170	20	.4	8.2	728	.99	273

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS S)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 28...	.02	.00	.58	.58	.60	.03	.01	1100	30
NOV 15...	.01	.04	.19	.23	.24	.03	.00	--	30
DEC 21...	.59	.00	.45	.45	.84	.02	--	1200	30
JAN 09...	.05	.11	.38	.49	.54	.02	--	1100	40
FEB 13...	.09	.06	.62	.68	.77	.02	.01	840	10
MAR 24...	.49	.11	1.6	1.9	2.4	.55	--	150	160
APR 18...	.04	.01	.97	.98	1.0	.07	.01	460	80
MAY 11...	.01	.01	.60	.61	.62	.06	--	670	50
JUN 12...	.00	.01	1.5	1.5	1.5	.01	.00	910	10
JUL 21...	.01	.01	.86	.87	.88	.07	.00	920	130
AUG 15...	.00	.03	.82	.85	.85	.03	.01	1100	10
SEP 18...	.02	.10	1.3	1.4	1.4	.16	.01	880	40

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC 21...	1300	--	0	--	1	--	0	--	1	--	0
MAR 24...	1500	1900	40	4	5	0	0	22	21	10	0
JUN 12...	1400	--	0	--	2	--	0	--	0	--	5
SEP 18...	1300	--	30	--	5	--	0	--	1	--	0

06181000 POPLAR RIVER NEAR POPLAR, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MV)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
DEC 21...	--	1	--	--	6	--	140	--	40	--
MAR 24...	21	3	14000	16	6	20	10	450	30	.0
JUN 12...	--	4	--	--	3	--	110	--	10	--
SEP 18...	--	4	--	--	2	--	90	--	0	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MU)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 21...	.0	--	3	--	2	--	0	1.0	--	20
MAR 24...	.0	3	--	28	1	3	0	1.0	60	20
JUN 12...	.1	--	3	--	3	--	0	.0	--	20
SEP 18...	.2	--	3	--	3	--	0	2.2	--	0

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
UCT 28...	1200	8.0	29	102	8.0	98
NOV 15...	1300	2.0	50	81	6.6	99
DEC 21...	1300	.0	9.0	68	1.7	--
JAN 09...	1300	.0	7.0	155	2.9	--
MAR 24...	1500	1.0	3500	751	7100	82
APR 19...	1330	7.0	237	30	19	95
MAY 11...	1300	14.5	184	166	82	96
JUN 12...	1400	19.5	77	94	20	--
JUL 21...	1230	21.5	63	94	16	--
AUG 15...	1400	22.0	17	46	2.1	--
SEP 18...	1300	12.5	139	524	197	100

06181995 BEAVER CREEK AT INTERNATIONAL BOUNDARY

(International gaging station)

LOCATION.--Lat 49°00'03", long 105°02'09", in SE¼ sec.5, T.1, R.23 W., second meridian, Hydrologic Unit 10060006, on left bank 300 ft (91 m) north of international boundary, 6 mi (10 km) east of Canadian Big Beaver Port of Entry, 8 mi (13 km) upstream from mouth, and 9 mi (14 km) southeast of Big Beaver, Saskatchewan.

DRAINAGE AREA.--180 mi² (470 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1977 to current year. April 1949 to October 1952, seasonal record collected 0.8 mi (1.3 km) downstream (06182000 Beaver Creek near international boundary). Records probably are equivalent.

GAGE.--Water-stage recorder. Altitude of gage is 2,250 ft (686 m), from topographic map. April 1949 to October 1952, nonrecording gage 0.8 mi (1.3 km) downstream at different datum.

REMARKS.--Water-discharge records fair except those for winter period, which are poor.

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 discharge, 4,020 ft³/s (114 m³/s) Apr. 7, 1952, gage height 13.3 ft (4.05 m), from floodmark, from rating curve extended above 320 ft³/s (9.06 m³/s), on basis of slope-area measurements of peak flow; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 427 ft³/s (12.1 m³/s) Mar. 22, gage height, 8.31 ft (2.533 m), backwater from ice; minimum daily, 0.18 ft³/s (0.005 m³/s) Feb. 14-16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	2.5	2.8	.81	.35	1.1	51	3.4	2.9	5.8	1.2	.90
2	2.5	2.5	2.8	.81	.35	1.1	24	3.3	2.9	4.4	1.2	.90
3	2.5	2.5	2.8	.78	.32	1.1	13	3.1	4.7	3.9	1.2	.84
4	2.5	2.5	2.8	.78	.32	1.1	11	3.0	4.4	31	1.1	.82
5	2.5	2.5	2.9	.74	.32	1.1	9.5	2.9	3.7	7.5	1.1	.80
6	2.5	2.5	3.1	.74	.28	1.1	7.8	2.9	3.3	4.1	1.0	.85
7	2.5	2.5	3.8	.71	.28	1.1	7.8	3.0	3.3	3.5	.92	1.2
8	2.5	2.5	4.2	.71	.28	1.1	7.7	3.2	3.0	3.2	.84	1.3
9	2.5	2.5	4.3	.67	.25	1.4	6.8	3.2	2.9	2.9	.77	1.3
10	2.5	2.5	4.1	.67	.25	1.8	6.2	4.3	2.9	2.8	.79	1.3
11	2.5	2.5	4.1	.64	.21	2.1	5.8	4.3	2.8	2.5	.73	1.7
12	2.5	2.5	4.2	.64	.21	3.5	5.8	3.8	2.6	2.4	.73	3.2
13	2.5	2.5	4.0	.60	.21	5.3	5.6	3.5	2.5	2.2	.82	3.4
14	2.5	2.5	3.7	.60	.18	11	5.8	3.2	2.7	2.0	.82	2.5
15	2.5	2.5	3.6	.60	.18	76	5.8	3.1	2.7	2.0	.87	2.1
16	2.5	2.5	3.6	.57	.18	72	5.8	2.9	2.3	2.0	.69	1.8
17	2.5	2.5	3.5	.57	.21	57	5.3	2.9	2.2	2.0	.87	1.7
18	2.5	2.5	3.5	.53	.25	82	5.1	2.8	2.0	2.1	.81	2.1
19	2.5	2.5	3.5	.53	.28	99	4.8	3.0	2.4	2.1	.89	3.4
20	2.5	2.6	3.5	.53	.32	217	4.7	2.8	2.5	1.9	.91	2.7
21	2.5	2.7	3.5	.49	.35	340	4.8	2.6	2.2	1.7	.99	2.3
22	2.5	2.7	3.4	.49	.35	398	4.5	2.8	2.3	1.6	1.2	2.8
23	2.5	2.9	3.6	.49	.53	400	4.4	2.9	2.7	1.8	1.1	2.7
24	2.5	3.0	3.8	.46	.71	346	4.2	2.8	2.6	1.5	1.0	2.3
25	2.5	3.1	3.9	.46	.88	305	4.0	2.7	2.4	1.3	1.0	2.0
26	2.5	3.0	4.1	.42	1.1	294	4.0	2.8	5.7	1.3	1.0	1.8
27	2.5	2.9	4.1	.42	1.1	262	3.9	2.5	3.5	1.3	1.1	1.6
28	2.5	2.9	3.9	.42	1.1	137	3.9	2.4	13	1.2	1.1	1.4
29	2.5	2.9	3.9	.39	---	73	3.8	2.4	13	1.3	1.1	1.3
30	2.5	2.9	4.2	.39	---	66	3.5	2.6	7.8	1.2	1.0	1.3
31	2.5	---	4.4	.39	---	81	---	3.3	---	1.2	1.0	---
TOTAL	77.5	79.1	113.6	18.05	11.35	3338.9	240.3	94.4	113.9	105.5	30.05	54.31
MEAN	2.50	2.64	3.66	.58	.41	108	8.01	3.05	3.80	3.40	.97	1.81
MAX	2.5	3.1	4.4	.81	1.1	400	51	4.3	13	31	1.2	3.4
MIN	2.5	2.5	2.8	.39	.18	1.1	3.5	2.4	2.0	1.2	.73	.80
AC-FT	154	157	225	36	23	6620	477	187	226	209	60	108

WTR YR 1978 TOTAL 4276.96 MEAN 11.7 MAX 400 MIN .18 AC-FT 8460

06181995 BEAVER CREEK AT INTERNATIONAL BOUNDARY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1977 to current year.

REMARKS.--Scheduled samplings were not possible during periods of no flow.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 18...	1130	1.3	2	1860	7.8	11.0	5.5	2	10.0	85
JAN 11...	1500	.63	0	1840	7.5	-18.0	.5	3	7.6	57
MAR 28...	1130	131	3	260	7.7	13.0	3.0	65	10.6	86
MAY 23...	1730	2.9	0	1630	6.4	29.0	24.0	20	9.0	117

DATE	TIME	CULI- FURM, TOTAL, IMMED. (CULS. PER 100 ML)	CULI- FURM, FECAL, UM-MF (CULS./ 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAL- CIUM (MG/L AS CA)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT 18...	K15	K10	240	0	43	31	320	9.1	6.7	660	
JAN 11...	<1	<1	300	0	64	33	330	8.4	7.3	770	
MAR 28...	--	--	74	0	16	8.2	26	1.3	8.1	120	
MAY 23...	K340	K330	240	0	38	30	300	8.4	8.6	600	

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 18...	0	540	17	350	6.2	.3	.1	1080	1.47
JAN 11...	0	630	39	390	6.5	.2	20	1230	1.67
MAR 28...	0	98	5.8	39	1.9	.1	6.8	166	.23
MAY 23...	16	520	4.0	330	5.3	.2	4.1	1040	1.41

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 18...	3.79	.00	.00	.25	.25	.25	.02	1500	20
JAN 11...	2.09	.05	.52	.23	.75	.80	.02	1600	80
MAR 28...	58.7	.25	.14	1.1	1.2	1.5	.26	180	280
MAY 23...	8.14	.02	.01	.67	.68	.70	.03	1400	30

POPLAR RIVER BASIN

06181995 BEAVER CREEK AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
JAN 11...	1300	--	0	--	1	--	0	--	2	--	10
MAR 28...	1130	2200	100	3	2	0	0	6	5	20	0
MAY 23...	1730	--	90	--	2	--	0	--	1	--	5

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
JAN 11...	--	3	--	--	2	--	110	--	180	--
MAR 28...	8	1	5600	10	2	10	20	130	70	.0
MAY 23...	--	2	--	--	4	--	100	--	0	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, TOTAL RECOV- ERABLE (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
JAN 11...	.0	--	1	--	1	--	0	.0	--	20
MAR 28...	.0	5	2	9	0	3	11	2.0	20	20
MAY 23...	.0	--	1	--	3	--	0	1.0	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
UCT 18...	1130	5.5	1.3	44	.15	90
MAR 28...	1130	3.0	131	130	46	96
MAY 23...	1730	24.0	2.9	80	.63	97

06185500 MISSOURI RIVER NEAR CULBERTSON, MT

LOCATION.--Lat 48°07'24", long 104°28'30", in SE¼NW¼ sec.3, T.27 N., R.56 E., Richland County, Hydrologic Unit 10060005, on right bank at downstream side of bridge on State Highway 16, 3 mi (5 km) southeast of Culbertson, 9.6 mi (15.4 km) downstream from Big Muddy Creek, and at mile 1,620.76 (2,607.80 km).

DRAINAGE AREA.--91,557 mi² (237,133 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1941 to December 1951, April 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,883.4 ft (574.06 m) National Geodetic Vertical Datum of 1929. (Corps of Engineers bench mark). July 1 to Nov. 6, 1941, water-stage recorder at site 400 ft (120 m) upstream at datum 0.11 ft (0.034 m) higher. Nov. 7, 1941, to Aug 17, 1950, water-stage recorder at site 580 ft (177 m) 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 (177 m) downstream at present datum.

REVISIONS.--WSP 1729: Drainage area.

REMARKS.--Water-discharge records good except those for winter period, which are fair. Flow partly regulated by Fort Peck Lake (see p. 147) and many other reservoirs above station. Diversions for irrigation of about 1,030,400 acres (4,170 km²) above station.

AVERAGE DISCHARGE.--28 years (1943-51, 1958-78, after operational level at Fort Peck Lake was reached), 10,760 ft³/s (304.7 m³/s), 7,796,000 acre-ft/yr (9.61 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78,200 ft³/s (2,210 m³/s) Mar. 26, 1943, gage height, 14.80 ft (4.511 m), from rating curve extended above 30,000 ft³/s (850 m³/s); maximum gage height, 19.14 ft (5.834 m) Mar. 23, 1960 (backwater from ice); minimum daily discharge, 575 ft³/s (16.3 m³/s) Nov. 22, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 27,000 ft³/s (765 m³/s) Mar. 30; maximum gage height, 14.98 ft (4.566 m) Mar. 30 (backwater from ice); minimum daily discharge, 5,200 ft³/s (147 m³/s) Nov. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6280	5440	11000	10800	14600	14000	22800	10300	11700	11200	12700	13900
2	6290	5500	11000	10000	14900	13700	24100	9720	13700	11200	13000	12600
3	6150	5530	10400	9800	15300	13700	22100	9070	13900	11300	13100	12600
4	5930	5530	10800	11000	16100	14900	19900	9350	13500	11700	13100	13200
5	5880	5500	10800	10700	15300	13900	20600	9480	13300	12400	13500	14200
6	5860	5540	10800	11600	15300	14500	22900	9260	13000	12800	13500	14000
7	5720	5470	10300	11800	15300	15000	23300	9090	12400	12900	13600	14000
8	5710	5270	9800	11600	13900	14800	22400	9530	12300	12900	13500	14300
9	5780	5210	9190	11500	13100	12200	21700	9670	12100	12600	13500	14100
10	5660	5270	8600	11500	16100	14000	22200	9280	11900	12000	13400	14000
11	5740	5550	8700	12000	15200	13800	21900	9430	12200	11200	13300	13900
12	5730	5670	9200	12300	15300	14100	20900	9920	12000	11900	13300	14300
13	5670	5860	9800	12300	15300	14500	21800	10100	12100	12100	13400	14700
14	5630	5680	11000	12700	15200	15000	22700	9850	12100	12300	13400	15600
15	5810	5390	11400	12000	15600	14900	23400	9670	12200	12300	13800	15500
16	5750	5250	11600	12200	14900	15100	23300	9620	12300	12300	13800	12000
17	5740	5360	11000	12100	13900	15000	22400	9700	12600	12300	13800	11500
18	5700	5300	10800	12800	14800	13100	21000	9820	12000	12100	14000	12700
19	5700	5300	10200	13600	15100	10400	20000	9790	11600	11900	13900	16100
20	5760	5200	9900	13200	15800	8900	20400	9930	12000	11600	13900	18500
21	5640	5600	9600	13300	16500	8900	20300	10600	12100	11400	13900	19600
22	5700	6200	9600	13900	15800	8500	18700	11300	11100	10900	14100	19300
23	5470	7000	10300	14800	15000	9500	16700	11500	10600	9720	14200	19200
24	5400	8200	10800	14600	14200	11000	14600	8730	10400	10400	13800	18000
25	5250	9700	10600	13600	16000	11900	13000	7750	10100	12200	13100	14900
26	5270	10600	10300	11800	15000	12000	11900	8320	10200	13000	13500	12800
27	5600	11000	10200	13000	14200	14000	11200	9190	10700	14100	13800	15600
28	5380	11300	10100	11300	14500	17200	10800	9140	11100	14100	13900	16900
29	5450	11600	10100	12800	---	20000	10700	9070	11000	14100	14000	16500
30	5710	11000	10100	13800	---	27000	10500	9330	10800	14000	14200	16000
31	5660	---	10000	15000	---	24000	---	10300	---	13600	14400	---
TOTAL	177440	201020	317900	383400	422200	439500	578200	297810	357400	378520	422400	450300
MEAN	5724	6701	10250	12370	15080	14180	19270	9607	11910	12210	13630	15010
MAX	6290	11600	11600	15000	16500	27000	24100	11500	13900	14100	14400	19600
MIN	5250	5200	8600	9800	13100	8500	10500	7750	10100	9720	12700	11500
AC-FT	352000	398700	630600	760500	837400	871700	1147000	590700	708900	750800	837600	893200
CAL YR 1977 TOTAL	3213020			8803	MAX 16600	MIN 5200	AC-FT 6373000					
WTR YR 1978 TOTAL	4426090			MEAN 12130	MAX 27000	MIN 5200	AC-FT 8779000					

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946, 1965 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1965 to current year.

WATER TEMPERATURES: July 1965 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 818 micromhos May 26, 1978; minimum daily, 338 micromhos Mar. 30, 1967.

WATER TEMPERATURES: Maximum daily, 24.5°C July 17, 1966; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 818 micromhos May 26; minimum daily, 387 micromhos Apr. 10.

WATER TEMPERATURES: Maximum daily, 21.0°C July 17; minimum daily, 0.0°C on many days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	
OCT 27...	1500	5740	0	692	8.1	19.0	10.0	25	--	10.0	95	
NOV 07...	1230	5320	1	687	8.4	7.5	5.0	15	--	11.5	97	
DEC 05...	1400	10800	--	700	8.2	-22.0	.0	10	--	12.6	93	
JAN 10...	1430	11200	0	648	8.0	-6.0	.0	8	--	12.4	92	
FEB 16...	1345	13900	1	658	7.8	-15.0	.0	15	--	12.0	89	
MAR 16...	1100	15100	0	625	7.9	.0	.0	30	--	12.0	89	
APR 04...	1415	18900	0	386	7.5	16.0	6.0	900	--	--	--	
MAY 09...	1600	9720	0	702	8.5	20.0	12.0	280	--	9.7	96	
JUN 08...	1330	12500	0	710	8.3	27.0	17.5	95	--	9.0	100	
JUL 11...	1500	11400	0	746	8.2	31.0	23.0	--	55	8.3	104	
AUG 21...	1500	14100	--	640	8.2	27.0	15.5	--	40	9.5	102	
SEP 20...	1000	18000	0	689	8.3	5.5	10.0	--	40	9.8	92	
DATE		COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCUCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HC03)	CAR- BONATE (MG/L AS C03)
OCT 27...	K3	K14	250	79	61	24	57	1.6	4.1	210	0	
NOV 07...	K2	K4	240	64	58	23	59	1.7	3.6	210	2	
DEC 05...	K6	37	240	75	58	23	48	1.4	3.8	200	0	
JAN 10...	K13	20	250	91	61	23	46	1.3	3.9	190	0	
FEB 16...	K14	K1000	240	81	57	23	47	1.3	3.6	190	0	
MAR 16...	--	K840	230	72	55	22	45	1.3	3.9	190	0	
APR 04...	K100	4600	110	22	27	11	38	1.6	5.1	110	0	
MAY 09...	K53	1200	230	61	54	22	66	1.9	5.0	200	0	
JUN 08...	46	K43	240	78	54	26	68	1.9	4.5	200	0	
JUL 11...	62	170	240	80	55	25	65	1.8	4.9	--	--	
AUG 21...	K19	K9	230	69	57	21	46	1.3	4.1	--	--	
SEP 20...	430	280	200	61	49	19	62	1.9	4.1	--	--	

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ALKALINITY (MG/L AS CACU3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 27...	170	2.7	190	10	.7	7.8	445	458	.61	6900	.00
NOV 07...	180	1.4	180	9.7	.7	8.3	427	448	.58	6130	.01
DEC 05...	160	2.0	170	8.5	.6	8.1	405	419	.55	11800	.03
JAN 10...	160	3.0	160	8.5	.7	8.8	412	406	.56	12500	.05
FEB 10...	160	4.8	160	8.3	.7	8.5	390	402	.53	14600	.04
MAR 16...	160	3.8	150	7.8	.7	7.9	381	386	.52	15500	.06
APR 04...	90	5.6	99	3.8	.5	6.0	231	244	.31	11800	.32
MAY 09...	160	1.0	180	9.0	.6	7.9	440	443	.60	11500	.12
JUN 08...	160	1.6	200	12	.7	7.9	458	472	.62	15500	.00
JUL 11...	160	--	190	8.9	.6	8.5	463	454	.63	14300	.02
AUG 21...	160	--	180	8.6	.7	7.7	415	421	.56	15800	.08
SEP 20...	140	--	190	8.3	.6	7.8	448	425	.61	21800	.15

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC DIS. TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT 27...	--	.00	--	.31	--	.06	.02	3.4	--	--
NOV 07...	--	.01	--	.06	--	.04	.02	3.1	--	--
DEC 05...	--	.04	--	.08	--	.02	.01	--	3.6	.4
JAN 10...	--	.07	--	.30	--	.04	.02	2.9	--	--
FEB 16...	.12	.01	.13	.02	.17	.04	.01	3.2	--	--
MAR 16...	.42	.01	.43	.17	.49	.06	.00	--	5.1	.4
APR 04...	2.1	.17	2.3	1.4	2.6	.91	.02	22	--	--
MAY 09...	.77	.06	.83	.54	.95	.32	.04	9.0	--	--
JUN 08...	.68	.01	.69	.19	.69	.14	.00	--	3.4	.9
JUL 11...	.34	.14	.48	.27	.50	.09	.02	5.5	--	--
AUG 21...	.49	.02	.51	.19	.59	.11	.01	--	5.5	.7
SEP 20...	1.2	.03	1.2	.68	1.4	.52	.02	--	2.3	3.6

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC 05...	1400	4	3	100	0	13	0	0	0
MAR 16...	1100	4	3	0	100	3	3	10	10
JUN 08...	1330	5	1	200	200	0	0	0	0
AUG 21...	1500	4	3	300	40	3	4	10	0
SEP 20...	1000	11	4	200	100	9	2	40	0

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COBALT, TOTAL RECOV- ERABLE (UG/L AS CU)	COBALT, DIS- SOLVED (UG/L AS CU)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)
DEC 05...	1	0	6	2	800	30	7	2	20
MAR 16...	2	0	10	3	1300	20	2	0	30
JUN 08...	2	0	22	24	6400	20	10	6	140
AUG 21...	2	<1	24	5	7000	<10	19	3	110
SEP 20...	12	1	44	6	33000	130	23	12	500

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 05...	0	.0	.0	0	1	0	0	20	10
MAR 16...	0	.1	.0	1	1	1	0	20	10
JUN 08...	5	.1	.0	1	1	0	0	70	10
AUG 21...	2	.2	.3	1	0	0	0	40	<5
SEP 20...	10	.6	.5	2	1	0	0	140	0

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	PCB, TOTAL (UG/L)	PCB, IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, IN BOT- TOM MA- TERIAL (UG/KG)	ATRA- ZINE, TOTAL (UG/L)	ATRA- ZINE, IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DANE, TOTAL (UG/L)	CHLOR- DANE, IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL (UG/L)	DDD, IN BOT- TOM MA- TERIAL (UG/KG)
NOV 07...	1230	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 16...	1345	ND	--	ND	--	ND	--	ND	--	ND	--
MAY 09...	1600	ND	ND	ND	ND	ND	--	ND	ND	ND	ND
AUG 21...	1500	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	DDE, TOTAL (UG/L)	DDE, IN BOT- TOM MA- TERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, IN BOT- TOM MA- TERIAL (UG/KG)	DI- AZINON, TOTAL (UG/L)	DI- AZINON, IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN, TOTAL (UG/L)	DI- ELDRIN, IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL (UG/L)	ENDRIN, IN BOT- TOM MA- TERIAL (UG/KG)
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NOV 07...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 16...	ND	--	ND	--	ND	--	ND	--	ND	--
MAY 09...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 21...	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	ETHION, TOTAL (UG/L)	ETHION, IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR, IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE BOTTL. MATH. (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE IN BOT- TOM MA- TERIAL (UG/KG)	MALA- THION, TOTAL (UG/L)	MALA- THION, IN BOT- TOM MA- TERIAL (UG/KG)
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NOV 07...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 16...	ND	--	ND	--	ND	--	ND	--	ND	--
MAY 09...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 21...	ND	--	ND	--	ND	--	ND	--	ND	--

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	METH- OXY- CHLOR, TOTAL (UG/L)	METH- OXY- CHLOR, TOT. IN BOTTOM MATL. (UG/KG)	METHYL PARA- THION, TOTAL (UG/L)	METHYL PARA- THION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRI- THION, TOTAL (UG/L)	METHYL TRI- THION, TOT. IN BOTTOM MATL. (UG/KG)	PARA- THION, TOTAL (UG/L)	PARA- THION, TOT. IN BOTTOM MATL. (UG/KG)	TOX- APHENE, TOTAL (UG/L)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
NOV 07...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 16...	ND	--	ND	--	ND	--	ND	--	ND	--
MAY 09...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 21...	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	TOTAL TRI- THION (UG/L)	TRI- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/L)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/L)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SIMA- ZINE TOTAL COUL- SON COND. (UG/L)	SILVEX, TOTAL (UG/L)	SILVEX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SIMA- ZINE IN BOTTOM MATERI- AL (UG/ KG DRY SOLIDS)
NOV 07...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 16...	ND	--	ND	--	ND	--	ND	ND	--	--
MAY 09...	ND	ND	ND	ND	ND	ND	ND	ND	ND	--
AUG 21...	ND	--	ND	--	ND	--	ND	ND	--	--

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
21...	1300	668	8.2	26.0	15.5	9.2	99
21...	1400	664	8.2	27.0	15.5	9.3	100
21...	1500	640	8.2	27.0	15.5	9.5	102
21...	1600	662	8.3	26.0	16.0	9.4	102
21...	1700	663	8.2	26.0	16.0	9.3	101
21...	1800	670	8.3	24.5	16.0	9.3	101
21...	1900	682	8.3	24.0	16.0	9.3	101
21...	2000	679	8.3	20.0	16.0	9.3	101
21...	2100	675	8.3	18.0	16.0	9.3	101
21...	2200	674	8.3	20.0	15.5	9.3	100
21...	2300	668	8.3	18.5	15.5	9.0	97
21...	2400	664	8.3	19.0	15.5	9.0	97
22...	0100	665	8.4	18.5	16.0	9.0	97
22...	0200	665	8.4	18.0	16.0	9.0	97
22...	0300	661	8.3	16.5	16.0	9.0	97
22...	0400	664	8.3	16.5	15.5	9.0	97
22...	0500	663	8.3	16.0	15.5	9.0	97
22...	0600	665	8.3	15.5	15.0	9.0	96
22...	0700	664	8.3	17.0	15.0	9.0	96
22...	0800	663	8.3	18.5	15.0	8.9	95
22...	0900	662	8.3	21.0	15.0	8.9	95
22...	1000	662	8.3	22.0	15.0	9.0	96
22...	1100	663	8.3	23.0	15.0	9.0	96
22...	1200	663	8.3	26.0	15.0	9.0	96
22...	1300	663	8.3	26.5	15.5	9.0	97

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHDS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	679	691	637	664	619	639	520	697	791	706	669	685
2	665	685	628	669	657	657	431	701	808	721	662	679
3	668	678	643	667	638	638	419	711	782	711	662	672
4	665	679	678	667	671	656	412	740	788	711	660	670
5	673	685	637	660	675	644	431	714	796	727	659	663
6	671	691	658	682	611	641	447	712	767	769	660	661
7	673	691	659	632	692	651	428	704	756	757	667	669
8	679	687	770	674	643	648	411	704	736	779	660	669
9	672	677	652	641	641	640	400	707	730	693	658	660
10	660	668	669	663	691	639	387	713	726	693	652	660
11	658	667	676	643	601	629	392	728	722	709	652	658
12	656	667	678	657	638	628	406	732	711	707	659	649
13	659	671	673	678	642	618	419	745	709	709	660	652
14	664	685	676	628	648	631	457	738	702	733	667	652
15	672	688	659	657	666	640	476	749	693	759	660	658
16	671	681	642	633	679	622	487	781	698	765	659	660
17	662	673	645	648	653	620	504	769	679	762	656	680
18	662	666	648	647	635	623	522	740	700	732	656	697
19	658	668	654	646	663	619	512	759	694	702	660	664
20	657	691	648	651	618	631	506	773	693	696	660	690
21	658	712	659	657	653	619	530	764	693	692	663	699
22	668	709	668	670	650	559	538	764	703	689	662	731
23	662	697	676	643	648	521	557	749	713	695	662	728
24	667	705	711	657	650	513	582	748	712	701	662	699
25	662	659	629	763	652	532	608	756	709	683	663	728
26	676	651	687	648	629	535	629	818	697	673	662	747
27	686	658	636	676	641	539	636	799	699	669	662	690
28	690	654	670	646	655	538	649	780	721	668	667	688
29	692	653	676	678	---	503	662	769	719	664	669	688
30	692	634	668	647	---	507	682	742	728	658	669	681
31	689	---	678	682	---	617	---	736	---	656	676	---
MEAN	670	678	664	660	649	603	501	743	726	709	662	681

WTR YR 1978 MEAN 663 MAX 818 MIN 587
 TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
 ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.0	7.5	.0	.0	.0	.0	3.5	10.0	12.0	20.0	16.0	15.0
2	9.0	7.0	.0	.0	.0	.0	3.0	9.0	11.0	20.5	15.5	15.5
3	9.5	6.0	.0	.0	.0	.0	3.5	11.0	11.0	20.5	14.5	16.0
4	9.5	7.0	.0	.0	.0	.0	4.0	11.0	14.0	19.5	14.5	16.5
5	8.5	5.0	.0	.0	.0	.0	5.5	10.5	15.0	19.5	15.0	16.0
6	7.5	5.0	.0	.0	.0	.0	5.5	10.5	16.0	19.5	16.0	16.0
7	8.0	5.0	.0	.0	.0	.0	5.5	10.5	15.5	19.0	16.5	15.5
8	7.0	4.5	.0	.0	.0	.0	5.0	9.5	15.5	19.0	17.0	16.0
9	8.0	3.5	.0	.0	.0	.0	6.0	9.0	16.0	16.5	17.0	15.0
10	7.0	2.5	.0	.0	.0	.0	5.5	11.0	16.0	15.0	17.0	15.0
11	5.0	2.0	.0	.0	.0	.0	6.0	11.0	15.5	16.0	17.0	16.0
12	5.5	2.0	.0	.0	.0	.0	5.0	11.5	14.5	16.5	17.0	14.5
13	7.0	3.0	.0	.0	.0	.0	5.0	11.5	16.0	18.0	17.5	12.5
14	7.5	4.0	.0	.0	.0	.0	5.5	12.5	16.0	18.5	17.5	12.0
15	8.0	4.0	.0	.0	.0	.0	6.5	13.5	16.0	19.5	16.0	12.0
16	9.0	4.0	.0	.0	.0	.0	5.5	15.5	15.0	20.0	16.0	11.0
17	9.0	3.0	.0	.0	.0	.0	6.0	15.5	16.0	21.0	15.5	12.0
18	9.0	1.0	.0	.0	.0	.0	6.5	13.0	16.0	19.5	14.0	12.0
19	9.0	1.0	.0	.0	.0	.0	5.5	13.0	16.5	18.0	14.0	10.5
20	9.0	1.0	.0	.0	.0	.0	5.0	12.0	15.0	17.5	14.5	10.0
21	9.5	.0	.0	.0	.0	.0	5.5	13.0	14.5	17.0	15.0	10.5
22	9.0	.0	.0	.0	.0	.0	6.5	15.0	15.5	17.0	15.5	11.0
23	9.5	.5	.0	.0	.0	.0	6.5	16.0	17.0	18.0	15.5	11.5
24	9.5	.0	.0	.0	.0	.0	6.5	17.5	17.0	19.5	15.0	13.0
25	9.5	.0	.0	.0	.0	.0	7.0	17.5	19.0	19.0	16.0	13.0
26	10.5	.0	.0	.0	.0	.0	8.5	17.5	17.0	20.0	17.0	14.0
27	10.0	.0	.0	.0	.0	.0	9.5	17.0	17.5	19.0	16.0	14.5
28	9.5	.0	.0	.0	.0	.0	11.0	16.0	17.0	19.0	15.0	14.5
29	9.5	.0	.0	.0	---	1.0	11.0	16.5	18.0	17.0	14.5	13.5
30	9.5	.0	.0	.0	---	1.0	10.5	16.0	19.0	16.0	14.0	13.5
31	8.5	---	.0	.0	---	4.0	---	14.0	---	15.5	14.5	---
MEAN	8.5	2.5	.0	.0	.0	.0	6.0	13.0	15.5	18.5	15.5	13.5

WTR YR 1978 MEAN 8.0 MAX 21.0 MIN .0

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 27...	1500	10.0	5740	147	2280	54
NOV 07...	1230	5.0	5320	66	948	71
APR 04...	1415	6.0	18900	1900	97000	96
MAY 09...	1600	12.0	9720	625	16400	98
JUN 08...	1330	17.5	12500	406	13700	49
JUL 11...	1500	23.0	11400	225	6930	65
AUG 21...	1500	15.5	14100	275	10500	54
SEP 20...	1000	10.0	18000	1360	66100	81

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM
OCT 27...	1500	3	3	81	100	--
NOV 07...	1230	0	0	57	98	100

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 7,77 1230	MAR 16,78 1100	MAY 9,78 1600
TOTAL CELLS/ML	1600	830	920
DIVERSITY: DIVISION	0.4	0.9	1.0
..CLASS	0.4	0.9	1.0
...ORDER	0.4	1.0	1.0
...FAMILY	1.3	1.8	1.0
....GENUS	1.9	1.9	1.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...CHLORACIACEAE						
....SCHROEDERIA	--	-	19	2	--	-
....DUCYSTACEAE						
....ANKISTRODESMUS	720#	45	--	-	--	-
....SELENASTRUM	56	4	--	-	--	-
...SCENEDESMACEAE						
....SCENEDESMUS	450#	29	--	-	--	-
....TETRASTRUM	220	14	--	-	--	-
...ULOTRICHIALES						
...CHAETOPHORACEAE						
....STIGEOCLONIUM	--	-	230#	27	--	-
...VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	--	-	--	-	340#	38
CHRYSDOPHYTA						
..BACILLARIOPHYCEAE						
...PENNALES						
...DIATOMACEAE						
....DIATOMA	--	-	19	2	--	-
...FRAGILARIACEAE						
....ASTERIONELLA	--	-	450#	55	--	-
...GOMPHONEMACEAE						
....GOMPHONEMA	--	-	38	5	--	-
...NAVICULACEAE						
....DIPLONEIS	--	-	19	2	--	-
....NAVICULA	--	-	19	2	--	-
...NITZSCHIAEAE						
....NITZSCHIA	--	-	38	5	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
...CHROCOCCACEAE						
....ANACYSTIS	--	-	--	-	570#	63
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
....TRACHELOMONAS	110	7	--	-	--	-

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUN 8,78 1330	JUL 11,78 1500	AUG 21,78 1500	SEP 20,78 1000
TOTAL CELLS/ML	1300	6900	260	0
DIVERSITY: DIVISION	0.6	1.3	0.7	0.0
..CLASS	0.6	1.3	0.7	0.0
...ORDER	1.0	2.1	1.0	0.0
....FAMILY	1.4	2.4	1.0	0.0
.....GENUS	2.3	3.3	1.0	0.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....DUCYSTACEAE								
.....ANKISTRODESMS	15	1	93	1	--	--	--	--
.....DICTYOSPHAERIUM	--	--	350	5	--	--	--	--
.....FRANCEIA	--	--	46	1	--	--	--	--
.....KIRCHNERIELLA	--	--	*	0	--	--	--	--
....DUCYSTIS	59	5	--	--	--	--	--	--
...SCENEDESMACEAE								
.....ACTINASTRUM	790#	61	530	8	--	--	--	--
.....CRUCIGENIA	59	5	--	--	--	--	--	--
.....SCENEDESMUS	59	5	190	3	--	--	--	--
.....TETRASTRUM	59	5	93	1	22	8	--	--
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	15	1	93	1	--	--	--	--
...ZYGNEMALES								
...DESMIDIACEAE								
....CLOSTERIUM	--	--	*	0	--	--	--	--
....COSMARIUM	29	2	--	--	--	--	--	--
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCAEAE								
....CYCLOTELLA	59	5	280	4	--	--	--	--
....STEPHANODISCUS	--	--	--	--	11	4	--	--
..PENNALES								
...ACHNANTHACEAE								
...COCCONEIS	15	1	--	--	--	--	--	--
...DIATOMACEAE								
....DIATOMA	--	--	*	0	--	--	--	--
...FRAGILARIACEAE								
....FRAGILARIA	59	5	--	--	--	--	--	--
....SYNEDRA	59	5	--	--	--	--	--	--
...NAVICULACEAE								
....NAVICULA	15	1	--	--	--	--	--	--
...NITZSCHIACEAE								
....NITZSCHIA	--	--	420	6	5	2	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCOCCALES								
....CHROCOCCOCCAEAE								
.....AGMENELLUM	--	--	1500#	22	--	--	--	--
.....ANACYSTIS	--	--	--	--	11	4	--	--
...HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	--	--	1500#	22	--	--	--	--
....ANABAENOPSIS	--	--	390	6	--	--	--	--
....APHANIZOMENON	--	--	1000#	15	--	--	--	--
...OSCILLATORIACEAE								
....OSCILLATORIA	--	--	93	1	220#	82	--	--
EUGLENOPHYTA (EUGLENIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
.....EUGLENA	--	--	*	0	--	--	--	--
....TRACHELIDMONAS	--	--	160	2	--	--	--	--

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

LOCATION.--Lat 44°32'00", long 110°26'20", Yellowstone National Park, Hydrologic Unit 10070001, at marina at Bridge Bay, 3.7 mi (6.0 km) southwest of lake outlet.

PERIOD OF RECORD.--October 1921 to current year (gage heights only). Prior to October 1966, published as Yellowstone Lake at Lake Hotel.

GAGE.--Nonrecording gage usually read once daily except during winter months, when it is read occasionally. Datum of gage is 7,729.45 ft (2,355.936 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1966, nonrecording gages at Lake Hotel dock at same datum.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 7.34 ft (2.237 m) June 28, 30, 1974; minimum observed, -0.1 ft (-0.03 m) Dec. 7, 8, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 5.74 ft (1.750 m) July 8, 12; minimum observed, 0.76 ft (0.232 m) Dec. 13.

[illegible]

YELLOWSTONE RIVER BASIN

323

06186500 YELLOWSTONE RIVER AT YELLOWSTONE LAKE OUTLET, YELLOWSTONE NATIONAL PARK

LOCATION.--Lat 44°34'03", long 110°22'48", Yellowstone National Park, Hydrologic Unit 10070001, on left bank 450 ft (137 m) downstream from Fishing Bridge, 0.2 mi (0.3 km) downstream from outlet of Yellowstone Lake, and at mile 594.8 (957.0 km).

DRAINAGE AREA.--1,006 mi² (2,606 km²).

PERIOD OF RECORD.--December 1922 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 7,727.77 ft (2,355.424 m), National Geodetic Vertical Datum of 1929. Prior to Oct. 2, 1928, nonrecording gage at site 450 ft (137 m) upstream at datum 1.07 ft (0.326 m) higher.

REMARKS.--Records good except those for Oct. 29 to Dec. 1 and winter periods, which are poor. No artificial regulation.

AVERAGE DISCHARGE.--52 years (1927-78), 1,329 ft³/s (37.64 m³/s), 17.94 in/yr (456 mm/yr), 962,900 acre-ft/yr (1.19 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,170 ft³/s (260 m³/s) June 28, 1974, gage height, 8.20 ft (2.499 m); minimum daily, 130 ft³/s (3.68 m³/s) Mar. 1-31, 1934, but may have been less during periods of ice effect; minimum gage height, 1.45 ft (0.442 m) Dec. 17, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,460 ft³/s (155 m³/s) July 10, gage height, 6.70 ft (2.042 m); minimum daily, 220 ft³/s (6.23 m³/s) Mar. 3, 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	595	450	360	300	260	240	552	580	1510	4970	4120	1970		
2	585	450	360	300	260	230	552	585	1520	5100	4010	1920		
3	580	450	350	300	260	220	552	590	1570	5180	3920	1890		
4	570	440	350	300	250	220	548	595	1600	5260	3840	1860		
5	561	435	355	295	250	230	552	595	1640	5320	3720	1830		
6	561	435	355	290	250	230	548	595	1730	5320	3640	1790		
7	561	432	362	290	240	250	552	595	1820	5360	3550	1780		
8	557	430	351	290	240	260	552	600	1940	5380	3460	1770		
9	543	420	341	290	240	270	552	605	2120	5380	3370	1720		
10	534	415	341	290	240	290	552	620	2280	5380	3290	1680		
11	530	410	341	285	240	290	561	645	2520	5400	3190	1650		
12	525	400	348	285	240	300	557	655	2630	5400	3100	1620		
13	521	400	344	280	240	310	552	655	2720	5360	3070	1600		
14	516	390	330	280	240	330	543	665	2870	5320	3010	1580		
15	512	390	330	280	240	330	543	692	3100	5280	2900	1570		
16	512	390	330	280	240	340	557	736	3290	5260	2870	1520		
17	503	379	330	275	240	360	561	798	3440	5240	2810	1480		
18	503	375	330	275	240	370	557	828	3550	5200	2740	1500		
19	498	375	320	275	240	380	548	870	3630	5120	2680	1490		
20	494	375	320	275	240	390	548	882	3740	5000	2610	1460		
21	489	375	320	270	240	400	557	914	3820	4930	2540	1430		
22	489	375	320	270	240	420	561	949	3920	4870	2490	1410		
23	489	375	315	270	240	450	561	998	4070	4790	2440	1380		
24	480	375	315	270	240	440	561	1080	4250	4660	2380	1360		
25	480	370	315	265	240	460	552	1160	4410	4590	2290	1330		
26	476	370	310	265	240	470	557	1200	4520	4480	2250	1320		
27	468	370	310	265	240	480	561	1260	4570	4430	2200	1300		
28	460	370	310	260	240	500	561	1300	4610	4410	2140	1280		
29	460	360	310	260	---	510	566	1370	4720	4410	2110	1260		
30	460	360	305	260	---	510	575	1420	4870	4340	2060	1250		
31	450	---	305	260	---	530	---	1480	---	4250	2040	---		
TOTAL	15962	11941	10283	8650	6810	10990	16651	26517	92980	155390	90840	47000		
MEAN	515	398	332	279	243	355	555	855	3099	5013	2930	1567		
MAX	595	450	362	300	260	530	575	1480	4870	5400	4120	1970		
MIN	450	360	305	260	240	220	543	580	1510	4250	2040	1250		
CFSM	.51	.40	.33	.28	.24	.35	.55	.85	3.08	4.98	2.91	1.56		
IN.	.59	.44	.38	.32	.25	.41	.62	.98	3.44	5.75	3.36	1.74		
AC-FT	31660	23680	20400	17160	13510	21800	33030	52600	184400	308200	180200	93220		
CAL YR 1977	TOTAL	261632	MEAN	717	MAX	2130	MIN	280	CFSM	.71	IN	9.67	AC-FT	518900
WTR YR 1978	TOTAL	494014	MEAN	1353	MAX	5400	MIN	220	CFSM	1.35	IN	18.27	AC-FT	979900

YELLOWSTONE RIVER BASIN

06191500 YELLOWSTONE RIVER AT CORWIN SPRINGS, MT

LOCATION.--Lat 45°06'43", long 110°47'37", in SE¼NW¼ sec.30, T.8 S., R.8 E., Park County, Hydrologic Unit 10070002, on left bank 20 ft (6 m) downstream from highway bridge at Corwin Springs, 1.3 mi (2.1 km) upstream from Mol Herron Creek, 7 mi (11 km) northwest of Gardiner, and at mile 530.5 (853.6 km).

DRAINAGE AREA.--2,623 mi² (6,794 km²).

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 and temperature recorders. Datum of gage is 5,079.09 ft (1,548.107 m) National Geodetic Vertical Datum of 1929. Aug. 12, 1889 to Nov. 4, 1893, nonrecording gages at site 2 mi (3 km) upstream at different datums. Sept. 2, 1910, to Apr. 19, 1935, nonrecording gages on bridges at present datum.

REMARKS.--Records good. Natural storage in Yellowstone Lake. Diversions for irrigation of about 960 acres (3.89 km²) of which 40 acres (162,000 m²) lies below station.

AVERAGE DISCHARGE.--72 years, 3,123 ft³/s (88.44 m³/s), 16.17 in/yr (411 mm/yr), 2,263,000 acre-ft/yr (2.79 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 32,000 ft³/s (906 m³/s) June 14, 15, 1918, gage height, 11.5 ft (3.51 m), from rating curve extended above 18,000 ft³/s (510 m³/s); minimum observed, 389 ft³/s (11.0 m³/s) Feb. 23, Mar. 5, 9, 1937, gage height, 0.05 ft (0.015 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 12,000 ft³/s (340 m³/s) and maximum(*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 10	0600	*20,600 583	*8.67 2.643	June 15	0500	18,800 532	8.28 2.524

Minimum discharge, 582 ft³/s (16.5 m³/s) Jan. 24, gage height, 0.53 ft (0.162 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1470	998	857	678	711	879	1550	2630	6240	14000	5740	2860
2	1390	1050	836	639	678	864	1610	3040	6240	13600	5540	2800
3	1380	1080	793	765	671	843	1510	3760	7470	13400	5360	2730
4	1390	1090	770	779	685	930	1420	3560	8670	13200	5200	2690
5	1350	1080	760	752	671	953	1390	3090	10600	12000	5070	2650
6	1300	1080	750	704	691	975	1340	2760	12600	11500	4940	2620
7	1330	1040	740	691	698	945	1330	2540	13300	11200	4790	2630
8	1330	983	740	685	718	983	1390	2440	13500	11200	4650	2690
9	1300	743	752	685	704	1010	1510	2430	15800	11100	4540	2620
10	1290	923	765	678	711	1020	1530	3100	18700	10800	4440	2520
11	1210	975	779	678	718	990	1600	3620	14800	10800	4340	2560
12	1210	990	814	685	665	983	1600	3270	12000	10600	4220	2660
13	1250	960	821	678	671	990	1590	3010	12300	9970	4180	2590
14	1250	990	821	691	665	983	1530	3750	15600	9650	4320	2540
15	1250	983	843	698	704	908	1490	6410	17600	9380	4030	2600
16	1240	945	857	678	691	872	1500	9140	15200	9200	3990	2630
17	1230	886	745	691	691	975	1520	6790	13300	9110	4380	2500
18	1200	879	752	698	718	1030	1450	5700	13100	8500	4070	2400
19	1190	857	731	691	718	1040	1440	4860	14100	8240	3820	2420
20	1180	704	671	691	725	1080	1490	4750	13100	8070	3670	2360
21	1170	678	711	698	698	1070	1540	5220	13700	7990	3560	2310
22	1160	850	879	711	711	1100	1500	6870	14600	7470	3470	2350
23	1150	879	786	704	725	1080	1450	7820	15000	7180	3530	2350
24	1130	886	772	633	759	1080	1410	8840	15300	7020	3370	2340
25	1120	886	745	685	779	1070	1480	7880	15000	6790	3250	2260
26	1120	930	752	704	793	1070	1650	7100	12800	6540	3160	2190
27	1120	945	752	691	843	1090	2060	6890	11800	6320	3120	2100
28	1110	938	752	685	864	1120	2180	7000	12700	6440	3060	2060
29	1090	923	745	704	---	1170	2310	8440	14060	6690	3000	2020
30	1120	893	772	671	---	1250	2500	7990	14400	6220	2950	1990
31	1110	---	759	658	---	1380	---	6940	---	5980	2890	---
TOTAL	38140	28094	24022	21479	20076	31733	47870	161640	393520	290160	126650	74040
MEAN	1230	936	775	693	717	1024	1596	5214	13120	9360	4085	2468
MAX	1470	1090	879	779	864	1380	2500	9140	18700	14000	5740	2860
MIN	1090	678	671	633	665	843	1330	2430	6240	5980	2890	1990
CFSM	.47	.36	.30	.26	.27	.39	.61	1.99	5.00	3.57	1.56	.94
IN.	.54	.40	.34	.30	.28	.45	.68	2.29	5.58	4.12	1.80	1.05
AC-FT	75650	55720	47650	42600	39820	62940	94950	320600	780500	575500	251200	146900
CAL YR 1977 TOTAL	713937			MEAN 1956	MAX 10600	MIN 640	CFSM .75	IN 10.13	AC-FT 1416000			
WTR YR 1978 TOTAL	1257424			MEAN 3445	MAX 18700	MIN 633	CFSM 1.31	IN 17.83	AC-FT 2494000			

06191500 YELLOWSTONE RIVER AT CORWIN SPRINGS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-74, 1977 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: June 1977 to current year.

INSTRUMENTATION.--Temperature recorder since June 1977.

REMARKS.--No record Nov. 7 to 21, Jan 5 to Feb. 22.

EXTREMES FOR PERIOD OF DAILY RECORD.--Maximum, 21.5°C July 22, 23, 1977; minimum recorded, 0.0°C on many days during winter period.

EXTREMES FOR CURRENT YEAR.--Maximum, 19.5°C Sept. 6, 7; minimum, 0.0°C on many days during December to March.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.0	8.5	9.0	4.5	3.0	4.0	3.0	1.5	2.0	.0	.0	.0
2	9.5	7.0	8.0	5.0	3.5	4.0	5.0	1.5	3.0	.0	.0	.0
3	9.5	7.0	8.5	6.0	3.5	4.5	4.0	2.5	3.0	.5	.0	.0
4	10.5	8.0	9.0	6.5	4.5	5.5	2.5	1.5	2.0	1.0	.5	.5
5	10.0	7.5	8.5	6.5	5.0	6.0	2.5	1.5	2.0	---	---	---
6	9.0	7.5	8.5	7.0	6.0	---	3.0	1.0	2.5	---	---	---
7	10.0	8.5	9.0	---	---	---	1.0	.0	.5	---	---	---
8	9.5	7.5	8.5	---	---	---	.0	.0	.0	---	---	---
9	8.0	7.0	7.5	---	---	---	1.0	.0	.5	---	---	---
10	8.0	5.5	6.5	---	---	---	2.5	.5	1.5	---	---	---
11	7.5	4.5	6.0	---	---	---	3.5	2.0	3.0	---	---	---
12	7.5	4.5	6.0	---	---	---	4.0	3.0	3.5	---	---	---
13	7.5	5.5	6.5	---	---	---	4.5	3.5	4.0	---	---	---
14	9.0	6.5	7.5	---	---	---	5.0	4.5	5.0	---	---	---
15	9.5	6.5	8.0	---	---	---	4.5	2.0	4.0	---	---	---
16	9.5	7.0	8.0	---	---	---	2.0	.0	.0	---	---	---
17	9.5	7.0	8.0	---	---	---	.0	.0	.0	---	---	---
18	10.0	7.0	8.0	---	---	---	.0	.0	.0	---	---	---
19	9.5	7.0	8.0	---	---	---	.0	.0	.0	---	---	---
20	9.5	7.5	8.0	---	---	---	.0	.0	.0	---	---	---
21	9.0	7.5	8.0	---	---	---	.0	.0	.0	---	---	---
22	9.0	6.5	8.0	1.0	---	---	1.0	.0	.5	---	---	---
23	9.0	6.0	7.5	3.0	1.0	2.0	1.0	.0	.5	---	---	---
24	9.0	6.5	7.5	4.0	2.5	3.5	.0	.0	.0	---	---	---
25	10.0	7.5	8.5	4.5	4.0	4.0	1.0	.0	.5	---	---	---
26	10.0	7.5	9.0	4.0	3.0	3.5	.5	.0	.0	---	---	---
27	10.5	8.0	9.0	4.0	3.0	3.5	.0	.0	.0	---	---	---
28	9.5	7.5	8.5	4.5	3.0	3.5	1.0	.0	.5	---	---	---
29	8.5	7.5	8.0	3.5	2.0	2.5	1.5	.0	.5	---	---	---
30	8.5	7.0	7.5	2.0	1.5	1.5	.0	.0	.0	---	---	---
31	7.0	4.5	5.5	---	---	---	.0	.0	.0	---	---	---
MONTH	10.5	4.5	8.0	7.0	1.0	3.5	5.0	.0	1.5	1.0	.0	.0

06191500 YELLOWSTONE RIVER AT CORWIN SPRINGS, MT--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY												
1	---	---	---	3.5	.5	2.0	9.0	7.5	8.0	9.0	7.5	8.5
2	---	---	---	2.0	.0	.5	8.5	6.5	7.0	9.0	8.0	8.5
3	---	---	---	.5	.0	.0	7.5	5.5	6.5	8.5	6.5	7.5
4	---	---	---	2.5	.0	1.5	6.5	5.0	6.0	7.0	5.5	6.0
5	---	---	---	6.0	2.5	4.5	8.5	5.5	7.0	7.0	5.5	6.0
6	---	---	---	7.0	4.5	5.5	8.0	6.0	7.0	6.5	5.5	6.0
7	---	---	---	6.0	3.0	4.5	8.5	6.0	6.5	7.5	5.0	6.0
8	---	---	---	6.0	3.0	4.5	10.5	6.5	8.5	9.0	5.5	7.0
9	---	---	---	6.5	4.5	5.5	10.0	7.5	8.5	10.5	7.0	9.0
10	---	---	---	7.5	4.0	5.5	10.0	7.0	8.5	9.5	8.0	9.0
11	---	---	---	6.5	3.0	4.5	10.0	6.5	8.5	8.0	6.0	7.0
12	---	---	---	4.5	3.0	4.0	8.5	5.5	7.0	7.0	5.5	6.0
13	---	---	---	5.5	3.0	4.0	8.0	5.0	6.5	9.5	6.5	8.0
14	---	---	---	4.5	2.5	3.5	7.0	5.5	6.0	10.5	8.5	9.5
15	---	---	---	5.0	1.5	3.0	8.0	5.0	6.5	9.5	8.0	8.5
16	---	---	---	4.5	1.0	3.0	8.5	6.5	7.0	9.5	4.5	6.0
17	---	---	---	6.5	2.5	4.5	8.0	5.5	6.5	5.0	4.0	4.5
18	---	---	---	8.0	4.0	5.5	8.0	4.5	6.0	5.5	5.0	5.0
19	---	---	---	8.5	4.0	6.0	9.5	5.0	7.0	7.5	5.5	6.5
20	---	---	---	8.0	4.5	6.0	9.0	7.0	8.0	8.0	7.5	8.0
21	---	---	---	8.5	4.0	6.0	8.0	6.5	7.5	9.5	8.0	8.5
22	---	---	---	6.5	4.5	5.5	8.0	5.5	6.5	9.5	7.0	8.0
23	5.0	---	---	7.0	4.5	6.0	8.5	5.0	6.0	8.0	7.0	7.5
24	4.0	3.5	4.0	8.0	5.5	6.5	9.0	4.5	7.0	8.0	6.0	7.0
25	5.0	2.5	3.5	7.5	4.5	6.0	9.5	7.0	8.0	6.5	5.0	5.5
26	4.5	2.5	3.5	9.5	5.5	7.0	11.5	9.0	10.0	7.5	5.5	6.5
27	5.0	2.5	3.5	9.5	6.0	8.0	10.5	8.5	9.5	8.0	6.5	7.0
28	4.5	2.0	3.0	10.0	6.5	8.0	9.0	8.0	8.5	8.5	6.5	7.5
29	---	---	---	10.5	6.5	8.5	8.0	7.0	7.5	9.0	6.0	7.0
30	---	---	---	9.0	6.5	8.0	8.5	7.0	7.5	6.0	5.0	5.5
31	---	---	---	10.0	7.0	8.5	---	---	---	6.0	5.5	6.0
MONTH	5.0	2.0	3.5	10.5	.0	5.0	11.5	4.5	7.5	10.5	4.0	7.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE												
1	8.5	6.0	7.0	12.0	10.0	11.0	17.5	16.5	17.0	17.5	15.0	16.0
2	9.5	7.5	8.5	12.5	10.0	11.5	16.5	16.0	16.5	17.5	14.5	16.0
3	9.5	8.0	8.5	13.0	10.5	11.5	16.5	15.5	16.0	17.5	15.0	16.0
4	9.5	7.5	8.5	13.0	10.0	11.0	17.0	15.5	16.5	18.0	15.0	16.0
5	10.0	6.5	8.5	11.0	9.5	10.5	17.5	16.5	17.0	16.5	15.5	17.0
6	10.0	6.0	8.0	11.5	10.5	11.0	18.5	17.5	18.0	19.5	17.0	18.0
7	9.0	6.5	7.5	13.0	11.0	11.5	18.5	17.0	18.0	19.5	17.0	17.5
8	10.0	5.5	7.5	13.0	11.5	12.5	18.5	17.0	17.5	17.5	14.5	16.5
9	10.0	6.0	8.0	13.0	12.0	12.5	19.0	17.0	18.0	16.0	12.5	14.0
10	10.0	5.5	6.5	14.0	12.0	13.0	18.5	17.5	17.5	14.5	13.5	14.0
11	7.5	4.5	5.5	14.5	13.0	14.0	18.5	17.0	18.0	14.0	12.0	13.0
12	9.5	6.0	7.0	14.5	13.0	13.5	18.0	16.0	17.0	12.0	9.5	11.0
13	10.5	8.0	9.0	14.5	13.0	14.0	16.0	15.0	15.5	11.0	9.5	10.0
14	10.5	7.0	8.5	15.0	13.5	14.0	15.0	13.5	14.5	12.5	9.5	10.5
15	10.0	6.5	8.0	15.5	14.0	14.5	15.5	13.5	14.5	13.5	10.5	11.5
16	6.5	6.0	7.0	14.5	14.0	14.5	15.0	13.5	14.5	14.5	11.5	12.5
17	9.5	6.5	7.5	15.0	13.5	14.5	13.5	12.5	13.0	13.5	10.5	11.5
18	10.0	7.0	8.5	14.5	13.5	14.0	14.5	12.5	13.5	10.5	8.5	9.5
19	10.0	7.5	8.5	15.0	14.5	14.5	14.5	12.5	13.5	9.5	7.5	8.0
20	10.0	6.5	8.0	15.0	13.0	14.5	15.5	13.5	14.5	10.0	6.5	8.0
21	10.5	8.0	9.5	13.0	12.5	13.0	16.5	14.0	15.0	10.5	6.5	8.5
22	11.0	8.0	9.5	15.0	12.5	13.5	16.5	14.5	15.0	11.0	8.0	9.5
23	11.0	7.5	9.5	16.5	14.5	15.0	15.0	13.0	14.0	12.5	9.0	10.5
24	11.0	8.0	9.5	16.5	15.5	16.0	16.0	13.0	14.5	14.0	10.0	12.0
25	10.5	7.5	8.5	16.5	15.5	16.0	16.5	13.5	15.0	14.5	10.5	12.0
26	9.5	7.5	8.0	16.5	15.5	16.0	16.5	14.0	15.0	15.0	11.0	13.0
27	11.5	9.0	10.0	17.0	16.0	16.5	16.5	14.5	15.0	14.5	11.0	12.5
28	12.0	9.5	10.5	17.0	15.5	16.5	16.5	13.5	15.0	13.0	12.0	12.5
29	12.0	10.0	11.0	16.5	15.0	16.0	16.5	14.0	15.0	14.0	11.0	12.0
30	12.0	9.5	11.0	17.0	16.0	16.5	17.0	14.0	15.5	13.0	9.5	11.5
31	---	---	---	18.0	17.0	17.5	17.5	15.0	16.0	---	---	---
MONTH	12.0	4.5	8.5	18.0	9.5	14.0	19.0	12.5	15.5	19.5	6.5	12.5
YEAR	19.5	.0	8.5									

YELLOWSTONE RIVER BASIN

06192500 YELLOWSTONE RIVER NEAR LIVINGSTON, MT

LOCATION.--Lat 45°35'50", long 110°33'55", in NE¼NW¼NW¼ sec. 12, T.3 S., R.9 E., Park County, Hydrologic Unit 10070002, on right bank 50 ft (15 m) downstream from bridge on former U.S. Highway 89, 2 mi (3 km) downstream from Suce Creek, 4 mi (6 km) south of Livingston, and at mile 481.3 (774.4 km).

DRAINAGE AREA.--3,551 mi² (9,197 km²).

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 (1,384.551 m), National Geodetic Vertical Datum of 1929. 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. Diversions for irrigation of about 24,200 acres (97.9 km²) of which about 2,000 acres (8.10 km²) is below station.

AVERAGE DISCHARGE.--53 years, 3,779 ft³/s (107.0 m³/s), 2,738,000 acre-ft/yr (3.38 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 36,300 ft³/s (1,030 m³/s) June 17, 1974, gage height 9.21 ft (2.807 m); maximum gage height, 9.34 ft (2.847 m) June 20, 1943; minimum daily discharge, 590 ft³/s (16.7 m³/s) Jan. 22, 1940.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 13,500 ft³/s (382 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
June 10	1300	*26,000	736	*7.87	2.399	June 15	1215	24,100	683	7.57	2.307

Minimum discharge, 778 ft³/s (22.0 m³/s) Feb. 18, gage height 0.86 ft (0.262 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2130	1610	1330	1000	941	1200	2070	3420	7850	18700	7220	3640
2	2050	1530	1330	1000	1150	1150	2230	3750	7480	18100	6930	3530
3	1960	1610	1280	1050	1020	1100	2150	4480	8400	17900	6680	3440
4	1990	1610	1260	1130	1040	1100	1970	4680	9700	17800	6470	3380
5	1960	1600	1200	1190	1020	1150	1900	4280	11900	16200	6290	3330
6	1900	1630	1200	1160	1040	1280	1820	3840	14900	15200	6110	3290
7	1930	1610	1200	1170	1020	1280	1790	3480	16400	14700	5960	3290
8	1940	1560	1200	1150	1020	1280	1800	3290	17200	14900	5760	3270
9	1900	1410	1200	1140	1030	1330	1900	3210	19700	14900	5620	3310
10	1940	1310	1200	1130	1000	1400	2020	3530	23900	14400	5510	3210
11	1900	1490	1260	1150	1100	1350	2040	4300	20900	14300	5420	3230
12	1820	1480	1230	1180	994	1310	2120	4380	16900	14100	5260	3330
13	1850	1490	1230	1160	930	1300	2090	3860	15500	13300	5180	3310
14	1880	1460	1260	1160	951	1300	2050	4120	14100	12700	5310	3250
15	1860	1480	1260	1200	1000	1260	1990	6470	22400	12300	5100	3230
16	1850	1480	1310	1110	1070	1190	1970	10000	21200	11900	4940	3310
17	1850	1410	1220	1100	983	1210	1990	9240	18100	11900	5290	3310
18	1830	1370	1160	1110	878	1320	1960	7680	16900	11000	5180	3210
19	1800	1450	1160	1110	1020	1390	1900	6410	17900	10600	4860	3210
20	1790	1200	1100	1140	1120	1410	1910	5910	17300	10400	4710	3190
21	1770	1000	1060	1160	1080	1420	2000	6140	17200	10200	4580	3270
22	1760	1100	1140	1120	1050	1450	2000	7680	18500	9570	4430	3250
23	1730	1300	1100	1120	1030	1450	1930	9160	19200	9160	4430	3290
24	1700	1480	1100	1030	1040	1440	1900	10400	20000	8910	4360	3250
25	1690	1480	1100	983	1060	1440	1880	10100	20000	8620	4190	3210
26	1690	1550	1100	1110	1080	1410	2050	9160	17600	8330	4090	3110
27	1700	1450	1100	1060	1090	1450	2480	8620	15600	7990	4020	3030
28	1690	1410	1100	1020	1160	1490	2870	8550	16200	7920	3950	2970
29	1640	1400	1070	1000	---	1560	3010	9800	17900	8370	3860	2930
30	1660	1390	1020	1030	---	1670	3250	9950	19100	7850	3790	2870
31	1670	---	1000	1050	---	1850	---	8830	---	7520	3730	---
TOTAL	56830	43350	36480	34223	28917	41940	63040	198780	504990	379740	159230	97450
MEAN	1833	1445	1177	1104	1033	1353	2101	6412	16830	12250	5136	3248
MAX	2130	1630	1330	1200	1160	1850	3250	10400	23900	18700	7220	3640
MIN	1640	1000	1000	983	878	1100	1790	3210	7480	7520	3730	2870
AC-FT	112700	85980	72360	67880	57360	83190	125000	394300	1002000	753200	315800	193300
CAL YR 1977 TOTAL	935910			MEAN 2564	MAX 12800	MIN 1000	AC-FT 1856000					
WTR YR 1978 TOTAL	1644970			MEAN 4507	MAX 23900	MIN 878	AC-FT 3263000					

06192500 YELLOWSTONE RIVER NEAR LIVINGSTON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1969 to current year.

WATER TEMPERATURES: October 1969 to current year.

INSTRUMENTATION.--Temperature recorder since July 25, 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 398 micromhos Apr. 3, 1970; minimum daily, 83 micromhos June 6, 1976.

WATER TEMPERATURES: Maximum daily, 23.0°C July 9, 1976; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 366 micromhos Jan. 4; minimum daily, 87 micromhos June 14.

WATER TEMPERATURES: Maximum daily, 19.5°C Aug. 6, 9; minimum daily, 0.0°C on many days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	
DATE	TIME												
OCT 27...	1230	1700	--	7.5	98	8	26	8.1	19	.8	4.6	110	
NOV 22...	1430	1100	538	.0	120	9	30	10	24	1.0	5.5	130	
DEC 28...	1150	1100	532	.0	110	17	28	9.1	24	1.0	5.9	110	
JAN 26...	1200	1110	536	.5	110	11	29	9.1	24	1.0	5.9	120	
FEB 22...	1320	1140	517	2.0	100	6	27	9.1	24	1.0	5.5	120	
MAR 29...	1115	1550	273	9.5	91	9	24	7.5	21	1.0	4.7	100	
APR 26...	1030	1960	255	10.0	87	5	22	7.7	17	.8	4.2	100	
MAY 26...	0800	9160	131	6.0	51	2	13	4.5	8.3	.5	1.9	60	
JUN 28...	1355	16800	118	11.0	41	2	11	3.3	7.1	.5	1.7	48	
JUL 26...	1230	8230	118	16.0	49	0	12	4.7	11	.7	2.3	60	
AUG 23...	1610	4460	182	15.5	63	2	16	5.5	14	.8	3.1	74	
SEP 27...	1030	3050	219	11.5	75	2	20	6.2	13	.7	3.4	90	
		SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 27...	41	9.7	.7	23	187	.25	858	.14	.02	.00	20	0	
NOV 22...	44	12	.8	28	220	.30	653	.42	.02	.01	40	20	
DEC 28...	41	15	.8	30	211	.29	627	.55	.03	.03	70	10	
JAN 26...	47	12	.8	30	219	.30	656	.43	.04	.03	60	10	
FEB 22...	45	15	.9	29	216	.29	665	.39	.02	.01	30	0	
MAR 29...	37	10	.8	20	175	.24	752	.15	.01	.01	40	10	
APR 26...	30	8.9	.7	22	162	.22	857	.07	.01	.01	40	0	
MAY 26...	14	2.8	.2	19	94	.13	2330	.13	.02	.02	80	0	
JUN 28...	9.8	3.4	.3	16	77	.10	3490	.16	.02	.01	60	5	
JUL 26...	15	4.8	.6	16	96	.13	2130	.10	.01	.01	30	0	
AUG 23...	18	6.4	.6	19	120	.16	1450	.06	.01	.01	200	4	
SEP 27...	22	7.8	.6	19	137	.19	1130	.04	.01	.01	160	0	

YELLOWSTONE RIVER BASIN

06192500 YELLOWSTONE RIVER NEAR LIVINGSTON, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	262	279	299	322	338	328	257	211	140	97	152	202
2	257	287	298	344	337	311	245	200	143	102	154	208
3	261	263	303	361	329	306	245	189	129	100	154	208
4	262	279	308	366	332	332	253	178	119	100	156	206
5	259	279	312	340	334	291	268	182	108	108	158	207
6	262	278	308	325	334	289	262	190	101	112	162	224
7	262	283	303	323	337	290	261	205	94	114	162	212
8	263	284	298	328	333	288	262	203	92	111	163	223
9	263	288	329	327	331	283	263	211	88	112	165	213
10	264	294	313	327	327	281	257	207	96	112	167	210
11	263	298	307	331	313	282	252	189	110	110	170	212
12	267	282	310	328	327	285	249	177	105	110	169	209
13	269	284	317	328	333	290	250	187	93	115	169	212
14	267	284	312	328	336	284	252	189	87	120	170	213
15	263	290	307	328	347	289	252	158	95	122	173	212
16	264	288	308	331	332	288	252	129	102	122	175	208
17	262	288	313	327	336	300	252	122	101	121	172	204
18	263	285	307	327	333	293	256	142	97	123	173	214
19	267	305	317	341	334	281	254	155	98	128	175	212
20	267	309	332	337	334	279	257	160	100	129	176	215
21	268	295	349	326	326	291	256	157	98	131	181	216
22	268	329	348	334	328	287	256	143	95	138	182	216
23	270	332	352	331	334	274	256	132	94	136	184	216
24	270	299	331	331	332	273	258	126	90	140	183	214
25	277	292	329	333	322	278	252	129	90	140	185	212
26	276	284	327	337	323	279	257	133	111	141	188	215
27	276	290	325	327	320	281	244	136	109	142	196	217
28	272	291	332	329	312	274	222	142	103	145	190	221
29	276	296	339	331	---	274	217	127	95	146	192	222
30	278	295	334	331	---	268	214	123	95	147	193	224
31	274	---	333	336	---	253	---	130	---	150	196	---
MEAN	267	292	319	333	331	287	251	163	103	123	174	213

MTN YR 1978 MEAN 237 MAX 366 MIN 87
TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	10.0	9.0	9.5	5.0	4.0	4.5	2.5	1.5	2.0	.0	.0	.0
2	10.5	7.5	9.0	4.5	4.0	4.0	3.5	1.5	2.5	.0	.0	.0
3	10.0	8.0	9.0	4.5	3.0	4.0	4.0	3.5	3.5	1.0	.0	.5
4	10.5	8.0	9.5	6.0	3.5	4.5	3.5	1.0	2.5	1.5	.5	1.0
5	9.0	7.5	8.5	6.0	4.5	5.0	1.0	.0	.5	1.5	1.0	1.0
6	9.0	7.5	8.0	7.0	5.5	6.0	2.0	.0	1.0	2.0	1.0	1.5
7	8.5	8.0	8.5	6.0	4.5	5.5	2.0	1.0	2.0	1.5	.0	.5
8	9.5	7.5	8.5	4.5	3.0	3.5	.5	.0	.0	.0	.0	.0
9	8.0	7.0	7.5	3.5	2.0	2.5	.0	.0	.0	.0	.0	.0
10	8.0	5.5	7.0	4.5	2.0	3.0	.5	.0	.5	.0	.0	.0
11	8.0	5.5	7.0	4.5	2.5	3.5	2.0	.5	1.5	.5	.0	.0
12	9.0	5.5	7.0	4.5	3.5	4.0	2.5	2.0	2.5	1.5	.5	1.0
13	8.5	6.5	7.5	5.5	4.0	4.5	3.0	2.0	2.5	2.0	1.0	1.5
14	9.5	6.5	8.0	5.0	3.5	4.0	4.5	3.0	3.5	2.0	1.0	1.5
15	9.5	6.5	8.0	4.5	4.0	4.0	5.0	4.5	4.5	.5	.0	.0
16	10.0	7.5	8.5	4.0	3.0	3.5	4.0	3.0	3.5	.0	.0	.0
17	10.0	7.0	8.5	3.0	2.0	2.5	3.0	1.0	1.5	1.5	.0	.5
18	10.0	7.0	8.5	2.0	1.0	1.5	1.5	.5	1.0	.0	.0	.0
19	9.5	7.0	8.5	.5	.0	.0	1.5	.5	1.0	.0	.0	.0
20	10.0	8.0	9.0	.0	.0	.0	.5	.0	.0	1.0	.0	.5
21	9.0	7.0	8.0	.0	.0	.0	.0	.0	.0	2.0	1.0	1.5
22	9.0	6.5	8.0	.0	.0	.0	.5	.0	.0	2.0	.5	1.0
23	9.0	7.0	8.0	1.0	.0	.5	1.0	.0	.5	2.0	1.0	1.5
24	9.5	7.0	8.5	1.5	.5	1.0	.5	.0	.0	.5	.0	.5
25	10.0	7.5	8.5	2.0	1.0	1.5	.5	.0	.0	1.0	.0	.5
26	9.0	8.0	8.0	2.5	2.0	2.0	1.5	.0	1.0	2.0	.0	1.0
27	8.5	6.0	7.5	3.0	1.5	2.5	.5	.0	.0	2.5	1.0	1.5
28	9.0	7.0	8.0	3.5	2.5	3.0	.0	.0	.0	1.5	.0	.5
29	9.0	7.5	8.5	4.0	3.0	3.5	1.0	.0	.5	1.5	.0	.5
30	8.0	6.5	7.5	3.5	2.5	3.0	.5	.0	.0	2.0	.5	1.0
31	6.5	5.0	5.5	---	---	---	.0	.0	.0	1.0	.0	.0
MONTH	10.5	5.0	8.0	7.0	.0	3.0	5.0	.0	1.0	2.5	.0	.5

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TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	.0	.0	.0	.5	.0	.0	9.5	7.5	8.5	11.5	8.0	9.5
2	1.5	.0	.5	.0	.0	.0	8.5	6.5	7.5	11.0	8.5	10.0
3	3.0	1.0	2.0	.0	.0	.0	8.0	5.5	7.0	10.0	9.0	9.0
4	4.0	1.5	2.5	1.0	.0	.0	8.0	6.0	7.0	9.0	7.0	8.0
5	4.5	2.5	3.5	3.5	.5	2.0	8.0	6.0	7.0	7.0	5.0	6.0
6	5.5	3.5	4.5	6.5	3.5	4.5	7.5	5.5	6.5	6.5	6.0	6.0
7	4.5	2.5	3.5	6.5	3.5	5.0	7.5	6.0	6.5	7.0	5.5	6.5
8	5.0	3.5	4.0	6.0	3.5	5.0	9.5	5.5	7.5	10.0	6.0	7.5
9	4.0	2.5	3.0	6.0	5.0	5.5	10.0	8.0	9.0	11.5	6.0	10.0
10	2.5	1.0	2.0	7.5	4.5	6.0	11.5	8.0	10.0	11.0	9.5	10.0
11	1.0	.0	.0	7.5	4.5	6.0	10.5	8.0	9.5	10.5	8.5	9.5
12	.0	.0	.0	6.0	3.5	4.5	10.0	7.0	8.0	9.0	7.0	8.0
13	.0	.0	.0	5.5	3.5	4.5	9.0	6.0	7.5	10.5	7.5	9.0
14	.5	.0	.0	5.5	3.5	4.5	9.0	5.5	7.5	13.0	9.5	11.0
15	1.5	.0	.5	5.0	2.5	3.5	10.0	6.0	8.5	13.0	10.5	12.0
16	2.0	.0	1.0	5.5	2.0	3.5	9.5	7.5	8.5	11.0	6.5	8.5
17	2.0	.0	.5	7.0	3.5	5.0	7.5	6.5	7.0	6.5	5.0	5.5
18	1.5	.0	.5	7.0	5.0	5.5	9.5	5.5	7.5	6.0	5.0	5.5
19	1.5	.5	1.0	7.0	4.5	6.0	10.5	6.5	8.5	9.0	5.5	7.0
20	3.5	1.5	2.0	9.0	5.0	7.0	9.0	7.0	8.0	10.5	7.0	8.5
21	3.0	.0	1.5	9.5	6.0	7.5	8.0	7.0	7.5	11.5	8.0	10.0
22	3.5	1.0	2.5	8.0	5.5	6.0	8.0	6.5	7.0	11.5	9.0	10.5
23	4.0	1.0	3.0	7.5	4.5	6.0	8.5	6.0	7.0	10.5	7.5	9.0
24	4.0	2.5	3.0	8.0	6.0	7.0	10.5	5.5	8.5	9.5	7.5	8.5
25	3.0	1.5	2.5	8.5	5.0	6.5	11.0	8.0	9.5	8.5	6.0	7.0
26	4.0	2.0	3.0	10.0	6.5	8.5	11.5	9.0	10.5	9.5	5.5	7.5
27	4.0	1.5	3.0	11.0	7.0	9.0	12.0	9.5	11.0	10.5	6.5	8.5
28	1.0	.0	.5	11.5	7.5	9.5	11.0	10.0	10.5	11.0	7.0	9.0
29	---	---	---	12.0	8.0	11.0	10.5	8.5	9.5	9.0	7.5	8.5
30	---	---	---	11.0	8.0	9.5	10.5	8.0	9.0	7.5	5.5	6.5
31	---	---	---	11.5	8.5	10.0	---	---	---	7.5	5.5	6.5
MONTH	5.5	.0	2.0	12.0	.0	5.5	12.0	5.5	8.0	13.0	5.0	6.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	10.0	6.0	8.0	13.5	10.0	11.5	19.0	15.5	17.5	17.0	14.0	15.5
2	12.0	7.5	9.5	14.0	10.5	12.0	17.0	14.5	16.0	17.0	13.5	15.5
3	13.0	8.0	10.5	14.0	11.0	12.5	17.5	14.5	16.0	17.0	14.0	15.5
4	12.0	8.0	10.0	13.5	11.0	12.0	18.0	14.5	16.0	17.0	14.0	15.5
5	12.0	8.0	10.0	11.5	10.0	10.5	18.0	15.0	16.5	17.0	15.0	16.0
6	11.5	8.0	9.5	13.0	10.0	11.5	19.5	16.0	17.5	18.0	15.0	16.5
7	10.5	8.0	9.0	14.0	10.5	12.5	19.0	16.0	18.0	18.5	16.0	17.0
8	10.0	7.5	9.0	14.0	11.5	12.5	19.0	16.0	17.5	16.5	13.5	15.0
9	10.5	8.0	9.0	14.5	11.5	13.0	19.5	16.0	17.5	15.5	12.5	14.0
10	9.5	6.5	8.0	15.5	11.5	13.5	18.5	16.0	17.5	14.5	13.0	13.5
11	6.5	6.0	6.5	15.0	12.5	14.0	18.5	15.5	17.0	12.5	11.5	12.0
12	9.5	6.0	8.0	16.0	12.5	14.5	17.5	16.0	16.5	11.5	10.0	10.5
13	12.0	7.5	10.0	16.0	12.5	14.5	16.0	14.5	15.0	10.5	9.5	10.0
14	11.0	8.5	10.0	16.5	12.5	14.5	15.0	13.5	14.5	12.0	10.0	11.0
15	9.5	8.0	9.0	16.0	13.5	14.5	15.0	13.0	14.0	13.5	10.0	11.5
16	9.5	7.5	8.0	16.0	13.5	15.0	14.5	13.5	14.0	13.5	11.0	12.0
17	10.5	7.0	8.5	17.0	13.5	15.0	13.5	12.5	12.5	13.0	10.5	11.5
18	11.0	8.0	9.0	16.0	13.0	14.5	14.5	11.5	13.0	11.0	8.0	8.5
19	10.0	8.0	9.0	16.0	13.0	14.5	14.5	12.0	13.5	10.0	7.5	8.5
20	10.5	8.0	9.0	14.5	15.0	14.0	15.5	12.5	14.0	9.5	7.0	8.5
21	12.0	8.0	10.0	15.5	12.5	14.0	16.0	13.0	14.5	10.5	7.0	8.5
22	12.0	9.0	10.5	15.5	12.0	14.0	16.0	14.0	15.0	11.0	8.0	9.5
23	11.5	9.0	10.5	17.5	12.5	15.0	16.0	12.5	14.5	12.0	9.0	10.5
24	11.5	9.0	10.5	17.0	14.5	15.5	16.0	12.5	14.5	13.5	10.0	11.5
25	10.5	8.5	9.5	18.5	14.5	16.5	16.5	13.0	14.5	14.0	10.5	12.5
26	11.0	8.0	9.0	18.5	14.5	17.0	16.0	13.5	15.0	14.5	11.0	12.5
27	12.5	8.5	10.5	17.5	15.0	16.5	16.0	13.5	14.5	12.5	11.0	11.5
28	13.5	10.5	12.0	17.5	15.5	16.0	16.0	13.0	14.5	12.5	11.5	12.0
29	14.0	10.5	12.0	18.0	15.0	16.5	16.0	13.0	14.5	13.0	10.5	12.0
30	13.0	10.5	12.0	19.0	15.0	17.0	16.5	13.5	15.0	12.5	10.0	11.5
31	---	---	---	19.0	15.0	17.0	15.5	14.0	15.0	---	---	---
MONTH	14.0	6.0	9.5	19.0	10.0	14.0	19.5	11.5	15.5	18.5	7.0	12.5
YEAR	19.5	.0	7.5									

YELLOWSTONE RIVER BASIN

06200000 BOULDER RIVER AT BIG TIMBER, MT

LOCATION.--Lat 45°50'03", long 109°56'17", in NE¼SE¼ sec.14, T.1 N., R.14 E., Sweet Grass County, Hydrologic Unit 10070002, on left bank at Old Boulder Bridge, 1 mi (2 km) east of Big Timber, and 1.6 mi (2.6 km) upstream from mouth.

DRAINAGE AREA.--523 mi² (1,355 km²).

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. Altitude of gage is 4,060 ft (1,240 m), from topographic map.

REMARKS.--Records good except those for July 26 to Sept. 30, which are fair, and those for winter period, which are poor. Diversions for irrigation of 13,300 acres (53.8 km²), of which 250 acres (1.01 km²) is below station.

AVERAGE DISCHARGE.--29 years, 623 ft³/s (17.64 m³/s) 451,400 acre-ft/yr (557 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,840 ft³/s (279 m³/s) May 28, 1956, gage height, 7.84 ft (2.390 m); maximum gage height, 8.25 ft (2.515 m) July 8, 1975; minimum discharge, 10 ft³/s (0.28 m³/s) about Aug. 26 or 27, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s (85.0 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 10	1045	*6,110 173	*7.39 2.252	June 24	0900	5,050 143	6.87 2.094
June 15	1030	5,190 147	6.95 2.118	June 30	0930	5,270 149	6.99 2.131

Minimum discharge, 78 ft³/s (2.21 m³/s), Mar. 3, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	236	236	178	110	110	122	268	369	1340	4540	923	201
2	222	236	208	120	120	95	300	394	1260	4410	841	208
3	211	244	197	140	120	100	279	425	1290	4410	756	201
4	225	232	194	160	130	110	259	446	1490	4460	676	194
5	232	232	140	180	140	140	247	457	1820	3780	622	191
6	225	232	130	200	150	145	232	474	2480	3460	570	197
7	240	229	120	200	151	132	225	474	3180	3160	563	201
8	255	214	110	200	151	154	218	446	3550	3470	491	208
9	251	172	100	160	137	157	214	452	4170	3830	457	197
10	259	184	100	140	137	163	218	515	5590	3460	404	172
11	240	214	140	140	117	151	211	615	4240	3660	369	197
12	232	208	180	150	120	143	218	582	2920	3580	364	251
13	244	204	204	150	120	137	214	539	2750	3190	355	248
14	255	194	218	140	130	132	211	595	4190	3010	359	236
15	251	194	211	130	170	127	201	1000	4840	2920	305	236
16	251	184	211	120	200	124	197	1600	4300	2710	275	259
17	259	178	160	120	244	137	201	1500	3430	2710	305	263
18	259	191	145	120	244	160	194	1530	3240	2360	345	336
19	255	166	130	110	259	166	201	1520	3840	2140	309	369
20	244	129	120	110	197	163	197	1440	3240	2200	275	369
21	251	105	120	130	145	160	211	1410	3220	2130	244	374
22	283	90	110	130	145	160	208	1580	3860	1750	225	414
23	267	96	110	130	154	157	204	1760	4270	1620	248	430
24	263	150	100	130	157	154	197	1900	4560	1650	221	459
25	255	200	100	130	145	145	197	1790	4370	1550	204	468
26	259	210	100	130	135	145	214	1650	3370	1550	204	480
27	263	210	115	130	135	148	255	1510	2840	1360	204	474
28	259	214	120	120	114	160	300	1460	3520	1330	208	457
29	251	211	120	120	---	178	336	1640	4490	1240	197	468
30	247	197	110	110	---	197	354	1590	4810	1140	191	425
31	247	---	110	110	---	240	---	1450	---	1050	188	---
TOTAL	7691	5756	4411	4270	4277	4602	7001	33113	102470	83830	11896	9183
MEAN	248	192	142	138	153	148	233	1068	3416	2704	384	306
MAX	283	244	218	200	259	240	354	1900	5590	4540	923	480
MIN	211	90	100	110	110	95	194	369	1260	1050	188	172
AC-FT	15260	11420	8750	8470	8480	9130	13890	65680	203200	166300	23600	18210

CAL YR 1977	TOTAL	139018	MEAN	381	MAX	4190	MIN	60	AC-FT	275700
WTR YR 1978	TOTAL	278502	MEAN	763	MAX	5590	MIN	90	AC-FT	552400

06204050 WEST ROSEBUD CREEK NEAR ROSCOE, MT

LOCATION.--Lat 45°14'35", long 109°43'50", in NE¼ sec.10, T.7 S., R.16 E., Stillwater County, Hydrologic Unit 10070005, on left bank at Mystic Lake powerplant, 2 mi (3 km) downstream from Mystic Lake, and 13 mi (21 km) southwest of Roscoe.

DRAINAGE AREA.--52.1 mi² (135 km²).

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

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 6,535.60 ft (1,992.051 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated by Mystic Lake (see p. 612).

AVERAGE DISCHARGE.--13 years, 131 ft³/s (3.710 m³/s), 34.15 in/yr (867 mm/yr) 94,910 acre-ft/yr (117 hm³/yr), adjusted for change in contents in Mystic Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,630 ft³/s (46.2 m³/s) July 6, 1975, gage height, 4.71 ft (1.436 m); minimum daily, 2.5 ft³/s (0.071 m³/s) Apr. 3, 4, 6, 7, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 947 ft³/s (26.8 m³/s) July 20, gage height, 3.43 ft (1.045 m); minimum daily, 5.4 ft³/s (0.153 m³/s) May 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	45	124	78	80	89	69	30	19	731	352	122
2	39	45	121	78	82	92	69	19	18	708	324	121
3	40	46	117	78	82	97	60	7.4	18	652	302	125
4	31	45	117	80	82	98	53	0.6	20	668	278	124
5	39	45	117	82	82	98	50	6.1	25	594	256	129
6	39	45	119	82	82	96	49	6.0	32	472	242	142
7	39	45	121	82	82	98	32	6.0	38	402	244	167
8	39	45	119	84	82	97	25	5.4	39	438	251	208
9	39	43	115	82	84	97	25	7.6	49	525	248	209
10	39	45	113	80	84	98	26	13	55	568	244	188
11	39	45	113	78	84	100	30	9.6	41	602	233	173
12	39	46	115	75	84	100	33	6.8	33	636	229	162
13	42	46	117	77	84	99	23	6.9	33	602	230	149
14	40	45	117	80	82	99	24	14	45	565	231	131
15	39	43	113	82	82	91	25	21	50	583	221	136
16	38	45	113	48	84	86	26	20	44	579	197	107
17	39	45	113	77	84	82	24	18	39	617	183	114
18	39	45	115	80	84	81	23	16	38	554	167	143
19	38	45	113	82	84	81	26	15	40	489	154	133
20	40	45	113	82	82	82	30	18	39	403	138	124
21	43	43	108	80	84	84	28	22	42	571	122	109
22	40	43	110	78	84	86	27	25	259	391	134	106
23	40	45	110	78	84	86	26	25	528	320	125	90
24	42	45	110	82	84	84	23	26	613	327	139	99
25	40	46	108	82	84	85	22	26	612	362	143	104
26	43	46	110	82	82	86	21	22	458	400	139	106
27	45	43	106	82	80	87	18	20	358	409	140	113
28	45	43	108	84	88	88	21	20	377	422	138	110
29	45	43	64	84	---	85	21	23	588	465	132	110
30	45	71	79	67	---	83	21	21	774	423	128	113
31	45	---	78	82	---	84	---	20	---	385	124	---
TOTAL	1246	1367	3416	2448	2326	2799	950	502.4	5324	15863	6188	3967
MEAN	40.2	45.6	110	79.0	83.1	90.3	31.7	16.2	177	512	200	132
MAX	45	71	124	84	88	100	69	30	774	731	352	209
MIN	31	43	64	48	80	81	18	5.4	18	320	122	90
AC-FT	2470	2710	6780	4860	4610	5550	1880	997	10560	31460	12270	7870
MEAN †	43.7	31.3	28.3	19.8	18.5	13.3	26.9	108	427	509	193	132
CFSM †	.84	.60	.54	.38	.36	.26	.52	2.07	8.20	9.77	3.70	2.53
IN †	.97	.67	.63	.44	.37	.29	.58	2.38	9.15	11.25	4.28	2.83
AC-FT †	2,690	1,860	1,740	1,220	1,030	820	1,600	6,617	25,430	31,270	11,890	7,870
OBSERVED												
CAL YR 1977	TOTAL	30,339.1	MEAN	83.1	MAX	201	MIN	9.1	AC-FT	60,160		
WTR YR 1978	TOTAL	46,397.4	MEAN	127	MAX	774	MIN	5.4	AC-FT	92,010		
ADJUSTED												
CAL YR 1977	TOTAL	33,638	MEAN	92.2	CFSM	1.76	IN	24.01	AC-FT	66,720		
WTR YR 1978	TOTAL	47,409	MEAN	129	CFSM	2.49	IN	33.84	AC-FT	94,050		

† Adjusted for change in contents of Mystic Lake.

YELLOWSTONE RIVER BASIN

06205000 STILLWATER RIVER NEAR ABSAROKEE, MT

LOCATION.--Lat 45°33'04", long 109°23'12", in NE¼NW¼ sec.28, T.3 S., R.19 E., Stillwater County, Hydrologic Unit 10070005, on right bank 3 mi (5 km) downstream from Rosebud Creek, 3.5 mi (5.6 km) northeast of Absarokee, 9 mi (14 km) southwest of Columbus, and at mile 10.8 (17.4 km).

DRAINAGE AREA.--975 mi² (2,525 km²).

PERIOD OF RECORD.--July 1910 to September 1914 (no winter records), March 1935 to current year.

REVISED RECORDS.--WSP 1309: 1911(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,874.67 ft (1,180.999 m) National Geodetic Vertical Datum of 1929. (levels by Soil Conservation Service). Prior to Oct. 1, 1914, nonrecording gage, and Mar. 26, 1935, to Sept. 30, 1942, nonrecording gage, at bridge 2 mi (3 km) upstream at different datums.

REMARKS.--Records good except those for winter period which are poor. Flow partly regulated by Mystic Lake (see p. 612). Diversions for irrigation of about 24,300 acres (98.3 km²), of which 400 acres (1.62 km²) lies below station.

AVERAGE DISCHARGE.--43 years (1935-78), 972 ft³/s (27.53 m³/s), 704,200 acre-ft/yr (868 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s (340 m³/s) June 15, 1967, gage height, 7.17 ft (2.185 m); minimum observed, 58 ft³/s (1.64 m³/s) Apr. 2, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,400 ft³/s (125 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 18	2145	4,450 126	4.41 1.344	June 24	0945	5,570 158	4.93 1.503
June 10	1030	*6,390 181	*5.27 1.606	June 30	0845	5,970 169	5.10 1.554
June 15	1045	5,640 160	4.96 1.512	July 12	0845	4,690 133	4.53 1.381

Minimum daily discharge, 180 ft³/s (5.10 m³/s) Nov. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	467	349	327	210	210	244	393	385	1640	5290	1920	544
2	462	369	385	190	210	215	372	414	1500	5090	1800	544
3	444	357	389	200	290	200	357	431	1560	4920	1660	544
4	515	357	381	220	270	200	330	449	1810	4920	1500	547
5	481	357	312	240	280	200	316	486	2180	4310	1360	549
6	472	365	290	260	320	230	309	602	2730	3660	1310	555
7	486	361	290	270	310	250	302	613	3320	3290	1270	595
8	476	345	280	260	290	250	298	646	3540	3660	1240	602
9	458	292	280	240	230	250	268	624	4170	4020	1200	660
10	476	316	310	220	260	280	285	741	5800	4000	1160	623
11	486	349	444	230	250	320	278	929	4530	4250	1100	659
12	467	338	422	240	230	338	281	852	3080	4370	1050	695
13	462	330	389	260	230	302	288	773	2740	4000	1030	922
14	458	323	409	260	230	288	275	832	4120	3750	1050	893
15	440	312	405	250	230	256	275	1100	5250	3710	1030	667
16	440	312	393	230	230	256	275	1520	4770	3640	965	850
17	435	295	316	220	260	288	268	1590	3610	3730	898	825
18	431	327	300	220	310	453	262	2890	3190	3240	866	1190
19	422	270	280	220	360	422	256	3050	3540	3000	814	1080
20	422	200	280	220	440	510	250	2150	3160	3050	764	1000
21	414	180	280	220	440	495	262	1930	3110	3140	701	943
22	409	220	310	220	480	449	262	2030	3690	2570	642	914
23	405	300	330	230	540	365	250	2150	4550	2260	636	892
24	393	330	300	240	410	345	244	2250	5160	2260	640	877
25	385	361	280	240	330	353	238	2140	4900	2280	628	874
26	369	422	280	240	300	365	238	1900	3660	2360	587	878
27	369	369	270	230	280	381	262	1720	2950	2290	555	875
28	376	334	270	230	260	381	330	1630	3340	2330	558	883
29	369	327	260	230	---	372	342	1870	4610	2450	555	888
30	369	312	260	220	---	372	357	1950	5520	2210	546	862
31	365	---	240	210	---	381	---	1700	---	2060	544	---
TOTAL	13423	9679	9962	7170	8530	10011	8723	42347	107730	106130	30599	24630
MEAN	433	323	321	231	305	323	291	1366	3591	3424	987	821
MAX	515	422	444	270	540	510	393	3050	5800	5290	1920	1190
MIN	365	180	240	190	210	200	238	385	1500	2060	544	544
AC-FT	26620	19200	19760	14220	16920	19860	17300	84000	213700	210500	60690	48850
CAL YR 1977	TOTAL	215544	MEAN	591	MAX	3690	MIN	180	AC-FT	427500		
WTR YR 1978	TOTAL	378934	MEAN	1038	MAX	5800	MIN	180	AC-FT	751600		

06205200 YELLOWSTONE RIVER AT LAUREL, MT

LOCATION.--Lat 45°39'15", long 108°45'32", in SW¼SW¼SW¼ sec.15, T.2 S., R.24 E., Yellowstone County, Hydrologic Unit 10070004, at bridge on U.S. Highway 310, 2.5 mi (4.0 km) upstream from Clarks Fork Yellowstone River, 1.3 mi (2.1 km) southeast of Laurel, and at mile 396.3 (637.6 km).

DRAINAGE AREA.--8,189 mi² (21,210 km²) revised.

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Water discharge computed by subtracting the discharge of Clarks Fork Yellowstone River near Silesia (station 06208800) from that of Yellowstone River at Billings (station 06214500).

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	DXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)
OCT											
13...	1500	3270	3	310	8.5	19.0	9.5	3	11.0	110	--
27...	0900	3060	0	312	7.8	4.0	9.0	4	9.6	94	5
NOV											
11...	1400	2440	0	330	7.9	17.0	4.0	3	11.8	102	12
30...	0900	3000	1	319	8.0	3.0	.0	6	12.8	98	28
DEC											
06...	1420	1870	71	360	8.2	-15.5	.0	4	13.2	102	150
29...	0900	1760	2	376	7.9	-6.0	.0	2	13.2	102	14
JAN											
11...	0945	4150	0	365	7.8	-7.0	.0	2	12.2	94	28
26...	0900	2100	2	361	8.0	-12.0	.0	9	12.5	96	20
FEB											
14...	0930	1630	71	380	8.1	-12.0	.0	20	12.2	94	3
28...	1020	1930	1	445	8.2	-15.0	.0	2	12.4	95	3
MAR											
07...	1500	2320	0	480	8.2	8.0	.0	4	13.0	100	9
28...	0815	4420	2	358	7.8	6.5	9.0	30	9.8	96	21
APR											
04...	1050	4950	1	318	7.9	13.5	8.0	25	10.1	96	57
25...	1400	3620	2	308	8.7	23.0	12.0	4	11.0	115	13
MAY											
09...	1110	7330	1	278	8.2	17.5	10.0	10	10.2	102	20
31...	1310	179000	60	189	7.6	6.0	9.0	9	10.0	98	15
JUN											
13...	1300	24800	0	135	8.3	30.5	14.0	35	9.2	100	16
26...	1430	30400	1	123	8.1	22.0	13.0	30	9.4	100	12
JUL											
06...	1230	26500	51	133	8.2	16.0	13.5	20	9.4	101	12
25...	1040	14100	0	162	8.3	27.5	19.0	2	8.5	104	40
AUG											
09...	1330	7930	0	213	8.5	28.0	22.0	3	8.6	110	--
23...	1000	4920	0	240	8.3	14.0	15.0	3	8.8	98	4
SEP											
12...	0830	5930	60	291	8.0	7.0	11.5	4	9.2	96	7
27...	1215	6520	1	259	8.5	25.0	14.5	1	9.6	106	17

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV						
11...	1400	4.0	2440	5	33	89
JAN						
11...	0945	.0	4150	3	34	--
FEB						
14...	0930	.0	1630	88	387	--
MAR						
28...	0815	9.0	4420	104	1240	82
JUN						
26...	1430	13.0	30400	190	15600	56
SEP						
27...	1215	14.5	6520	10	176	78

YELLOWSTONE RIVER BASIN

06205200 YELLOWSTONE RIVER AT LAUREL, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 JM-MF (COLS./100 ML)	HARDNESS (MG/L AS CAC03)	HARDNESS, NONCARBONATE (MG/L CAC03)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNESIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DIS-SOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)
OCT											
13...	170	K2	120	4	32	9.9	18	.7	3.2	140	1
27...	K27	K7	--	--	--	--	--	--	--	--	--
NOV											
11...	31	<1	--	--	--	--	--	--	--	--	--
30...	K13	K7	--	--	--	--	--	--	--	--	--
DEC											
06...	140	K3	--	--	--	--	--	--	--	--	--
29...	<1	<1	--	--	--	--	--	--	--	--	--
JAN											
11...	49	K8	140	6	37	11	22	.8	3.9	160	0
26...	K340	K3	--	--	--	--	--	--	--	--	--
FEB											
14...	83	K7	--	--	--	--	--	--	--	--	--
28...	K15	K2	--	--	--	--	--	--	--	--	--
MAR											
07...	650	K4	--	--	--	--	--	--	--	--	--
28...	360	38	--	--	--	--	--	--	--	--	--
APR											
04...	39	K2	120	6	33	9.9	19	.7	3.0	140	0
25...	K3	K1	--	--	--	--	--	--	--	--	--
MAY											
09...	60	55	--	--	--	--	--	--	--	--	--
31...	670	K10	--	--	--	--	--	--	--	--	--
JUN											
13...	55	62	--	--	--	--	--	--	--	--	--
26...	330	150	--	--	--	--	--	--	--	--	--
JUL											
06...	270	120	--	--	--	--	--	--	--	--	--
25...	218	26	62	0	16	5.4	9.9	.5	1.8	76	0
AUG											
09...	--	K20	--	--	--	--	--	--	--	--	--
23...	K940	39	--	--	--	--	--	--	--	--	--
SEP											
12...	1800	300	--	--	--	--	--	--	--	--	--
27...	K12	K15	--	--	--	--	--	--	--	--	--

DATE	ALKALINITY (MG/L AS CAC03)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)
OCT										
13...	120	.7	42	6.9	.6	15	176	198	.24	1550
27...	111	--	--	--	--	--	200	--	.27	1650
NOV										
11...	--	--	--	--	--	--	201	--	.27	1320
30...	--	--	--	--	--	--	188	--	.26	1520
DEC										
06...	--	--	--	--	--	--	216	--	.29	1090
29...	--	--	--	--	--	--	239	--	.33	1140
JAN										
11...	130	4.1	46	9.1	.6	21	223	230	.30	2500
26...	--	--	--	--	--	--	221	--	.30	1250
FEB										
14...	--	--	--	--	--	--	218	--	.30	959
28...	--	--	--	--	--	--	269	--	.37	1400
MAR										
07...	--	--	--	--	--	--	297	--	.40	1860
28...	--	--	--	--	--	--	214	--	.29	2550
APR										
04...	110	2.8	37	6.8	.4	15	181	194	.25	2420
25...	--	--	--	--	--	--	188	--	.26	1840
MAY										
09...	--	--	--	--	--	--	167	--	.23	3310
31...	--	--	--	--	--	--	113	--	.15	54600
JUN										
13...	--	--	--	--	--	--	87	--	.12	5830
26...	--	--	--	--	--	--	79	--	.11	6480
JUL										
06...	--	--	--	--	--	--	75	--	.10	5370
25...	62	.6	14	3.7	.3	12	95	101	.13	3620
AUG										
09...	--	--	--	--	--	--	125	--	.17	2680
23...	--	--	--	--	--	--	143	--	.19	1900
SEP										
12...	--	--	--	--	--	--	186	--	.25	2980
27...	--	--	--	--	--	--	157	--	.21	2760

06205200 YELLOWSTONE RIVER AT LAUREL, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SOLIDS, SUSP. TOTAL, RESIDUE AT 110 DEG. C (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT										
13...	9	.03	.01	.11	.12	.15	.03	30	1.9	--
27...	9	.01	.03	.30	.33	.34	.01	--	2.3	--
NOV										
11...	2	.05	.00	.16	.16	.21	.02	--	2.0	--
30...	14	--	.03	.44	.47	--	.00	--	2.6	--
DEC										
06...	5	.24	.01	.14	.15	.39	.01	--	1.5	--
29...	10	--	--	.22	--	.59	--	--	3.0	--
JAN										
11...	2	.46	.10	.06	.16	.62	.02	20	1.0	--
26...	62	.25	.03	.01	.04	.29	.09	--	2.6	--
FEB										
14...	89	.23	.04	.48	.52	.75	.14	--	3.9	--
28...	12	.46	--	--	.17	.63	.02	--	1.9	--
MAR										
07...	50	.34	.01	.14	.15	.49	.04	--	3.2	--
28...	125	.15	.05	.49	.54	.69	.08	--	6.3	--
APR										
04...	56	.31	.01	.52	.53	.84	.03	30	5.4	--
25...	--	.01	.01	.59	.60	.61	.04	--	2.9	--
MAY										
09...	44	.10	.03	.46	.49	.59	.07	--	4.8	--
31...	--	.09	.01	.49	.50	.59	.06	--	5.3	--
JUN										
13...	146	.11	.03	.44	.47	.58	.16	--	5.6	--
26...	136	.09	.04	.27	.31	.40	.14	--	3.6	--
JUL										
06...	39	.05	.01	.80	.81	.86	.07	--	3.2	--
25...	10	.08	.00	.51	.51	.59	.04	40	2.1	--
AUG										
09...	16	.02	.02	.35	.37	.39	.00	--	2.1	--
23...	23	.02	.01	.38	.39	.41	.02	--	2.2	--
SEP										
12...	11	.08	.01	.64	.65	.73	.02	--	3.4	--
27...	3	.02	.00	.71	.71	.73	.01	--	2.8	.6

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MV)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)
OCT												
13...	1500	17	<10	20	<10	180	<100	30	4	.0	0	30
NOV												
11...	1400	14	1	4	4	90	6	20	--	.0	0	30
DEC												
06...	1420	15	1	20	8	350	11	20	--	.0	0	20
JAN												
11...	0945	40	1	10	16	40	8	0	10	.0	0	30
FEB												
14...	0930	17	1	10	9	1500	11	120	--	.1	0	20
MAR												
26...	0815	13	2	20	11	2300	10	90	--	.0	2	30
APR												
04...	1050	15	1	10	4	1800	6	70	20	--	0	20
MAY												
09...	1110	9	1	0	6	1300	9	40	--	.0	0	20
JUN												
26...	1430	7	0	15	25	3300	16	90	--	.0	0	20
JUL												
25...	1040	7	2	10	10	530	10	20	0	.0	0	10
AUG												
23...	1000	14	5	0	11	400	47	20	--	.0	0	40
SEP												
27...	1215	11	3	0	7	380	210	20	--	.0	0	10

06207500 CLARKS FORK YELLOWSTONE RIVER NEAR BELFRY, MT

LOCATION.--Lat 45°00'37", long 109°03'53", in NW¼SW¼NW¼ sec.32, T.9 S., R.22 E., Carbon County, Hydrologic Unit 10070006, on left bank 0.4 mi (0.6 km) upstream from county road bridge and Big Sand Coulee, 0.8 mi (1.3 km) north of Wyoming-Montana State line, 9.5 mi (15.3 km) southwest of Belfry, and at mile 78.5 (126.3 km).

DRAINAGE AREA.--1,154 mi² (2,989 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1921 to current year. Monthly discharge only for some period, 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. Altitude of gage is 3,980 ft (1,210 m), from topographic map. Prior to Nov. 15, 1934, nonrecording gage, and Nov. 15, 1934, to July 26, 1951, water-stage recorder at bridge 0.4 mi (0.6 km) downstream at different datum. July 27, 1951, to Sept. 30, 1953, water-stage recorder at present site at datum 0.98 ft (0.299 m) higher.

REMARKS.--Water-discharge records good except those for winter period and June 1-27, July 4-31, and Aug. 10-30, which are poor. Diversions for irrigation of about 11,100 acres (44.9 km²) above station.

AVERAGE DISCHARGE.--57 years, 954 ft³/s (27.02 m³/s), 691,200 acre-ft/yr (852 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 ft³/s (360 m³/s) July 6, 1975, gage height, 8.77 ft (2.673 m); minimum observed, 32 ft³/s (0.91 m³/s) Apr. 26, 1961, result of discharge measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,400 ft³/s (153 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 10	0630	*8,210	233	June 25	0900	5,840	165
June 15	0815	6,990	198	June 30	0515	6,260	177

Minimum discharge, 85 ft³/s (2.41 m³/s) Oct. 12, gage height, 0.64 ft (0.195 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	145	119	309	150	130	190	564	560	1910	5780	1890	354
2	136	119	318	160	160	160	566	554	1750	5520	1760	345
3	130	133	358	170	200	170	472	683	2240	5230	1550	336
4	154	124	349	190	220	210	406	690	2640	5150	1400	327
5	187	121	300	210	236	220	363	602	3260	5000	1290	327
6	133	154	270	240	243	236	336	536	4150	4100	1230	340
7	133	154	200	230	247	224	322	483	4960	3800	1250	372
8	127	145	140	230	243	225	327	445	5160	3700	1220	483
9	119	119	120	240	232	273	381	417	5940	4000	1170	530
10	119	113	200	250	225	358	428	518	7760	4100	1100	506
11	108	157	280	260	211	300	412	697	6140	4200	1050	578
12	95	154	340	266	218	262	417	711	4330	4100	1000	512
13	100	154	363	262	210	243	376	602	3780	4000	1000	472
14	110	151	390	236	200	240	358	725	5220	3900	1100	461
15	103	151	372	240	220	218	345	1420	6610	3700	980	506
16	105	170	354	262	220	204	349	2440	6340	3600	900	472
17	113	256	309	221	218	258	354	2150	5050	3800	840	450
18	110	258	322	251	240	300	336	2090	4370	3700	780	472
19	103	200	322	236	266	288	318	1860	4690	3200	740	478
20	113	160	266	247	211	285	331	1490	4420	2900	680	445
21	121	130	200	240	214	285	354	1750	4300	2800	620	439
22	121	221	261	247	220	288	349	2390	4830	2600	560	439
23	124	258	304	221	229	281	318	2660	5360	2300	485	401
24	121	296	262	229	243	281	304	3090	5650	2100	460	385
25	116	327	254	204	229	281	292	2950	5710	2100	440	363
26	108	395	273	232	221	269	318	2610	5010	2200	420	345
27	110	358	273	221	225	277	395	2390	3890	2200	430	331
28	121	345	251	221	221	309	439	2300	3860	2200	440	318
29	116	349	230	221	---	354	450	2730	5110	2500	390	313
30	116	340	190	210	---	434	450	2650	5920	2400	370	309
31	119	---	170	180	---	494	---	2270	---	2100	354	---
TOTAL	3736	6133	8570	6977	6152	8422	11450	47463	140360	108980	27699	12409
MEAN	121	204	276	225	220	272	382	1531	4679	3515	900	414
MAX	187	395	390	266	266	494	584	3090	7760	5780	1890	578
MIN	95	113	120	150	130	160	292	417	1750	2100	354	309
AC-FT	7410	12160	17000	13840	12200	16710	22710	94140	278400	216200	55340	24610
CAL YR 1977	TOTAL	190473	MEAN	522	MAX	5290	MIN	95	AC-FT	377800		
WTR YR 1978	TOTAL	388551	MEAN	1065	MAX	7760	MIN	95	AC-FT	770700		

06207500 CLARKS FORK YELLOWSTONE RIVER NEAR BELFRY, MT--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at bridge on county road, 0.4 mi (0.6 km) downstream from discharge station, just upstream from Sand Coulee, 0.8 mi (1.3 km) north of Wyoming-Montana State line, 9.5 mi (15.3 km) southwest of Belfry, and at mile 78.1 (125.7 km).

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT								
04...	1030	142	6.0	170	12	46	14	14
NOV								
01...	1015	121	3.5	190	18	52	15	16
DEC								
28...	1600	258	.0	150	27	41	12	12
JAN								
27...	0910	229	.0	170	39	47	12	11
FEB								
22...	1545	217	4.5	160	35	44	13	13
MAR								
27...	1245	281	--	150	19	40	12	14
MAY								
03...	1400	802	--	90	8	25	6.5	11
JUN								
02...	1000	1820	--	63	16	18	4.4	4.7
JUL								
10...	1400	4100	--	32	6	9.4	2.0	3.7
AUG								
01...	1010	2120	15.5	50	3	15	3.2	3.8
SEP								
07...	1030	367	17.0	120	13	35	8.7	8.8

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT							
04...	.5	2.1	180	6	160	36	1.9
NOV							
01...	.5	2.3	210	0	170	50	7.5
DEC							
28...	.4	1.4	150	0	120	48	5.1
JAN							
27...	.4	1.5	160	0	130	47	2.5
FEB							
22...	.4	1.1	140	6	120	53	2.5
MAR							
27...	.5	1.2	160	0	130	47	1.8
MAY							
03...	.5	.9	100	0	86	28	.0
JUN							
02...	.3	.0	57	0	47	13	11
JUL							
10...	.3	.1	32	0	26	8.0	.0
AUG							
01...	.2	.1	57	0	47	7.8	.7
SEP							
07...	.3	1.5	130	0	110	34	.4

YELLOWSTONE RIVER BASIN

06207510 BIG SAND COULEE AT WYOMING-MONTANA STATE LINE

LOCATION.--Lat 45°00'17", long 109°03'29", in SE¼NE¼SW¼ sec.32, T.9 S., R.22 E., Carbon County, MT., Hydrologic Unit 10070006, on right bank 0.3 mi (0.5 km) north of Wyoming-Montana State line and 0.5 mi (0.8 km) upstream from mouth.

DRAINAGE AREA.--134 mi² (347 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1973 to current year (no winter records).

GAGE.--Water-stage recorder. Altitude of gage is 4,000 ft (1,219 m), from topographic map.

REMARKS.--Records good, except those for July, which are poor. Natural flow of stream affected by transbasin diversions and return flow from irrigated areas.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 382 ft³/s (10.8 m³/s) May 2, 1978, gage height, 4.81 ft (1.466 m), from rating curve extended above 170 ft³/s (4.81 m³/s) on basis of slope-area measurement of peak flow; minimum daily during periods of operation, 1.2 ft³/s (0.034 m³/s) Apr. 18, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 382 ft³/s (10.8 m³/s) May 2, gage height, 4.81 ft (1.466 m), from rating curve extended above 170 ft³/s (4.81 m³/s) on basis of slope-area measurement of peak flow; minimum daily during period of operation, 3.1 ft³/s (0.088 m³/s) Mar. 1-3, 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76					3.1	4.5	133	80	72	81	64
2	90					3.1	3.9	183	67	62	57	69
3	91					3.1	3.9	144	50	65	64	73
4	96					3.2	3.6	118	44	61	72	70
5	89					3.2	3.6	116	37	72	62	63
6	94					3.2	3.6	112	33	70	65	65
7	121					3.1	3.6	110	63	68	81	64
8	108					3.2	3.7	112	81	74	77	89
9	107					3.4	4.0	107	77	80	77	96
10	119					25	4.0	108	90	91	78	97
11	119					57	8.2	116	81	85	84	133
12	114					42	23	118	53	81	90	209
13	114					28	24	112	48	79	107	147
14	118					18	25	110	51	80	113	94
15	125					7.9	25	110	72	84	113	97
16	129					8.6	25	114	65	88	112	96
17	127					18	25	116	77	86	114	104
18	130					57	26	273	81	80	112	156
19	127					34	26	130	98	78	104	232
20	124					23	25	97	103	76	103	154
21	118					18	26	112	104	74	104	125
22	110					15	26	85	104	74	104	124
23	114					8.6	26	94	107	72	97	121
24	112					7.2	26	97	107	70	89	119
25	110					7.2	26	100	55	68	78	118
26	107					7.9	25	97	60	60	76	116
27	112					8.2	58	93	80	62	76	114
28	118					6.8	113	94	75	66	70	112
29	113					5.5	122	90	82	68	70	110
30	116					5.0	104	76	91	73	70	110
31	113					5.0	---	77	---	78	67	---
TOTAL	3461					441.5	822.6	3554	2236	2295	2707	3341
MEAN	112					14.2	27.4	115	74.5	74.0	87.3	111
MAX	130					57	122	273	107	91	114	232
MIN	76					3.1	3.6	76	33	60	57	63
AC=FT	6860					876	1630	7050	4440	4550	5370	6630

06207510 BIG SAND COULEE AT WYOMING-MONTANA STATE LINE--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: May 1973 to current year (no winter records).

SUSPENDED SEDIMENT DISCHARGE: May 1973 to current year (no winter records).

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 24.0°C July 5, 6, 11, 1973, July 19, 1974, June 27, July 21, Aug. 3, Sept. 7, 1977; minimum, 1.5°C Mar. 19, 1978.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 37,200 mg/L May 8, 1975; minimum daily mean, 1 mg/L Mar. 27, 1977.

SEDIMENT LOADS: Maximum daily, 11,600 tons (10,500 tonnes) Oct. 31, 1974; minimum daily, 0.01 ton (0.01 tonne) Mar. 3, 7, 1976, Mar. 27, Apr. 1, 1977.

EXTREMES FOR PERIOD OCTOBER 1977, MARCH TO SEPTEMBER 1978.--

WATER TEMPERATURES: Maximum, 22.0°C Sept. 5; minimum, 1.5°C Mar. 19.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 14,300 mg/L May 18; minimum daily mean, 5.0 mg/L Aug. 30, 31.

SEDIMENT LOADS: Maximum daily, 10,500 tons (9,530 tonnes) May 18; minimum daily, 0.17 ton (0.15 tonne) Mar. 7.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	
MAR													
07...	1400	3.2	700	13.5	330	54	97	22	26	.7	3.9	340	
07...	1415	3.2	--	13.5	--	--	--	--	--	--	--	--	
MAY													
03...	1315	170	400	11.0	83	1	25	4.9	50	2.4	10	99	
03...	1320	170	--	11.0	--	--	--	--	--	--	--	--	
19...	1640	108	--	11.0	--	--	--	--	--	--	--	--	
JUN													
02...	0945	75	--	9.0	--	--	--	--	--	--	--	--	
JUL													
10...	1430	91	170	16.0	56	5	16	3.8	7.2	.4	1.3	62	
SEP													
07...	0900	60	330	17.0	110	4	32	7.4	19	.8	2.3	130	
DATE	TIME	ALKA- LINIT (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L AS (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
MAR													
07...	280	80	6.7	.3	12	418	.57	3.61	--	3.4	3.7	.01	
07...	--	--	--	--	--	--	--	--	--	--	--	--	
MAY													
03...	81	100	19	.3	9.8	268	.36	123	--	.77	9.0	4.7	
03...	--	--	--	--	--	--	--	--	--	--	--	--	
19...	--	--	--	--	--	--	--	--	--	--	--	--	
JUN													
02...	--	--	--	--	--	--	--	--	--	--	--	--	
JUL													
10...	51	16	.9	.6	11	87	.12	21.4	--	.06	.41	.12	
SEP													
07...	110	41	2.2	.1	8.7	178	.24	28.8	.22	--	--	.09	

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM
MAY											
03...	1320	11.0	170	10600	4870	86	95	96	98	99	100
19...	1640	11.0	108	3750	1090	79	97	100	--	--	--
SEP											
07...	0900	17.0	60	80	13	--	--	--	--	--	--

YELLOWSTONE RIVER BASIN

06297510 BIG SAND COULEE AT WYOMING-MONTANA STATE LINE--Continued

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM
MAR 07...	1415	13.5	13	28	35	43	48
JUN 02...	0945	9.0	1	4	14	25	30
SEP 07...	0900	17.0	1	3	12	18	22

DATE	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 64.0 MM
MAR 07...	52	59	72	84	95	100
JUN 02...	36	50	68	83	100	--
SEP 07...	29	48	73	87	100	--

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.0					15.5	10.0	12.0	14.0	19.0	19.0	18.5
2	11.0					15.0	11.0	13.0	15.5	18.5	15.0	18.5
3	10.5					13.0	11.0	11.0	16.0	16.5	18.0	18.5
4	7.5					11.0	14.0	8.0	15.5	18.5	20.0	17.5
5	8.0					13.5	15.5	6.5	15.5	16.5	19.5	22.0
6	6.5					10.0	14.0	7.0	16.0	15.5	20.0	19.0
7	9.5					11.5	15.0	6.5	14.5	16.0	21.0	15.5
8	11.0					11.5	16.0	10.0	17.5	17.0	21.0	18.0
9	10.5					10.0	13.0	13.5	19.0	15.5	20.5	15.5
10	5.0					11.0	14.5	13.5	13.5	17.5	20.5	16.0
11	7.5					4.5	15.0	14.0	14.0	18.0	21.0	12.0
12	9.5					5.0	11.0	13.0	16.5	19.0	20.0	10.0
13	10.5					4.5	11.0	14.5	16.5	17.5	16.0	12.0
14	10.5					5.0	13.0	18.0	19.0	20.0	15.0	11.5
15	10.0					5.0	9.5	18.0	18.0	21.0	16.0	15.5
16	12.0					10.5	10.5	13.0	15.0	16.5	16.0	10.0
17	10.5					5.5	11.0	10.0	18.5	18.5	11.0	13.0
18	11.0					7.0	13.0	8.0	16.0	18.5	14.5	8.0
19	11.5					1.5	13.0	10.0	15.0	16.5	15.0	7.5
20	9.5					4.5	13.5	11.0	15.5	15.0	20.5	8.0
21	10.0					5.0	9.5	13.0	16.5	10.5	19.5	10.0
22	10.5					2.5	12.0	16.0	18.5	15.5	18.5	11.0
23	11.5					5.5	10.0	14.5	16.0	18.5	15.5	11.0
24	12.0					9.0	12.0	14.0	14.5	21.0	17.5	11.5
25	13.0					7.0	18.0	13.5	15.5	18.5	18.0	13.0
26	10.0					11.0	17.0	10.5	15.5	18.5	16.5	17.0
27	10.5					14.0	14.5	13.5	15.5	18.5	15.5	17.0
28	10.5					13.0	11.0	18.5	18.5	16.0	16.5	14.0
29	11.0					15.5	10.5	13.0	19.5	20.5	18.5	11.0
30	10.0					15.0	14.0	9.5	19.0	21.0	18.0	14.0
31	10.0					14.0	---	10.0	---	20.5	18.0	---
MEAN	10.0					9.0	12.0	12.0	16.5	17.5	18.0	14.0
WTR YR 1978	MEAN	13.5		MAX	22.0	MIN	1.5					

06297510 BIG SAND COULEE AT WYOMING-MONTANA STATE LINE--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	39	8.0									25	.21
2	64	16									34	.28
3	55	14									26	.22
4	41	11									32	.28
5	25	6.0									22	.19
6	44	11									26	.22
7	50	16									20	.17
8	32	9.3									25	.22
9	27	7.6									45	.41
10	31	10									803	167
11	26	8.4									1580	257
12	35	11									1930	248
13	30	9.2									1910	157
14	39	12									1310	64
15	31	10									900	19
16	32	11									1000	35
17	18	6.2									1350	145
18	37	13									4670	719
19	47	16									4420	406
20	44	15									4650	289
21	32	10									4300	209
22	28	8.3									6100	289
23	25	7.7									2750	64
24	24	7.3									600	12
25	38	11									425	8.3
26	26	7.5									940	20
27	33	10									1260	26
28	40	13									1060	19
29	27	8.2									600	8.9
30	15	4.7									440	5.9
31	36	11									360	4.9
TOTAL	---	319.6									---	3177.20
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	220	2.7	9640	3460	160	35	82	16	98	21	9	1.6
2	148	1.6	7650	5020	160	29	68	11	74	11	21	3.9
3	148	1.6	5940	2600	110	15	55	9.4	60	10	56	11
4	152	1.5	650	207	100	12	60	9.9	70	14	54	10
5	112	1.1	220	69	80	8.0	67	13	77	17	25	4.3
6	65	.63	175	53	120	11	60	11	58	13	46	8.1
7	50	.49	440	131	220	37	83	15	53	12	88	15
8	45	.45	520	157	400	87	78	16	38	7.9	282	68
9	60	.65	290	84	350	69	79	17	43	8.9	123	32
10	54	.58	1930	563	460	112	82	20	44	9.3	79	21
11	121	5.5	1990	623	148	32	122	28	43	9.8	3430	1470
12	212	13	340	108	102	15	150	33	54	13	9510	5370
13	137	8.9	200	60	142	18	133	28	36	10	554	313
14	122	8.2	140	42	130	18	78	17	42	13	160	41
15	98	6.6	280	83	166	32	77	17	49	15	107	28
16	92	6.2	510	157	158	36	69	16	36	11	99	26
17	74	5.0	11700	3660	133	28	72	17	44	14	93	26
18	58	4.1	14300	10500	94	21	61	13	46	14	1730	1030
19	42	2.9	6480	2510	82	22	55	12	46	13	4780	3230
20	86	5.8	1100	288	72	20	53	11	40	11	1640	682
21	56	3.9	920	278	60	22	50	10	24	6.7	227	77
22	56	3.9	1460	335	102	29	89	18	22	6.2	148	50
23	44	3.1	900	228	132	38	79	15	23	6.0	77	25
24	48	3.4	560	147	110	32	62	12	16	3.8	72	23
25	37	2.6	430	116	65	9.7	80	15	22	4.6	78	25
26	29	2.0	260	68	59	9.6	73	12	16	3.3	76	24
27	3430	636	160	40	81	17	101	17	20	4.1	58	18
28	2950	900	140	36	71	14	157	28	45	8.5	51	15
29	3960	1300	130	32	48	11	116	21	13	2.5	56	17
30	670	188	200	41	68	17	103	20	5	.94	51	15
31	---	---	170	35	---	---	88	19	5	.90	---	---
TOTAL	---	3120.40	---	31731	---	856.3	---	517.3	---	295.44	---	12679.9

TOTAL LOAD FOR YEAR: 52697.14 TONS.

06208800 CLARKS FORK YELLOWSTONE RIVER NEAR SILESIA, MT

LOCATION.--Lat 45°30'48", long 108°49'42", in NW¼SE¼ sec.1, T.4 S., R.23 E., Carbon County, Hydrologic Unit 10070006, on left bank 0.5 mi (0.8 km) downstream from Whitehorse Canal intake, 1 mi (2 km) upstream from Rock Creek, 3 mi (5 km) south of Silesia, and at mile 19 (31 km).

DRAINAGE AREA.--2,093 mi² (5,421 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1969 to current year. Records for July 1921 to September 1969 (published as Clarks Fork Yellowstone River at Edgar) at site 5 mi (8 km) upstream not equivalent owing to diversion in Whitehorse Canal during irrigation season.

GAGE.--Water-stage recorder. Altitude of gage is 3,410 ft (1,039 m), from topographic map.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Diversion for irrigation of about 42,600 acres (172 km²) of which about 1,100 acres (4.45 km²) lies below station. In addition, about 9,000 acres (36.4 km²) of land above station are irrigated by diversions from the adjoining Rock Creek basin.

AVERAGE DISCHARGE.--9 years, 1,229 ft³/s (34.81 m³/s), 890,400 acre-ft/yr (1.10 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,800 ft³/s (334 m³/s) June 10, 1972, gage height, 7.51 ft (2.289 m); maximum gage height, 7.82 ft (2.384 m) July 6, 1975; minimum discharge, 88 ft³/s (2.36 m³/s) July 21, 1977, gage height, 0.72 ft (0.219 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,300 ft³/s (150 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 19	0500	*10,500 297	*7.41 2.259	June 24	1600	5,920 168	5.58 1.701
June 10	1800	7,850 222	6.42 1.957	July 1	1400	5,940 168	5.59 1.704
June 15	1500	6,620 187	5.90 1.798				

Minimum daily discharge, 150 ft³/s (4.25 m³/s) Dec. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, AFTER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	543	494	549	230	200	200	705	790	2310	5640	1800	399
2	477	474	524	220	240	240	701	906	1980	5360	1720	390
3	495	450	537	350	400	250	736	848	2070	5160	1560	404
4	501	485	563	500	400	250	657	1040	2530	5050	1370	456
5	519	490	500	700	400	400	590	1010	3100	4860	1250	461
6	536	499	170	700	540	400	554	910	3950	4070	1170	420
7	516	520	200	500	540	400	526	843	4660	3630	1160	406
8	524	510	160	400	460	420	514	850	5040	3570	1110	467
9	527	503	150	330	420	470	526	765	5490	3900	1060	594
10	526	459	200	350	370	450	508	724	6420	3470	1040	677
11	544	445	500	350	320	450	598	854	6730	3940	994	829
12	525	500	370	460	280	440	593	971	4700	4110	953	1210
13	526	496	660	450	250	420	593	915	3660	4050	944	1330
14	550	495	714	450	270	520	564	831	4430	3770	1020	1050
15	545	503	713	400	300	400	546	1090	5890	3650	944	957
16	550	496	669	350	300	400	539	2050	6320	3560	855	957
17	550	501	627	370	300	420	541	2580	5170	3720	786	927
18	544	522	592	340	300	667	536	5040	4280	3530	775	1530
19	537	463	500	310	360	788	517	7180	4330	3020	717	2250
20	531	220	520	500	440	758	505	2590	4400	2740	659	1360
21	515	250	500	320	440	668	518	2160	4110	2710	567	1140
22	511	400	480	360	440	655	534	2460	4540	2460	497	1020
23	506	550	470	400	460	567	519	2630	5160	2090	447	1000
24	514	620	470	500	440	534	495	3200	5530	1940	446	941
25	496	621	460	350	370	532	476	3540	5660	1870	411	893
26	488	701	450	500	370	541	435	2990	4890	1900	398	873
27	479	704	450	500	330	535	409	2680	3680	1930	412	843
28	479	651	440	280	300	536	850	2530	3430	1950	431	822
29	500	659	440	250	---	534	902	2710	4260	2340	415	801
30	504	600	430	250	---	590	834	2920	5460	2330	399	786
31	493	---	400	250	---	665	---	2660	---	2080	399	---
TOTAL	15910	15277	14488	11460	10260	14993	17744	63347	134700	104920	26771	26193
MEAN	513	509	467	370	366	484	541	2043	4490	3385	864	873
MAX	550	709	714	700	540	788	902	7180	6920	5640	1860	2250
MIN	393	220	150	230	200	230	435	724	1980	1870	398	590
AC-FT	31560	30500	28740	22750	20550	29740	35200	125600	267200	208100	53100	51950
CAL YR 1977	TOTAL	229875	MEAN	630	MAX	4850	MIN	97	AC-FT	456000		
WTR YR 1978	TOTAL	456063	MEAN	1249	MAX	7160	MIN	150	AC-FT	904600		

06208800 CLARKS FORK YELLOWSTONE RIVER NEAR SILESIA, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--Water years 1977 to current year.

INSTRUMENTATION.--Temperature recorder since Aug. 24, 1977.

REMARKS.--No record Mar. 30 to Apr. 26, July 19 to Aug. 29.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 22.5°C Sept. 7, 1977, minimum, 0.0°C on many days during winter period.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum recorded 22.0°C Sept. 2,7; minimum, 0.0°C on many days during November to March.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.5	10.0	10.0	5.5	4.0	5.0	1.0	.5	1.0	.0	.0	.0
2	12.5	9.5	10.5	6.5	4.0	5.0	1.0	.5	1.0	.0	.0	.0
3	12.5	9.0	10.5	6.5	4.5	5.5	3.0	1.0	2.0	.0	.0	.0
4	10.5	8.5	9.5	6.5	4.0	5.0	2.0	.0	1.0	.0	.0	.0
5	8.5	7.5	8.0	7.0	5.0	6.0	.0	.0	.0	.0	.0	.0
6	8.5	7.0	8.0	7.0	5.5	6.0	.0	.0	.0	.0	.0	.0
7	8.5	6.0	8.5	6.5	5.0	5.5	.0	.0	.0	.0	.0	.0
8	10.0	7.0	8.5	5.5	2.5	4.0	.0	.0	.0	.0	.0	.0
9	8.5	7.0	8.0	2.5	1.0	1.5	.0	.0	.0	.0	.0	.0
10	9.0	6.0	7.5	3.0	.5	1.5	.0	.0	.0	.0	.0	.0
11	8.5	5.0	7.0	5.0	2.0	3.5	.0	.0	.0	.0	.0	.0
12	9.0	5.5	7.5	6.0	4.0	5.0	.0	.0	.0	.0	.0	.0
13	9.0	7.5	8.5	5.0	4.0	4.5	.0	.0	.0	.0	.0	.0
14	10.5	8.0	9.0	4.5	3.5	4.0	.5	.0	.0	.0	.0	.0
15	10.0	7.0	8.5	4.5	4.0	4.0	.0	.0	.0	.0	.0	.0
16	10.5	7.5	9.0	4.0	2.5	3.5	.5	.0	.0	.0	.0	.0
17	11.0	8.0	9.5	2.5	1.5	2.0	.5	.0	.0	.0	.0	.0
18	11.0	8.0	9.5	1.5	.5	1.0	.5	.0	.0	.0	.0	.0
19	11.5	8.5	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	11.5	9.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	10.5	8.5	9.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	11.0	8.0	9.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	11.0	8.5	9.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	11.0	8.5	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	12.5	9.0	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	11.0	9.0	10.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
27	10.5	8.0	9.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	10.5	8.0	9.5	.5	.0	.0	.0	.0	.0	.0	.0	.0
29	11.0	9.0	10.0	1.0	.0	.5	.0	.0	.0	.0	.0	.0
30	11.0	9.0	10.0	1.0	.0	.5	.0	.0	.0	.0	.0	.0
31	8.5	6.0	7.0	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	12.5	5.0	9.0	7.0	.0	2.5	3.0	.0	.0	.0	.0	.0

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TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	.0	.0	.0	.0	.0	.0	---	---	---	13.0	10.0	11.5
2	.0	.0	.0	.0	.0	.0	---	---	---	15.5	11.5	13.5
3	.0	.0	.0	.0	.0	.0	---	---	---	13.5	12.0	13.0
4	.0	.0	.0	.0	.0	.0	---	---	---	12.0	10.0	11.0
5	.0	.0	.0	.0	.0	.0	---	---	---	10.0	7.5	8.5
6	.0	.0	.0	.0	.0	.0	---	---	---	7.5	7.0	7.5
7	.5	.0	.0	.0	.0	.0	---	---	---	8.0	6.5	7.0
8	.5	.0	.0	.0	.0	.0	---	---	---	10.0	6.5	8.5
9	.0	.0	.0	.0	.0	.0	---	---	---	13.5	8.0	11.0
10	.0	.0	.0	.5	.0	.0	---	---	---	14.0	12.0	13.0
11	.0	.0	.0	.5	.0	.0	---	---	---	13.0	11.0	12.0
12	.0	.0	.0	.5	.0	.0	---	---	---	13.5	9.5	11.5
13	.0	.0	.0	.5	.0	.0	---	---	---	16.0	11.0	13.5
14	.0	.0	.0	.5	.0	.0	---	---	---	17.5	14.0	15.5
15	.0	.0	.0	1.0	.0	.5	---	---	---	19.0	15.0	17.0
16	.0	.0	.0	2.5	.5	1.5	---	---	---	18.0	10.5	14.5
17	.0	.0	.0	3.5	1.5	2.5	---	---	---	10.5	8.0	9.0
18	.0	.0	.0	5.5	2.5	4.0	---	---	---	8.0	6.5	7.0
19	.0	.0	.0	6.0	3.0	4.5	---	---	---	9.5	6.0	7.5
20	.0	.0	.0	7.5	4.0	6.0	---	---	---	13.5	9.0	11.0
21	.0	.0	.0	9.5	5.5	7.5	---	---	---	16.5	11.5	14.0
22	.5	.0	.0	7.5	4.5	6.0	---	---	---	16.0	13.5	14.5
23	.0	.0	.0	5.5	3.5	4.5	---	---	---	14.0	12.5	13.0
24	.5	.0	.0	6.5	5.0	5.5	---	---	---	12.5	11.5	12.0
25	.0	.0	.0	8.5	4.0	6.0	---	---	---	12.5	10.5	11.5
26	.0	.0	.0	11.0	6.5	8.5	---	---	---	13.0	10.0	11.5
27	.0	.0	.0	11.5	8.0	10.0	14.0	12.5	13.5	14.0	11.0	12.5
28	.0	.0	.0	13.5	9.0	11.0	12.5	11.0	11.5	15.5	12.5	14.0
29	---	---	---	---	10.0	---	11.0	10.5	10.5	14.0	11.0	12.5
30	---	---	---	---	---	---	12.0	10.0	11.0	11.0	9.5	10.5
31	---	---	---	---	---	---	---	---	---	9.5	8.0	8.5
MONTH	.5	.0	.0	13.5	.0	3.0	14.0	10.0	11.5	19.0	6.0	11.5
JUNE			JULY			AUGUST			SEPTEMBER			
1	11.5	8.0	9.5	15.5	12.5	14.0	---	---	---	21.5	16.5	19.0
2	14.5	9.5	12.0	15.5	12.5	14.0	---	---	---	22.0	17.0	19.5
3	16.5	12.0	14.0	16.5	13.0	14.5	---	---	---	21.0	18.0	19.5
4	15.5	13.0	14.0	16.0	14.0	14.5	---	---	---	21.0	17.5	19.5
5	15.5	13.5	14.5	14.5	12.5	13.5	---	---	---	20.0	17.5	19.0
6	15.0	13.0	14.0	15.5	12.5	13.5	---	---	---	21.0	17.5	19.0
7	14.0	11.0	12.5	16.0	12.0	14.0	---	---	---	22.0	16.0	20.0
8	14.0	10.5	12.0	16.0	14.5	15.5	---	---	---	21.0	18.5	19.5
9	14.5	11.0	12.5	15.5	13.5	14.5	---	---	---	19.0	15.5	17.5
10	12.5	10.0	11.5	16.0	13.5	14.5	---	---	---	17.0	15.0	16.0
11	11.0	8.5	9.5	16.5	14.0	15.0	---	---	---	16.0	12.5	14.0
12	12.5	8.5	10.5	16.5	14.0	15.0	---	---	---	12.5	9.5	10.5
13	14.5	11.0	12.5	17.0	14.0	15.5	---	---	---	11.0	9.0	10.0
14	16.0	13.5	14.5	18.0	15.0	16.5	---	---	---	13.0	9.5	11.0
15	14.5	11.5	13.0	17.5	15.5	16.5	---	---	---	15.5	11.5	13.5
16	12.5	10.0	11.0	17.5	15.5	16.5	---	---	---	16.5	13.5	14.5
17	13.0	9.5	11.0	17.0	14.5	16.0	---	---	---	14.5	12.5	13.5
18	14.0	11.0	12.5	16.5	15.0	---	---	---	---	12.5	6.0	10.0
19	14.0	11.5	12.5	---	---	---	---	---	---	7.5	5.0	6.5
20	13.5	9.5	11.0	---	---	---	---	---	---	10.0	7.5	8.5
21	15.5	12.0	13.5	---	---	---	---	---	---	11.0	8.5	9.5
22	15.5	13.0	14.5	---	---	---	---	---	---	12.0	9.5	10.5
23	15.5	12.5	14.0	---	---	---	---	---	---	14.0	10.5	12.5
24	14.5	11.5	13.0	---	---	---	---	---	---	15.0	12.0	13.5
25	14.0	11.0	12.0	---	---	---	---	---	---	16.0	13.5	14.5
26	13.0	10.0	11.5	---	---	---	---	---	---	17.0	14.0	15.5
27	15.0	12.0	13.5	---	---	---	---	---	---	16.5	13.5	15.0
28	16.5	14.0	15.0	---	---	---	---	---	---	15.0	13.5	14.5
29	16.5	15.0	15.5	---	---	---	---	---	---	14.0	12.0	13.0
30	16.0	12.5	14.5	---	---	---	20.5	---	---	14.5	11.5	13.0
31	---	---	---	---	---	---	20.0	17.0	18.5	---	---	---
MONTH	16.5	8.0	12.5	18.0	12.0	15.0	20.5	17.0	18.5	22.0	5.0	14.5
YEAR	22.0	.0	6.5									

YELLOWSTONE RIVER BASIN

06209500 ROCK CREEK NEAR RED LODGE, MT

LOCATION.--Lat 45°07'15", long 109°17'45", in NW¼NW¼ sec.20, T.8 S., R.20 E., Carbon County, Hydrologic Unit 10070006, on left bank at downstream side of bridge, 3 mi (5 km) upstream from West Fork, and 4.5 mi (7.2 km) southwest of Red Lodge.

DRAINAGE AREA.--124 mi² (321 km²).

PERIOD OF RECORD.--April to December 1932, May 1934, to current year. Monthly discharge only for May 1934, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,100.52 ft (1,859.438 m) National Geodetic Vertical Datum of 1929. Prior to Oct, 1, 1937, nonrecording gage at same site and datum.

REMARKS.--Records good. Flow partly regulated by Glacier Lake. No diversions above station.

AVERAGE DISCHARGE.--44 years, 174 ft³/s (4.928 m³/s), 126,100 acre-ft/yr (155 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,110 ft³/s (88.1 m³/s) June 4, 1957, gage height, 4.78 ft (1.457 m), from rating curve extended above 1,300 ft³/s (36.8 m³/s); maximum gage height observed, 4.80 ft (1.463 m) June 1937; minimum discharge observed, 14 ft³/s (0.40 m³/s) Nov. 29, 1954, result of discharge measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharged above base of 660 ft³/s (18.7 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 9	2300	*1160 32.9	*3.80 1.158	June 23	2230	833 23.6	3.44 1.049
June 15	2100	1020 28.9	3.66 1.116	June 29	2400	925 26.2	3.55 1.082

Minimum discharge, 19 ft³/s (0.54 m³/s) Mar. 16, gage height, 1.12 ft (0.341 m), result of freezup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	42	34	33	32	24	35	38	183	817	467	200
2	71	47	37	37	30	24	35	36	183	801	440	197
3	68	46	36	40	30	23	31	41	206	762	410	197
4	70	48	35	37	30	25	30	41	231	801	381	197
5	68	48	35	37	30	27	30	41	296	733	359	203
6	67	48	36	36	30	27	29	41	420	602	359	218
7	67	46	37	35	29	27	29	41	546	552	359	241
8	64	38	33	35	29	27	31	42	635	608	354	248
9	64	38	37	34	29	27	32	46	849	655	345	218
10	64	44	42	34	29	27	30	55	987	662	333	200
11	61	44	40	34	25	27	31	59	718	682	324	218
12	64	46	40	33	24	27	30	55	558	668	316	206
13	63	44	42	31	24	26	30	59	583	621	316	197
14	60	42	42	31	26	26	30	83	817	615	304	186
15	60	42	43	31	30	25	30	135	978	615	269	183
16	58	38	41	30	26	26	30	177	882	662	252	177
17	56	37	38	32	28	27	30	164	689	711	245	135
18	56	36	37	31	27	26	29	149	621	615	222	133
19	55	34	35	37	29	27	29	135	635	577	236	128
20	56	32	36	36	30	27	29	133	552	577	225	124
21	55	36	37	36	28	27	30	144	583	564	222	122
22	56	41	38	36	28	26	28	180	675	472	241	122
23	55	45	39	36	28	26	28	206	747	456	252	120
24	55	44	39	36	27	26	28	241	785	472	231	120
25	54	43	37	36	27	26	30	235	747	483	225	122
26	54	44	38	33	26	27	32	212	570	500	222	120
27	52	39	41	30	25	29	36	197	511	488	225	118
28	50	38	37	30	25	30	36	200	615	552	222	118
29	49	37	38	30	---	33	35	228	809	522	206	116
30	49	36	37	29	---	34	35	212	865	494	206	112
31	46	---	35	27	---	35	---	197	---	494	203	---
TOTAL	1838	1243	1172	1043	783	841	928	3825	18476	18833	8973	4996
MEAN	59.3	41.4	37.6	33.6	28.0	27.1	30.9	123	616	608	289	167
MAX	71	48	43	40	32	35	36	241	987	817	467	248
MIN	46	32	33	27	24	23	28	38	183	456	203	112
AC-FT	3650	2470	2320	2070	1550	1670	1840	7590	36650	37360	17800	9910
CAL YR 1977	TOTAL	37080	MEAN 102	MAX 570	MIN 22	AC-FT 73550						
WTR YR 1978	TOTAL	62951	MEAN 172	MAX 987	MIN 23	AC-FT 124900						

06211000 RED LODGE CREEK ABOVE COONEY RESERVOIR, NEAR BOYD, MT

LOCATION.--Lat 45°26'16", long 109°15'11", in SE4SE4 sec.33, T.4 S., R.20 E., Carbon County, Hydrologic Unit 10070006, on right bank 0.6 mi (1.0 km) upstream from Cooney Reservoir, 9 mi (14 km) west of Boyd.

DRAINAGE AREA.--143 mi² (370 km²).

PERIOD OF RECORD.--May 1937 to current year (no winter records for 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 (1,294.79 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for November, which are 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 (20.6 km²) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,260 ft³/s (64.0 m³/s) June 15, 1967, gage height, 7.00 ft (2.134 m), from rating curve extended above 1,700 ft³/s (48.1 m³/s) on basis of contracted-opening measurement of peak flow; no flow on many days in 1949.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,050 ft³/s (58.1 m³/s) May 18, gage height, 6.59 ft (2.009 m); minimum daily, 12 ft³/s (0.34 m³/s) Nov. 19, but may have been less during winter period.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	22					58	32	246	165	80	41
2	39	24					50	44	207	189	86	38
3	39	27					46	44	189	189	92	35
4	44	26					42	52	177	198	78	32
5	42	26					40	69	168	190	67	31
6	40	28					36	171	165	183	69	35
7	44	30					36	144	174	195	67	44
8	41	26					36	144	171	162	58	62
9	41	19					38	99	171	210	49	53
10	44	32					40	96	198	189	44	56
11	44	30					38	96	213	177	20	80
12	44	30					33	90	186	174	19	96
13	42	28					32	78	174	168	20	105
14	40	24					33	82	192	159	27	92
15	40	19					32	90	198	156	24	82
16	39	15					32	94	210	156	22	80
17	38	14					31	186	210	159	22	78
18	37	13					28	1380	186	153	24	141
19	35	12					27	1350	180	168	32	144
20	33	13					27	544	183	192	29	147
21	30	16					27	426	168	213	28	162
22	29	22					25	359	150	177	28	186
23	29	26					23	326	168	159	36	168
24	29	26					23	309	177	147	40	144
25	26	26					22	265	166	132	39	125
26	28	26					21	264	180	117	38	115
27	28	26					18	246	159	108	35	110
28	28	26					28	231	147	108	41	105
29	28	26					34	234	168	110	40	101
30	27	26					32	261	168	94	39	96
31	19	---					---	222	---	82	40	---
TOTAL	1110	704					990	8058	5475	4987	1341	2784
MEAN	35.8	23.5					33.0	260	183	161	43.3	92.8
MAX	44	32					58	1380	246	213	92	186
MIN	19	12					18	32	147	82	19	31
AC-FT	2200	1400					1960	15980	10860	9890	2660	5520

YELLOWSTONE RIVER BASIN

06211500 WILLOW CREEK NEAR BOYD, MT

LOCATION.--Lat 45°25'20", long 109°13'47", in NE¼SW¼SW¼ sec.2, T.5 S., R.20 E., Carbon County, Hydrologic Unit 10070006, on left bank 0.5 mi (0.8 km) upstream from Cooney Reservoir and 8 mi (13 km) west of Boyd.

DRAINAGE AREA.--53.3 mi² (138.0 km²).

PERIOD OF RECORD.--June 1937 to current year (no winter records for most years).

REVISED RECORDS.--WSP 1729: Drainage area. WSP 2116: 1957, 1962.

GAGE.--Water-stage recorder. Altitude of gage is 4,260 ft (1,300 m), from topographic map. Prior to Apr. 23, 1948, at site 0.5 mi (0.8 km) downstream at different datum.

REMARKS.--Records fair. Diversions for irrigation of about 1,800 acres (7.28 km²) above station. Some return flow from lands irrigated by water diverted from Rock Creek basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,720 ft³/s (48.7 m³/s) June 15, 1967, gage height, 7.08 ft (2.158 m), from rating curve extended above 400 ft³/s (11.3 m³/s) on basis of slope-area measurement of peak flow; maximum gage height, 7.24 ft (2.207 m) May 29, 1942 (backwater from Cooney Reservoir), site and datum then in use; no flow May 29, 30, 1969.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 150 ft³/s (4.25 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)		Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)	
May 19	0100	*1,520	43.0	*6.65	2.027	July 21	0900	225	6.37	3.60	1.097
July 7	0530	215	6.09	3.57	1.088	Sept. 22	0515	234	6.63	3.57	1.088
July 9	1300	237	6.71	3.64	1.109						

Minimum daily discharge, 12 ft³/s (0.34 m³/s) Nov. 27-30, Apr. 25-27, but may have been less during winter period.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	21					29	13	57	81	47	27
2	26	21					29	18	50	98	55	27
3	27	22					25	16	46	120	65	27
4	29	21					22	16	51	123	51	25
5	28	22					22	23	57	125	41	25
6	27	21					21	47	43	109	44	28
7	29	21					20	29	51	162	41	28
8	27	20					19	31	57	125	37	36
9	27	19					20	29	46	196	34	29
10	27	23					20	24	37	186	35	25
11	27	21					19	21	44	185	36	57
12	27	21					18	21	33	159	41	92
13	27	21					17	19	37	140	31	118
14	26	21					17	16	48	116	33	75
15	25	21					17	16	52	113	35	54
16	25	21					16	17	68	115	36	46
17	24	21					16	30	65	113	46	41
18	23	18					15	546	51	96	41	102
19	23	16					15	1100	55	111	31	104
20	23	15					15	257	68	138	34	123
21	23	15					14	159	50	195	42	115
22	23	14					14	102	50	164	36	176
23	23	14					13	81	43	135	37	143
24	23	14					13	70	39	98	29	106
25	22	13					12	58	50	94	27	74
26	22	13					12	54	60	86	27	52
27	22	12					12	43	65	79	27	41
28	22	12					15	36	58	82	28	35
29	21	12					16	32	104	111	26	34
30	22	12					15	50	88	77	26	31
31	21	---					---	37	---	67	25	---
TOTAL	768	538					528	3017	1623	3805	1146	1896
MEAN	24.8	17.9					17.6	97.3	54.1	123	37.0	63.2
MAX	29	23					29	1100	104	198	65	176
MIN	21	12					12	13	33	67	25	25
AC-FT	1520	1070					1050	5980	3220	7550	2270	3760

06212500 RED LODGE CREEK BELOW COONEY RESERVOIR, NEAR BOYD, MT

LOCATION.--Lat 45°27'00", long 109°11'06", in N½NW¼ sec.31, T.4 S., R.21 E., Carbon County, Hydrologic Unit 10070006, on right bank 400 ft (122 m) upstream from Cottonwood Creek, 1 mi (2 km) downstream from Cooney Dam, and 6 mi (10 km) west of Boyd.

DRAINAGE AREA.--210 mi² (544 km²).

PERIOD OF RECORD.--September 1937 to current year.

REVISED RECORDS.--WSP 1309: 1942(M), 1944(M). WSP 2116: 1957(M).

GAGE.--Water-stage recorder. Altitude of gage is 4,140 ft (1,260 m), from topographic map.

REMARKS.--Records good except those for winter period and periods of no gage-height record, which are fair. No gage-height record Feb. 24 to Mar. 28. Some return flow from lands irrigated by water diverted from Rock Creek and East Rosebud Creek basins. Flow completely regulated by Cooney Reservoir (see p. 612). Diversions for irrigation of about 6,900 acres (27.9 km²) above station.

AVERAGE DISCHARGE.--41 years, 101 ft³/s (2.860 m³/s), 73,170 acre-ft/yr (90.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,470 ft³/s (98.3 m³/s) June 15, 1967, gage height, 10.17 ft (3.100 m); no flow Oct. 6, 7, 1948, Oct. 7, 8, 12, 16, 17, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 608 ft³/s (17.2 m³/s) May 21, gage height, 4.67 ft (1.423 m); minimum daily 8.2 ft³/s (0.232 m³/s) on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	26	11	8.2	8.2	8.2	84	15	343	245	183	199
2	41	26	11	8.2	8.2	8.2	69	15	401	245	163	199
3	41	26	11	8.2	8.2	8.2	55	16	307	300	165	197
4	55	27	12	8.2	8.2	8.2	55	16	238	300	164	195
5	25	26	14	8.2	8.2	8.2	55	16	218	300	163	195
6	26	26	13	8.2	8.2	8.2	45	16	199	300	161	194
7	27	26	12	8.2	8.2	8.2	32	16	202	300	158	195
8	27	24	10	8.2	8.2	8.2	22	16	166	300	157	166
9	26	24	17	8.2	8.2	8.2	15	16	166	300	134	178
10	25	23	15	8.2	8.2	8.2	14	16	166	300	105	178
11	21	24	11	8.2	8.2	8.2	14	16	168	300	99	164
12	21	24	8.3	8.2	8.2	8.2	12	17	168	300	83	154
13	21	24	8.2	8.2	8.2	8.2	14	17	170	300	73	140
14	20	24	8.2	8.2	8.2	8.2	14	17	174	300	93	127
15	21	24	8.2	8.2	8.2	8.2	14	17	174	300	111	125
16	22	23	8.2	8.3	8.2	8.2	14	17	174	300	102	126
17	23	23	8.2	8.2	8.2	8.2	15	17	176	300	108	127
18	23	23	8.2	8.2	8.2	8.2	15	47	176	300	153	147
19	23	23	8.2	8.2	8.2	8.2	15	432	174	300	152	157
20	24	23	8.2	8.2	8.2	8.2	15	563	174	300	128	206
21	24	23	8.2	8.2	8.2	8.2	16	597	174	300	90	232
22	33	23	8.2	8.2	8.2	8.2	16	564	174	300	89	230
23	33	23	8.2	8.2	8.2	8.2	16	577	174	300	104	223
24	23	23	8.2	8.2	8.2	8.2	16	573	174	300	178	220
25	25	23	8.2	8.2	8.2	8.2	17	567	172	300	222	218
26	25	23	8.2	8.2	8.2	8.2	16	563	172	300	222	218
27	26	18	8.2	8.2	8.2	8.2	15	540	172	250	222	217
28	26	12	8.2	8.2	8.2	8.2	15	469	204	220	222	216
29	26	12	8.2	8.2	---	50	15	444	244	210	217	216
30	26	12	8.2	8.2	---	84	15	366	245	210	203	216
31	27	---	8.2	8.2	---	83	---	335	---	210	200	---
TOTAL	829	681	307.1	254.3	229.6	446.6	745	6933	6059	6790	4624	5595
MEAN	26.7	22.7	9.91	8.20	8.20	14.4	24.8	224	202	284	149	187
MAX	41	27	17	8.3	8.2	84	84	597	401	300	222	232
MIN	20	12	8.2	8.2	8.2	8.2	12	15	166	210	73	125
AC-FT	1640	1350	604	504	455	866	1460	13750	12020	17430	9170	11100
CAL YR 1977	TOTAL	21014.9	MEAN	57.6	MAX	165	MIN	8.2	AC-FT	41680		
WTR YR 1978	TOTAL	35493.6	MEAN	97.2	MAX	597	MIN	8.2	AC-FT	70400		

06214500 YELLOWSTONE RIVER AT BILLINGS, MT

LOCATION.--Lat 45°47'48", long 108°28'12", in NE¼NE¼ sec. 34, T.1 N., R.26 E., Yellowstone County, Hydrologic Unit 10070007, on left bank 30 ft (9.1 m) downstream from bridge on U.S. Highway 87, 1 mi (2 km) northeast of Billings, 10 mi (16 km) upstream from Pryor Creek, and at mile 346.0 (556.7 km).

DRAINAGE AREA.--11,795 mi² (30,549 km²). Area at site used Jan. 10, 1963, to Dec. 2, 1967, 11,783 mi² (30,518 km²).

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.--WRD Mont. 1968: 1967 (M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,081.36 ft (939.199 m) National Geodetic Vertical Datum of 1929. May 1904 to December 1905, nonrecording gage at bridge 30 ft (9.1 m) upstream at different datum. Aug. 24, 1928, to June 30, 1932, nonrecording gage at bridge 30 ft (9.1 m) upstream at datum 2.0 ft (0.61 m) higher. July 1, 1932, to Oct. 12, 1937, water-stage recorder at old diversion dam 3 mi (5 km) upstream at different datum. Oct. 13, 1937, to Jan. 9, 1963, water-stage recorder at present site at datum 2.0 ft (0.61 m) higher. Jan. 10, 1963, to Dec. 2, 1967, water-stage recorder at city of Billings Water Department intake, 1.8 mi (2.9 km) upstream at datum 3,096.09 ft (943.688 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Diversions for irrigation of about 350,000 acres (1,420 km²) above station.

AVERAGE DISCHARGE.--50 years (1928-78), 7,042 ft³/s (199.4 m³/s), 5,102,000 acre-ft/yr (6.29 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,500 ft³/s (1,970 m³/s) June 19, 1974, gage height, 14.60 ft (4.450 m); maximum gage height, 14.76 ft (4.499 m) June 16, 1967, present datum, from floodmark; minimum discharge, 430 ft³/s (12.2 m³/s) Dec. 12, 1932.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 50,200 ft³/s (1,420 m³/s) May 19, gage height, 11.91 ft (3.630 m); minimum, 620 ft³/s (17.6 m³/s) Nov. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3520	3570	3220	2600	2000	1990	5530	7140	19300	36300	13400	4780
2	3620	3430	3200	4000	2000	1980	5890	7390	17100	35500	12800	4700
3	3920	3320	3300	4500	1800	1980	6000	7900	16000	34500	12200	4650
4	3980	3300	3340	7000	1980	1900	5610	8890	17300	34500	11500	4650
5	3890	3390	2640	10000	2720	1830	5160	9400	19600	34400	10800	4630
6	3920	3390	2040	10000	2620	2160	4850	9260	23600	30600	10300	4550
7	3960	3490	1600	7000	2760	2720	4700	9020	28800	28400	9720	4560
8	3980	3430	1300	6000	2650	2780	4550	8680	31800	27100	9300	4900
9	4050	3300	1100	5000	2530	2780	4510	8090	33400	29500	8990	5210
10	4080	3030	1400	4500	2410	3630	4430	7900	36800	29400	8580	5560
11	4080	2880	1800	4500	2200	4310	4550	8620	44900	28300	8290	5890
12	3980	3010	3340	4200	2100	4390	4550	10000	36600	29000	7640	7140
13	3800	3180	3760	4000	1900	4100	4650	9830	28800	28200	7360	8060
14	3780	3140	3650	4000	1900	3650	4700	8890	28700	26000	7210	7610
15	4010	3100	3820	3500	1900	3320	4630	9300	35700	24800	6950	6990
16	4010	3060	3870	3000	2000	3030	4580	13400	40200	24300	6750	6780
17	4010	3010	3520	2400	2000	3080	4550	20600	36600	23900	6400	6810
18	3980	3000	3060	2200	2200	3780	4510	30100	31200	23300	6000	8850
19	3980	2500	2740	2100	2400	5240	4530	44500	29600	21000	6000	11600
20	3920	1940	2550	2400	2600	5730	4410	25300	31200	20600	6000	8950
21	3850	1050	2400	2400	2610	5950	4340	20800	29200	20700	5670	8220
22	3800	775	2400	2600	2680	5750	4340	19800	29700	19700	5400	8090
23	3780	1080	2400	3000	2700	5160	4390	21800	32000	17700	5370	7930
24	3740	1510	2200	3400	2630	4530	4270	24000	34600	16700	5270	7700
25	3650	2680	2250	2700	2720	4220	4050	25300	36200	16000	5190	7550
26	3580	3890	2250	2400	2530	4290	3870	23200	35100	15600	5060	7520
27	3540	4460	2250	2400	2320	4550	4120	20600	29400	15300	4930	7360
28	3560	3890	2300	2400	2230	4960	6640	19000	26600	14900	4880	7210
29	3580	3620	2300	2300	---	5160	7210	19000	29400	15400	4700	7080
30	3600	3600	2350	2200	---	5110	7140	21500	34500	15700	4580	7020
31	3470	---	2400	2000	---	5240	---	20600	---	14600	4800	---
TOTAL	118620	88975	80950	120700	65290	119570	147460	499810	905900	751900	232020	202550
MEAN	3833	2966	2611	3894	2352	3857	4915	16120	30200	24250	7485	6752
MAX	4680	4460	3870	10000	2820	5950	7210	44500	44900	36300	13400	11600
MIN	3470	775	1100	2000	1800	1830	3870	7140	16000	14600	4580	4550
AC-FT	235700	176500	160600	239400	129500	237200	292500	991400	1797000	1491000	460200	401800

CAL YR 1977 TOTAL 1639705 MEAN 4492 MAX 25800 MIN 775 AC-FT 3252000
WTR YR 1978 TOTAL 3333945 MEAN 9134 MAX 44900 MIN 775 AC-FT 6613000

06214500 YELLOWSTONE RIVER AT BILLINGS, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

LOCATION.--Samples for NASQAN station collected at "south" bridge on Billings Boulevard, 5.9 mi (9.5 km) upstream from gaging station. Samples for daily specific conductance collected at Billings Water Department Intake, 1.8 mi (2.9 km) upstream from gaging station.

PERIOD OF RECORD.--Water years 1950-58, 1963 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1950 to September 1958, July 1963 to current year.

WATER TEMPERATURES: December 1950 to September 1958, July 1963 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1976 to current year.

REMARKS.--Water temperatures taken at highway bridge December 1950 to September 1958, at water department intake July 1963 to September 1968 and October 1970 to current year, at both sites October 1968 to September 1970.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,210 micromhos Feb. 2, 1951; minimum daily, 111 micromhos June 9, 1973.

WATER TEMPERATURES: Maximum daily, 26.5°C July 24, 1955; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily, 4,260 mg/L May 18, 1978; minimum daily, 1 mg/L on Oct. 27, 30, 1976, Jan. 11, 12, 1978.

SEDIMENT LOAD: Maximum daily, 493,000 tons (447,000 tonnes) May 19, 1978; minimum daily, 11 tons (10 tonnes) Jan. 12, 1978.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 669 micromhos Nov. 23; minimum daily, 134 micromhos June 25.

WATER TEMPERATURES: Maximum daily, 20.5°C Aug. 11, 12; minimum daily, 0.0°C on several days during November to March.

SEDIMENT CONCENTRATIONS: Maximum daily, 4,260 mg/L May 18; minimum daily, 1 mg/L Jan. 11, 12.

SEDIMENT LOAD: Maximum daily, 493,000 tons (447,000 tonnes) May 19; minimum daily, 11 tons (10 tonnes) Jan. 12.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT											
06...	1500	3920	3	490	8.6	11.5	9.5	10	--	12.0	118
NOV											
02...	1545	3390	1	467	8.6	15.0	7.0	5	--	13.0	120
30...	1330	3450	1	445	8.3	7.0	.5	15	--	12.6	98
JAN											
10...	0930	4500	71	529	8.0	-9.0	.0	1	--	12.2	93
FEB											
13...	1120	1900	1	490	8.0	-16.0	.0	1	--	12.2	93
MAR											
13...	1430	4100	3	455	8.0	8.5	.0	75	--	11.5	88
APR											
05...	1510	6000	1	408	7.9	15.0	10.0	50	--	9.7	96
MAY											
02...	1120	7330	1	425	8.0	17.0	12.0	90	--	9.4	98
JUN											
02...	1400	16900	1	309	8.4	19.0	13.5	--	24	9.2	98
JUL											
05...	1440	34000	1	145	8.1	23.5	15.5	--	33	8.8	98
AUG											
01...	1100	13300	1	210	8.4	23.5	20.0	--	5.0	8.4	104
SEP											
01...	1030	4800	1	365	8.4	20.0	17.5	--	3.7	6.8	80

YELLOWSTONE RIVER BASIN

06214500 YELLOWSTONE RIVER AT BILLINGS, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COLIFORM, FECAL, 0.7 UM-WF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CAC03)	HARDNESS, NONCARBONATE (MG/L AS CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNESIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT 06...	160	180	180	55	44	16	28	.9	3.4	170	2
NOV 02...	20	37	170	25	43	15	28	.9	3.2	170	3
NOV 30...	42	190	170	58	45	15	27	.9	3.3	160	0
JAN 10...	K700	260	200	57	49	15	31	1.0	3.8	170	0
FEB 13...	100	59	190	50	48	17	28	.9	3.6	170	0
MAR 13...	83	K34000	160	40	39	14	32	1.1	4.0	140	0
APR 03...	K59	--	150	30	40	15	25	.9	2.9	150	0
MAY 02...	--	180	150	31	37	15	28	1.0	2.9	140	0
JUN 02...	140	97	110	22	28	10	22	.9	1.8	--	--
JUL 05...	400	360	65	12	18	4.8	7.7	.4	1.4	--	--
AUG 01...	71	K2600	80	14	21	6.8	13	.6	1.9	--	--
SEP 01...	230	550	140	30	44	7.5	24	.9	2.9	--	--

DATE	ALKALINITY (MG/L AS CAC03)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 06...	140	.7	84	6.2	.5	14	275	262	.37	2910	.15	
NOV 02...	140	.7	84	7.1	.5	14	270	262	.37	2470	.07	
NOV 30...	130	1.3	87	7.0	.5	16	272	278	.37	2530	.40	
JAN 10...	140	2.7	120	8.5	.6	19	316	334	.43	3840	.57	
FEB 13...	140	2.7	95	8.2	.5	17	294	301	.40	1510	.38	
MAR 13...	110	2.2	98	7.5	.6	9.9	274	274	.37	3030	.28	
APR 03...	120	3.0	70	2.4	.4	14	245	242	.33	3970	.30	
MAY 02...	110	2.2	82	6.1	.3	15	245	253	.33	4850	.20	
JUN 02...	89	--	62	9.9	.2	12	203	199	.28	9260	.13	
JUL 05...	53	--	22	2.7	.2	9.8	83	99	.11	7620	.08	
AUG 01...	66	--	32	3.6	.4	11	127	129	.17	4560	.05	
SEP 01...	110	--	68	6.0	.5	14	223	233	.30	2890	.08	

06214500 YELLOWSTONE RIVER AT BILLINGS, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, ORGANIC (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT 06...	--	.00	--	.13	--	.03	.01	--	1.8	.6
NOV 02...	--	.01	--	.10	--	.02	.02	1.8	--	--
30...	--	.04	--	.31	--	.02	.00	2.7	--	--
JAN 10...	--	.08	--	.15	--	.02	.01	--	1.4	.3
FEB 13...	.30	.04	.34	.05	.72	.02	.01	1.4	--	--
MAR 13...	.63	.08	.71	.04	.99	.22	.07	6.3	--	--
APR 03...	.52	.05	.57	.52	.87	.03	.02	--	5.1	--
MAY 02...	.85	.05	.90	.27	1.1	.19	.08	7.0	--	--
JUN 02...	--	.01	--	.37	--	.07	.01	4.6	--	--
JUL 05...	.25	.01	.26	.01	.34	.13	.01	--	2.7	.9
AUG 01...	.24	.00	.24	.27	.29	.06	.00	3.0	--	--
SEP 01...	.24	.01	.25	.16	.33	.03	.02	4.8	--	--

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
OCT 06...	1500	10	8	200	100	<10	5	20	20
JAN 10...	0930	13	11	100	0	0	0	10	10
APR 03...	1510	11	8	100	100	1	1	10	10
JUL 05...	1440	4	5	300	300	2	1	10	0

DATE	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)
OCT 06...	<50	0	<10	1	550	10	<100	10	20
JAN 10...	0	0	13	4	100	20	6	0	10
APR 03...	1	2	6	2	2700	40	2	6	120
JUL 05...	2	1	20	4	3900	40	67	17	90

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 06...	0	.0	.0	0	0	<10	0	20	10
JAN 10...	20	.0	.0	1	1	0	0	20	20
APR 03...	20	.0	.0	1	0	0	0	20	10
JUL 05...	0	.0	.0	0	0	0	0	20	10

YELLOWSTONE RIVER BASIN

06214500 YELLOWSTONE RIVER AT BILLINGS, MT--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	PCB, TOTAL (UG/L)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	AROCLO TOTAL 1254 PCB SERIES (UG/L)	ATRA- ZINE, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL (UG/L)
NOV 02...	1545	ND	--	ND	--	--	ND	ND	--	ND
FEB 13...	1120	--	--	ND	--	.0	ND	ND	--	ND
MAY 02...	1120	ND	ND	ND	ND	--	ND	ND	ND	ND
AUG 01...	1100	ND	--	ND	--	--	ND	ND	--	ND

DATE	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL (UG/L)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- AZINON, TOTAL (UG/L)	DI- AZINON, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN, TOTAL (UG/L)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL (UG/L)
NOV 02...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB 13...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 02...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 01...	--	ND	--	ND	--	ND	--	ND	--	ND

DATE	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ETHION, TOTAL (UG/L)	ETHION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR, EPOXIDE TOTAL (UG/L)	HEPTA- CHLOR, EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	MALA- THION, TOTAL (UG/L)
NOV 02...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB 13...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 02...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 01...	--	ND	--	ND	--	ND	--	ND	--	ND

DATE	MALA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	METH- OXY- CHLOR, TOTAL (UG/L)	METH- OXY- CHLOR, TOT. IN BOTTOM MATL. (UG/KG)	METHYL PARA- THION, TOTAL (UG/L)	METHYL PARA- THION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRI- THION, TOTAL (UG/L)	METHYL TRI- THION, TOT. IN BOTTOM MATL. (UG/KG)	PARA- THION, TOTAL (UG/L)	PARA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOX- APHENE, TOTAL (UG/L)
NOV 02...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB 13...	--	ND	--	ND	--	ND	--	ND	--	ND
MAY 02...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 01...	--	ND	--	ND	--	ND	--	ND	--	ND

DATE	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	TRI- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4-D, TOTAL (UG/L)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4,5-T TOTAL (UG/L)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SIMA- ZINE TOTAL COUL- SON COND. (UG/L)	SILVEX, TOTAL (UG/L)	SILVEX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
NOV 02...	--	ND	--	ND	--	ND	--	ND	ND	--
FEB 13...	--	ND	--	ND	--	ND	--	ND	ND	--
MAY 02...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 01...	--	ND	--	ND	--	ND	--	ND	ND	--

06214500 YELLOWSTONE RIVER AT BILLINGS, MT--Continued
 WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE, AIR (DEG C)	TEMPERATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)
AUG							
01...	0930	210	8.3	19.5	19.0	8.0	96
01...	1030	210	8.3	21.5	19.5	8.3	100
01...	1100	210	8.4	23.5	20.0	8.4	104
01...	1130	210	8.4	23.5	20.0	8.4	102
01...	1230	210	8.5	23.5	20.0	8.7	106
01...	1330	210	8.5	24.5	20.5	9.0	111
01...	1430	210	8.6	25.0	20.5	9.0	111
01...	1530	212	8.6	26.0	21.0	9.2	115
01...	1630	212	8.7	24.0	21.0	9.2	115
01...	1730	215	8.7	19.0	20.5	8.9	110
01...	1830	210	8.6	20.0	20.5	8.5	105
01...	1930	216	8.6	18.5	20.5	8.4	103
01...	2030	219	8.6	18.0	19.5	8.3	101
01...	2130	220	8.6	17.5	19.5	8.2	99
01...	2230	226	8.6	17.5	19.5	8.0	96
01...	2330	218	8.5	16.5	19.0	7.8	94
02...	0030	223	8.6	16.0	19.0	7.8	94
02...	0130	221	8.5	16.0	19.0	7.6	92
02...	0230	223	8.7	14.5	19.0	7.5	90
02...	0330	231	8.4	13.0	19.0	7.7	93
02...	0430	230	8.4	11.0	18.0	7.2	85
02...	0530	230	8.2	11.0	18.0	7.6	89
02...	0630	229	8.2	10.0	18.0	7.6	89
02...	0730	226	8.3	10.5	18.0	7.5	88
02...	0830	224	8.2	11.5	18.0	7.5	88
02...	0930	226	8.3	13.5	18.0	7.8	92

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPERATURE (DEG C)	STREAM-FLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DIS-CHARGE, SUSPENDED (T/DAY)	SED. SJSP. FALL DIAM. % FINER THAN .004 MM	SED. SJSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SJSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
JCT												
05...	1500	9.5	3920	23	243	--	--	--	--	--	--	91
NOV												
02...	1545	7.0	3390	7	64	--	--	--	--	--	--	89
30...	1330	5	3450	44	410	--	--	--	--	--	--	89
MAR												
15...	1400	--	3350	97	877	--	--	--	--	--	--	67
APR												
03...	1510	10.0	6000	171	2770	--	--	--	--	--	--	79
MAY												
02...	1120	12.0	7330	246	4870	--	--	--	--	--	--	81
17...	1700	11.0	21700	4260	250000	40	57	82	92	97	100	--
18...	1400	9.0	30200	4130	337000	46	62	86	96	99	100	--
19...	0815	9.0	50100	4550	615000	47	68	87	93	98	100	--
19...	1415	9.0	42700	5160	595000	41	60	78	89	96	100	--
JUN												
02...	1400	13.5	16900	98	4470	--	--	70	86	98	100	--
JUL												
05...	1440	15.5	34000	180	16500	--	--	57	77	98	100	--
27...	0740	19.5	15300	77	3180	--	--	--	--	--	--	62
AUG												
01...	1100	20.0	13300	44	1580	--	--	--	--	--	--	82
SEP												
01...	1030	17.5	4800	24	311	--	--	--	--	--	--	78

06214500 YELLOWSTONE RIVER AT BILLINGS, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	470	469	449	527	488	464	479	483	320	137	238	395
2	467	467	469	534	497	478	442	436	317	140	249	398
3	462	465	453	621	506	482	410	401	312	140	255	409
4	452	467	461	631	522	501	411	407	296	146	260	406
5	452	471	462	---	485	517	411	378	257	148	271	409
6	461	467	477	557	462	502	422	383	220	158	280	406
7	452	465	529	499	460	468	431	390	197	178	282	409
8	459	462	570	486	452	437	436	416	177	168	286	403
9	453	466	547	482	---	422	448	422	180	167	284	412
10	452	469	538	509	---	426	446	403	164	173	300	417
11	457	467	512	520	464	409	451	393	154	185	290	409
12	451	481	531	517	462	438	430	383	151	162	305	---
13	449	486	457	496	488	460	418	348	168	161	306	---
14	459	488	433	479	519	484	407	337	182	163	319	---
15	---	481	451	468	547	496	406	336	154	164	319	448
16	---	489	443	467	531	495	407	330	138	168	315	409
17	443	471	441	469	517	500	412	298	147	168	320	400
18	442	485	460	502	493	533	417	387	158	165	336	394
19	439	462	465	520	488	540	407	548	157	177	327	549
20	443	473	486	501	483	---	410	548	150	188	331	483
21	440	535	502	519	484	531	411	499	154	202	346	471
22	447	591	462	519	471	---	406	454	160	201	350	448
23	450	669	510	490	457	598	400	401	146	210	359	422
24	451	639	503	477	448	501	400	548	139	213	362	412
25	447	572	507	475	434	512	403	309	134	219	367	407
26	453	485	538	486	433	531	407	288	152	210	365	398
27	453	461	528	489	442	535	410	286	157	209	372	398
28	458	441	509	488	453	509	565	296	179	215	380	392
29	454	459	523	482	---	488	637	292	161	217	365	393
30	454	449	511	462	---	479	571	287	142	208	382	392
31	463	---	512	488	---	477	---	269	---	212	---	---
MEAN	453	492	492	506	480	491	438	379	184	180	316	418

WTR YR 1978 MEAN 401 MAX 659 MIN 134
TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	7.0	3.0	.5	.5	.0	9.5	12.0	9.0	15.0	19.0	18.0
2	10.0	6.0	2.5	.0	.5	1.0	10.0	12.0	10.5	15.0	18.5	18.0
3	10.0	7.0	2.0	.0	.5	.0	8.5	13.0	13.5	15.0	16.0	19.0
4	11.0	6.0	2.0	.0	.5	.0	9.0	12.0	15.0	15.0	18.0	19.0
5	9.0	4.0	.5	---	.5	.5	9.5	9.5	15.0	14.0	18.0	19.0
6	9.0	4.5	.5	1.0	.5	1.0	8.5	10.0	14.5	14.0	20.0	18.5
7	10.0	4.5	.5	1.0	.5	1.0	8.0	8.0	14.0	15.5	20.0	19.5
8	9.0	4.5	.5	1.0	.5	2.0	9.0	8.5	13.0	16.0	20.0	20.0
9	9.0	2.5	.5	2.0	.5	1.5	7.5	9.0	15.0	15.0	20.0	16.0
10	6.0	2.0	.0	1.0	.5	1.5	8.0	12.0	14.5	15.0	20.0	17.0
11	6.0	2.0	.5	1.0	.5	.5	9.0	12.5	11.0	16.0	20.5	16.0
12	6.5	6.0	.5	1.0	.5	.5	8.0	11.0	10.0	17.0	20.5	---
13	8.0	4.0	1.0	1.0	1.0	1.0	8.0	12.0	12.0	17.0	19.5	---
14	8.5	5.0	1.0	1.5	1.0	1.0	8.5	14.0	14.0	17.0	17.5	---
15	---	4.5	1.0	1.0	.5	.5	8.5	15.0	14.0	17.5	16.0	16.0
16	---	4.0	.5	.5	.5	1.0	8.5	17.0	12.0	17.5	16.5	14.0
17	8.5	2.0	.5	.5	.5	.5	10.0	12.0	11.5	17.0	15.5	13.0
18	8.5	2.5	.5	.5	.5	1.5	9.0	10.0	12.5	17.5	15.0	12.0
19	9.0	.5	.0	1.0	.5	2.0	9.0	7.5	13.0	17.0	15.0	10.0
20	9.5	.0	1.5	.5	.5	---	9.0	10.0	11.0	15.0	15.5	8.0
21	9.5	.0	.5	.5	.5	6.0	9.5	12.0	13.0	14.5	16.5	8.5
22	9.0	.0	.5	.5	.5	---	7.5	14.0	14.0	15.5	16.5	10.5
23	8.5	.5	.5	.5	.5	4.5	8.0	14.0	14.0	17.5	16.0	12.0
24	9.0	1.0	.5	.5	.5	6.5	8.0	13.0	16.0	18.5	19.0	13.0
25	10.0	1.0	1.5	.5	.5	5.0	10.0	12.0	13.5	19.0	17.0	14.5
26	10.0	1.0	1.5	.5	1.0	7.0	14.0	12.0	14.0	19.0	18.5	16.0
27	9.5	1.0	1.0	.5	1.0	9.0	13.0	12.0	13.5	19.5	17.5	15.0
28	9.0	2.5	1.5	.5	1.0	10.0	12.0	13.0	15.5	19.5	16.0	---
29	10.0	2.5	2.0	.5	---	10.0	12.0	14.0	16.5	18.0	17.0	14.0
30	10.0	3.0	.5	.5	---	11.5	11.5	12.0	16.0	18.5	17.0	12.5
31	8.0	---	.5	.5	---	12.0	---	9.5	---	18.5	17.0	---
MEAN	9.0	3.0	1.0	.5	.5	3.5	9.5	12.0	13.5	16.5	17.5	15.0

WTR YR 1978 MEAN 8.5 MAX 20.5 MIN .0

06214500 YELLOWSTONE RIVER AT BILLINGS, MT--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	34	323	20	190	36	313	9	63	51	275	8	43
2	19	196	13	120	26	225	51	551	19	103	7	37
3	25	265	16	143	22	196	61	984	4	19	11	59
4	30	322	15	134	24	216	61	1150	25	134	16	82
5	23	242	13	119	23	176	75	2030	26	191	20	99
6	25	265	15	137	12	66	63	1700	19	145	19	112
7	15	160	18	170	11	48	49	926	21	156	23	169
8	14	150	22	204	9	32	32	518	34	272	18	135
9	12	131	20	178	7	21	13	175	22	150	131	1050
10	21	231	17	139	67	253	3	36	6	39	184	1800
11	19	204	13	101	94	457	1	12	8	46	115	1340
12	19	204	19	154	102	920	1	11	10	57	125	1480
13	16	164	20	172	49	497	25	270	4	21	76	641
14	15	153	16	136	28	276	48	518	4	21	77	759
15	18	195	21	176	31	320	55	520	4	21	84	753
16	10	108	25	207	28	293	35	283	10	54	105	859
17	21	227	18	146	7	67	40	259	13	70	121	1010
18	17	183	41	332	15	124	20	119	23	137	320	3600
19	19	204	40	270	16	118	15	85	13	84	812	11500
20	23	243	5	26	11	76	19	123	8	56	815	12700
21	19	198	11	31	10	65	11	71	15	106	690	11100
22	17	174	20	42	9	53	86	618	15	109	278	4320
23	16	163	14	41	2	13	97	786	20	146	222	3090
24	16	162	8	33	3	18	31	285	5	36	266	3250
25	20	197	36	299	6	36	33	241	20	147	310	3530
26	21	203	90	945	11	67	32	207	15	102	330	3820
27	21	201	83	999	17	103	21	136	13	81	468	5750
28	15	144	44	462	9	56	17	110	11	66	356	4770
29	13	126	39	381	6	37	20	124	---	---	230	3200
30	32	311	39	379	6	38	57	339	---	---	181	2500
31	28	262	---	---	8	52	55	297	---	---	85	1200
TOTAL	---	6316	---	6866	---	5237	---	13547	---	2846	---	84958
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	101	1510	539	10400	170	8860	220	21600	112	4050	23	297
2	100	1590	580	11600	153	7290	220	21100	67	2320	27	343
3	67	1090	611	13000	193	8340	410	58200	62	2040	22	276
4	77	1170	429	10300	225	10500	382	35600	65	2020	21	264
5	81	1130	309	7840	451	23900	115	10700	55	1600	21	263
6	54	707	279	6980	645	41100	133	11000	54	1500	21	258
7	51	647	224	5460	258	20100	140	10700	52	1360	20	246
8	51	627	210	4920	311	26700	94	6880	51	1280	21	278
9	48	584	209	4570	496	44700	95	7570	51	1240	25	352
10	33	395	173	3690	552	57800	69	5480	46	1070	25	375
11	47	577	162	3770	556	67400	52	3970	48	1070	140	2230
12	52	639	135	3650	422	41700	46	3600	45	928	250	4820
13	49	615	126	3340	368	28600	50	3810	50	994	430	9360
14	49	622	95	2280	516	40100	102	7160	39	759	659	13500
15	10	125	420	10500	598	57600	123	8240	43	805	120	2260
16	19	235	1830	66200	472	51200	118	7740	39	711	87	1590
17	25	307	3760	209000	372	36800	84	5420	40	691	87	1600
18	20	244	4260	346000	370	31200	52	3270	38	616	459	12300
19	19	232	4230	493000	200	16000	88	4990	40	648	609	19100
20	21	250	1380	94300	274	23100	79	4390	30	486	399	9640
21	21	246	575	32300	291	22900	34	1900	29	444	370	8210
22	7	82	690	36900	208	16700	43	2290	35	510	127	2770
23	24	284	530	31200	155	13400	55	2630	35	567	86	1840
24	28	323	500	32400	290	27100	66	2980	32	455	67	1390
25	24	262	595	40600	220	21500	60	2590	34	476	77	1570
26	35	366	447	28000	135	12800	45	1900	38	519	27	548
27	28	311	165	9180	138	11000	53	2190	34	453	27	537
28	306	6460	156	8000	130	9340	57	2290	33	435	25	487
29	739	14400	104	5340	160	12700	52	2160	31	393	24	459
30	350	6750	143	8300	291	27100	64	2710	29	359	22	417
31	---	---	189	10500	---	---	101	3980	28	363	---	---
TOTAL	---	42780	---	1553520	---	817530	---	249040	---	31102	---	97580
TOTAL LOAD FOR YEAR:			2911322		TONS.							

06214500 YELLOWSTONE RIVER AT BILLINGS, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPOSURE (DAYS)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS TOTAL ASH WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2)	BIOMASS CHLORO- PHYLL RATIO PERI- PHYTON (UNITS)
OCT							
06...	1500	22	.472	.393	.089	.032	688
JUL							
05...	1440	33	--	--	.006	.000	--
SEP							
01...	1030	31	4.72	4.02	2.29	.000	--

PHYTOPLANKTON

DATE TIME	NOV 2,77 1545	MAR 13,78 1430	MAY 2,78 1120
TOTAL CELLS/ML	1100	11000	3200
DIVERSITY: DIVISION	0.5	0.0	0.8
..CLASS	0.5	0.0	0.8
..ORDER	0.6	0.0	1.3
...FAMILY	2.7	2.5	0.0
....GENUS	0.0	3.0	0.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...OOCYSTACEAE						
...CHODATELLA	--	-	--	-	22	1
...SELENASTRUM	--	-	--	-	22	1
...SCENEDESMACEAE						
...SCENEDESMUS	60	6	--	-	88	3
CHRYSOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINOIDISCEAE						
...CYCLOTELLA	10	1	--	-	240	8
..PENNALES						
...ACHNANTHACEAE						
...ACHNANTHES	10	1	--	-	44	1
...COCCONEIS	40	4	610	5	--	-
...CYMBELLACEAE						
...CYMBELLA	140	13	1400	12	400	13
...EPITHEMIA	220#	21	1400	12	22	1
...DIATOMACEAE						
...DIATOMA	260#	24	400	4	--	-
...FRAGILARIACEAE						
...FRAGILARIA	--	-	--	-	310	10
...HANNAEA	--	-	400	4	--	-
...SYNEURA	80	7	1600	14	110	3
...GOMPHONEMACEAE						
...GOMPHONEIS	--	-	--	-	22	1
...GOMPHONEMA	80	7	3000#	27	270	8
...NAVICULACEAE						
...CALONEIS	--	-	--	-	44	1
...NAVICULA	70	7	1500	13	550#	17
...NEIDIUM	--	-	400	4	--	-
...PINNULARIA	--	-	--	-	22	1
...NITZSCHACEAE						
...NITZSCHIA	70	7	610	5	620#	20
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...HORMOGONALES	--	-	--	-	150	5
...CHROCOCCALES						
...UNKNOWN 218010101021000	30	3	--	-	--	-
...UNKNOWN 218010101023000	--	-	--	-	220	7

06214500 YELLOWSTONE RIVER AT BILLINGS, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUN 2,78 1400	JUL 5,78 1440	AUG 1,78 1100	SEP 1,78 1030
TOTAL CELLS/ML	1800	1400	660	2200
DIVERSITY: DIVISION	1.1	1.4	1.0	0.8
..CLASS	1.1	1.4	1.0	0.8
...ORDER	1.7	1.6	1.1	1.5
...FAMILY	3.3	3.0	2.5	3.1
...GENUS	0.0	3.1	2.5	0.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...HYDRODICTYACEAE								
....PEDIASTRUM	--	-	--	-	230#	35	--	-
....OOCYSTACEAE								
....ANKISTRODESMUS	22	1	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	81	12	--	-
...SCENEDESMACEAE								
....SCENEDESMUS	--	-	160	12	--	-	63	3
...TETRASPORALES								
...PALMELLACEAE								
....SPHAEROCYSTIS	--	-	--	-	--	-	160	7
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	67	4	--	-	7	1	330#	15
....MELOSIRA	45	2	46	3	--	-	--	-
....STEPHANODISCUS	--	-	23	2	--	-	--	-
...PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	67	4	120	8	--	-	--	-
....COCCONEIS	22	1	23	2	--	-	79	4
...RHODICUSPHENIA	45	2	--	-	--	-	16	1
...CYMBELLACEAE								
....AMPHORA	22	1	--	-	--	-	--	-
....CYMBELLA	89	5	93	7	14	2	590#	27
....EPITHEMIA	110	6	--	-	--	-	63	3
...DIATOMACEAE								
....DIATOMA	89	5	--	-	110#	16	130	6
...FRAGILARIACEAE								
....SYNEDRA	45	2	23	2	--	-	63	3
...GOMPHONEMACEAE								
....GOMPHONEMA	110	6	210	15	14	2	140	7
...NAVICULACEAE								
....NAVICULA	220	13	140	10	81	12	210	9
...NITZSCHACEAE								
....NITZSCHIA	130	7	46	3	120#	19	170	8
...SURIRELLACEAE								
....SURIRELLA	45	2	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...HORMOGONALES								
...OSCILLATORACEAE								
....OSCILLATORIA	400#	22	350#	25	--	-	--	-
...RIVULARIACEAE								
....RAPHIDIOPSIS	--	-	160	12	--	-	--	-
...CHRODUCOCALLES								
...UNKNOWN 218010101021000	220	13	--	-	--	-	160	7
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....TRACHELOMONAS	22	1	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

YELLOWSTONE RIVER BASIN

06216000 PRYOR CREEK AT PRYOR, MT

LOCATION.--Lat 45°26'06", long 108°32'01", in NE¼NW¼NE¼ sec.5, T.5 S., R.26 E., Big Horn County, Hydrologic Unit 10070008, on left bank at Pryor, 2 mi (3 km) downstream from Lost Creek.

DRAINAGE AREA.--117 mi² (303 km²).

PERIOD OF RECORD.--June 1921 to September 1924 (no winter records), October 1966 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 3,990 ft (1,220 m), from topographic map. Prior to Oct. 14, 1966, nonrecording gage at approximately same site at different datum.

REMARKS.--Records fair. No gage-height record May 18 to May 22. Numerous diversions for irrigation above station.

AVERAGE DISCHARGE.--12 years (1966-78), 42.3 ft³/s (1.198 m³/s), 30,650 acre-ft/yr (37.8 hm³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,280 ft³/s (64.6 m³/s) May 19, 1978, gage height, 8.88 ft (2.707 m), from floodmark, from rating curve extended above 410 ft³/s (11.6 m³/s) on basis of contracted-opening measurement of peak flow; minimum observed, 3.4 ft³/s (0.10 m³/s) June 24, 1921, gage height, 0.86 ft (0.262 m), site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,280 ft³/s (64.6 m³/s) May 19, gage height, 8.88 ft (2.707 m) from floodmark, from rating curve extended above 410 ft³/s (11.6 m³/s) on basis of contracted-opening measurement of peak flow; minimum, 14 ft³/s (0.40 m³/s) Jan. 30, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	33	31	27	27	26	32	83	182	55	34	32
2	37	32	32	29	29	26	31	73	152	63	35	33
3	36	32	32	28	30	31	31	71	140	57	36	33
4	37	32	31	28	30	29	30	69	132	57	35	33
5	37	32	26	29	28	25	31	72	129	56	35	34
6	38	32	30	29	28	28	30	72	125	57	34	34
7	40	32	29	27	28	29	26	71	120	56	34	34
8	40	32	32	28	28	30	27	83	113	54	34	34
9	38	31	30	28	28	32	26	66	105	59	34	34
10	39	31	30	29	28	36	28	62	101	52	34	35
11	37	31	31	28	27	36	28	70	98	41	34	39
12	39	31	31	29	29	35	27	76	89	44	33	156
13	37	31	32	30	29	33	27	73	83	44	34	111
14	37	31	33	29	29	33	28	77	60	42	35	58
15	37	31	33	27	28	31	28	83	78	42	35	51
16	36	31	32	29	28	31	28	98	76	43	34	49
17	36	30	31	30	26	34	26	124	72	43	34	47
18	37	31	31	28	28	123	28	420	70	44	34	90
19	36	30	30	27	29	99	28	1700	68	43	34	111
20	36	28	28	28	29	97	27	1200	70	44	34	107
21	36	29	31	28	29	59	28	700	65	46	34	113
22	36	31	30	28	29	48	28	400	63	44	34	100
23	36	29	31	28	30	40	28	305	61	42	34	68
24	36	29	29	28	31	36	28	289	59	38	33	61
25	35	29	31	28	28	35	26	272	61	38	32	58
26	34	34	30	30	28	36	23	237	67	36	32	55
27	34	32	28	29	30	36	25	216	60	35	32	54
28	33	31	29	28	28	34	108	196	58	35	32	54
29	33	31	29	28	---	33	178	182	57	34	31	56
30	34	31	28	27	---	32	127	178	57	34	30	55
31	33	---	26	28	---	32	---	169	---	34	31	---
TOTAL	1127	930	939	877	801	1270	1172	7791	2691	1414	1041	1829
MEAN	36.4	31.0	30.3	28.3	28.6	41.0	39.1	251	89.7	45.6	33.6	61.0
MAX	40	34	33	30	31	123	178	1700	182	63	36	156
MIN	33	28	26	27	27	26	23	62	57	34	30	32
AC-FT	2240	1840	1860	1740	1590	2520	2320	15450	5340	2800	2060	3630

CAL YR 1977 TOTAL 12789 MEAN 35.0 MAX 93 MIN 11 AC-FT 25370
WTR YR 1978 TOTAL 21882 MEAN 60.0 MAX 1700 MIN 23 AC-FT 43400

06217500 YELLOWSTONE RIVER AT HUNTLEY, MT

LOCATION.--Lat 45°54'15", long 108°19'01", in N½SW¼ sec.24, T.2 N., R.27 E., Yellowstone County, Hydrologic Unit 10070007, at bridge on State Highway 312, 0.1 mi (0.2 km) downstream from Twelve Mile Creek, and 0.7 mi (1.1 km) northwest of Huntley.

DRAINAGE AREA.--12,840 mi² (33,256 km²).

PERIOD OF RECORD.--Water years 1951-52, 1971, 1972 to current year.

REMARKS.--Records of discharge are estimated from Yellowstone River at Billings (station 06214500). Flow affected by diversions for irrigation upstream from station.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (NMD CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	DXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)
OCT												
15...	1600	3980	0	475	8.7	27.0	12.0	6	12.0	124	21	2300
27...	1245	3540	0	460	8.4	13.5	10.5	7	10.9	109	6	7200
NOV												
11...	1150	2880	0	500	8.4	12.0	3.5	3	12.8	108	14	880
29...	1200	3620	2	470	8.2	8.0	1.5	20	12.4	98	29	5800
DEC												
06...	1100	2040	3	540	8.2	-17.0	.0	15	12.8	98	20	K30000
23...	0900	2200	0	542	8.0	-1.5	.5	5	12.9	99	25	<1
JAN												
11...	1345	4500	1	560	7.8	-11.0	.0	2	11.3	86	25	910
25...	0930	2700	70	523	8.2	-13.0	.0	1	12.1	92	8	1300
FEB												
14...	1500	1900	0	550	8.1	-7.0	.0	3	13.3	102	3	K10
28...	0815	2230	83	498	7.9	-18.0	.0	2	13.2	101	13	1600
MAR												
08...	1130	2780	0	453	8.3	9.0	2.0	4	13.2	106	110	2000
28...	1215	4960	0	560	8.1	21.5	11.0	95	9.9	100	30	10400
APR												
04...	1540	5610	1	430	8.1	17.5	10.5	35	10.0	100	18	110
26...	1115	3870	1	429	8.7	19.0	13.0	4	10.6	112	23	1140
MAY												
11...	1020	8620	51	430	8.2	8.5	13.0	50	9.0	95	82	13000
JUN												
01...	1030	19300	2	380	7.7	11.5	10.0	55	9.9	98	25	2130
14...	0930	28700	1	188	8.1	20.5	14.5	50	9.0	98	21	3300
27...	1130	29400	0	175	8.1	25.0	16.0	40	9.0	101	17	2100
JUL												
07...	1045	28400	0	179	8.1	25.5	15.0	40	9.2	101	12	3500
26...	0950	15600	0	230	8.2	22.5	19.5	7	8.0	97	21	5300
AUG												
10...	0745	8780	1	310	8.3	19.5	21.5	7	7.5	94	16	13000
24...	1130	5270	0	372	8.5	25.5	18.5	7	9.2	110	10	4000
SEP												
14...	0950	7610	0	470	7.8	11.5	10.5	310	9.0	90	34	3000
27...	0900	7360	1	408	8.6	11.0	14.5	6	8.6	94	22	2400

YELLOWSTONE RIVER BASIN

06217500 YELLOWSTONE RIVER AT HUNTLEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CACO3)
OCT											
18...	200	180	39	44	17	30	1.0	3.5	170	1	140
27...	76	--	--	--	--	--	--	--	--	--	138
NOV											
11...	110	190	45	46	19	31	1.0	3.5	180	0	150
29...	1400	--	--	--	--	--	--	--	--	--	140
DEC											
06...	28000	200	51	50	18	32	1.0	3.6	180	0	150
28...	41	--	--	--	--	--	--	--	--	--	162
JAN											
11...	390	210	67	53	20	35	1.0	3.9	180	0	150
25...	480	--	--	--	--	--	--	--	--	--	146
FEB											
14...	24	210	75	53	20	34	1.0	3.3	170	0	140
28...	260	--	--	--	--	--	--	--	--	--	130
MAR											
08...	200	--	--	--	--	--	--	--	--	--	120
28...	310	180	42	43	18	42	1.4	3.9	170	0	140
APR											
04...	46	160	35	42	13	29	1.0	3.0	150	0	120
20...	780	--	--	--	--	--	--	--	--	--	143
MAY											
11...	710	160	36	39	15	30	1.0	2.8	150	0	120
JUN											
01...	330	--	--	--	--	--	--	--	--	--	98
14...	240	--	--	--	--	--	--	--	--	--	70
27...	220	73	16	20	5.5	10	.5	1.4	69	0	57
JUL											
07...	260	--	--	--	--	--	--	--	--	--	63
28...	320	87	14	22	7.9	15	.7	1.9	89	0	73
AUG											
10...	310	--	--	--	--	--	--	--	--	--	92
24...	370	130	14	32	12	26	1.0	3.1	140	0	110
SEP											
14...	59000	--	--	--	--	--	--	--	--	--	--
27...	480	160	35	40	14	25	.9	2.7	150	0	120
DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	SOLIDS, SUSP. TOTAL, RESIDUE AT 110 DEG. C (MG/L)	NITRO- GEN, NH2+NO3 TOTAL (MG/L AS N)
OCT											
18...	.5	86	7.5	.5	11	285	287	.39	3060	22	.14
27...	--	--	--	--	--	296	--	.40	2830	13	.09
NOV											
11...	1.1	110	8.1	.5	15	305	322	.41	2370	2	.20
29...	--	--	--	--	--	306	--	.42	2990	34	.50
DEC											
06...	1.8	120	8.2	.4	16	308	337	.42	1700	37	.47
28...	--	--	--	--	--	358	--	.49	2130	27	.54
JAN											
11...	4.6	130	9.7	.6	18	356	359	.48	4330	5	.66
25...	--	--	--	--	--	320	--	.44	2330	19	.43
FEB											
14...	2.2	120	9.3	.6	17	341	342	.46	1750	18	.39
26...	--	--	--	--	--	294	--	.40	1770	14	.40
MAR											
08...	--	--	--	--	--	290	--	.39	2180	23	.31
28...	2.2	120	9.4	.5	10	338	331	.46	4530	228	.33
APR											
04...	1.9	83	7.6	.4	14	266	266	.36	4030	88	.30
26...	--	--	--	--	--	264	--	.36	2760	11	.02
MAY											
11...	1.5	97	6.1	.3	13	273	277	.37	6350	136	.15
JUN											
01...	--	--	--	--	--	233	--	.32	12100	164	.19
14...	--	--	--	--	--	115	--	.16	8910	174	.14
27...	.9	26	2.8	.2	12	112	112	.15	8890	84	.14
JUL											
07...	--	--	--	--	--	106	--	.14	8130	104	.10
26...	.9	36	3.9	.3	11	136	142	.19	5730	44	.15
AUG											
10...	--	--	--	--	--	168	--	.23	3980	42	.08
24...	.7	72	6.5	.5	13	229	234	.31	3260	34	.15
SEP											
14...	--	--	--	--	--	302	--	.41	6210	600	.31
27...	.6	90	6.7	.4	11	257	264	.35	5110	19	.16

06217500 YELLOWSTONE RIVER AT HUNTLEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)	OIL AND GREASE, TOTAL RECOV. GRAVI- METRIC (MG/L)
OCT											
18...	.00	.20	.20	.34	.05	200	20	--	2.8	--	--
27...	.04	.41	.45	.54	.02	--	--	3.1	--	--	0
NOV											
11...	.00	.40	.40	.60	.03	210	20	1.9	--	--	0
29...	.05	.40	.45	.95	.08	--	--	3.1	--	--	0
DEC											
06...	.09	.45	.54	1.0	.06	230	10	4.6	--	--	0
28...	.12	.59	.71	1.3	.06	--	--	3.1	--	--	162
JAN											
11...	.20	.19	.39	1.1	.06	260	20	--	4.4	--	0
25...	.12	.00	.07	.50	.05	--	--	1.8	--	--	146
FEB											
14...	.09	.06	.15	.54	.06	240	20	1.9	--	--	1
28...	.10	.10	.20	.60	.05	--	--	2.6	--	--	0
MAR											
08...	.00	.18	.18	.49	.05	--	--	--	--	--	0
28...	.11	.80	.91	1.2	.33	190	20	11	--	--	--
APR											
04...	.06	.55	.61	.91	.05	170	20	--	5.5	2.0	0
26...	.06	.40	.46	.48	.04	--	--	3.7	--	--	--
MAY											
11...	.10	.56	.68	.83	.15	130	80	6.9	--	--	0
JUN											
01...	.01	.48	.49	.68	.15	--	--	6.1	--	--	98
14...	.05	.76	.81	.95	.18	--	--	5.8	--	--	0
27...	.04	.25	.29	.43	.22	50	50	4.3	--	--	0
JUL											
07...	.01	.29	.30	.40	.17	--	--	3.7	--	--	0
26...	.00	.71	.71	.86	.05	80	30	--	3.0	1.1	0
AUG											
10...	.07	.35	.42	.50	.02	--	--	3.3	--	--	0
24...	.03	.36	.41	.56	.05	160	10	2.3	--	--	0
SEP											
14...	.03	1.5	1.5	1.8	.33	--	--	7.3	--	--	--
27...	.01	.43	.44	.60	.05	180	20	3.2	--	--	--

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
JUL											
26...	0950	1400	10	8	5	0	0	2	1	0	0

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
JUL										
26...	26	5	1600	16	7	30	30	50	0	.0

YELLOWSTONE RIVER BASIN

06217500 YELLOWSTONE RIVER AT HUNTLEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	MERCURY DIS- SOLVED (UG/L AS MG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
JUL 26...	.0	4	0	9	4	0	0	.0	10	0

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 18...	1600	12.0	3930	21	226	95
NOV 11...	1150	3.5	2880	5	39	91
DEC 06...	1100	.0	2040	47	259	--
JAN 11...	1345	.0	4500	4	49	--
FEB 14...	1500	.0	1900	46	236	--
MAR 28...	1215	11.0	4960	264	3540	92
APR 04...	1540	10.5	5610	123	1860	87
MAY 11...	1020	13.0	8620	164	3820	79
JUN 27...	1130	16.0	29400	200	15900	65
JUL 26...	0950	19.5	15600	76	3200	62
AUG 24...	1130	18.5	5270	24	341	74
SEP 27...	0900	14.5	7360	51	1010	77

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPO- SURE (DAYS)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- FLUORUM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- FLUORUM (MG/M2)
JUL 26...	0950	29	3.70	2.52	.470	.000
SEP 27...	0900	34	4.25	3.46	9.80	1.36

455936108102200 HUNTLEY PROJECT DRAIN NO. 7 NEAR WORDEN, MT

LOCATION.--Lat 45°59'36", long 108°10'22", in NW¼NW¼SW¼ sec.19, T.3 N., R.29 E., Yellowstone County, Hydrologic Unit 10070007, at downstream side of bridge on farm road, 0.25 mi (0.04 km) upstream from mouth, 2.2 mi (3.5 km) northwest of Worden.

PERIOD OF RECORD.--Water years 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (AMD CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
OCT											
28...	0930	1.2	0	766	8.0	8.5	9.0	7.0	68	300	0
NOV											
29...	1000	1.2	2	980	7.9	7.0	6.5	8.4	76	500	0
DEC											
28...	1050	.77	0	1000	7.7	.0	3.5	10.4	87	310	48
JAN											
25...	1200	.63	70	1040	8.1	-13.0	1.0	12.4	96	320	0
MAR											
01...	1050	.83	70	1060	7.6	-16.0	.0	11.0	84	330	0
08...	1025	.58	0	1060	8.3	9.0	3.0	10.2	85	330	0
APR											
26...	0920	1.1	1	1120	8.2	17.5	11.0	14.4	145	340	0
JUN											
01...	0900	1.6	2	1250	7.5	15.0	9.5	8.3	81	290	0
14...	0750	1.2	1	1250	7.9	16.0	11.5	8.6	88	360	49
JUL											
07...	0855	7.6	0	415	7.6	17.0	14.0	8.8	95	140	10
AUG											
10...	1000	7.0	1	699	7.9	24.0	18.5	5.4	64	230	0
SEP											
14...	0910	9.0	0	578	8.0	11.0	9.5	9.0	87	200	37

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT											
28...	66	32	110	2.8	3.3	380	0	200	9.8	.8	25
NOV											
29...	69	32	120	3.0	3.8	420	0	200	11	.7	25
DEC											
28...	68	33	120	3.0	3.4	310	2	200	18	.7	24
JAN											
25...	70	35	130	3.2	3.2	410	0	220	12	.6	22
MAR											
01...	75	35	130	3.1	3.1	420	0	230	16	.7	22
08...	73	35	130	3.1	3.2	420	0	210	13	.7	19
APR											
26...	76	36	140	3.3	3.2	430	0	250	14	.7	20
JUN											
01...	56	37	160	4.1	3.8	440	0	270	18	.6	21
14...	85	36	160	3.7	3.4	380	0	290	18	.7	20
JUL											
07...	35	13	37	1.4	2.2	160	0	66	5.4	.4	11
AUG											
10...	53	23	72	2.1	3.4	290	0	130	9.3	.6	19
SEP											
14...	49	19	45	1.4	3.9	200	0	120	9.8	.5	16

YELLOWSTONE RIVER BASIN

455936108102200 HUNTLEY PROJECT DRAIN NO. 7 NEAR WORDEN, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHOPHOS- PHATE DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHOPHOS- PHATE DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 28...	641	.87	2.08	1.5	.01	.57	.58	.04	.02	30	100
NOV 29...	675	.92	2.19	1.5	.19	.56	.55	.03	.03	20	80
DEC 28...	629	.86	1.31	1.0	.10	1.4	1.5	.05	.04	20	90
JAN 25...	702	.95	1.19	1.5	.08	.18	.26	.04	.00	10	100
MAR 01...	726	.99	1.63	1.6	--	--	.43	.05	.04	20	140
03...	697	.95	1.09	1.4	.21	.12	.33	.02	.01	20	280
APR 26...	738	1.00	2.19	1.4	.00	.63	.63	.03	.02	20	90
JUN 01...	743	1.08	3.43	2.2	.19	1.2	1.4	.03	.04	10	80
14...	810	1.10	2.62	2.1	.00	.19	.19	.01	.01	10	90
JUL 07...	251	.34	5.15	.43	.03	.15	.18	.02	.02	40	0
AUG 10...	459	.62	8.68	1.3	.02	.47	.49	.02	.05	10	50
SEP 14...	366	.50	8.89	.77	.10	.73	.63	.14	.11	40	30

06217750 FLY CREEK AT POMPEYS PILLAR, MT

LOCATION.--Lat 45°59'33", long 107°57'07", in SW¼NW¼SE¼ sec.23, T.3 N., R.30 E., Yellowstone County, Hydrologic Unit 10070007, on right bank at county bridge at Pompeys Pillar and 0.5 mi (0.8 km) upstream from mouth.

DRAINAGE AREA.--285 mi² (738 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Nonrecording gage. Altitude of gage is 2,870 ft (875 m), from topographic map. Oct. 1, 1968 to May 1974, nonrecording gage at present site but different datum. May 1974 to July 16, 1978, nonrecording gage at bridge 3 mi (5 km) upstream at different datum.

REMARKS.--Water-discharge records poor. Flow affected by waste water from irrigation ditches and by return flow from irrigated areas upstream. Discharge for the period May 1974 to July 16, 1978, was computed by combining the flow of Fly Creek, as determined at gage site then in use, and the flow of Lost Boy Creek.

AVERAGE DISCHARGE.--10 years, 37.8 ft³/s (1.070 m³/s), 27,390 acre-ft/yr (33.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft³/s (292 m³/s) May 19, 1978, gage height, 15.94 ft (4.859 m), previous site and datum, from floodmark, from rating curve extended above 1,800 ft³/s (50.9 m³/s) on basis of slope-area measurement of peak flow; minimum daily, 1.7 ft³/s (0.048 m³/s) Dec. 20, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,300 ft³/s (292 m³/s) May 19, gage height, 15.94 ft (4.859 m), previous site and datum, from floodmark, from rating curve extended above 1,800 ft³/s (50.0 m³/s) on basis of slope-area measurement of peak flow; minimum daily, 3.5 ft³/s (0.099 m³/s) Dec. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	7.6	6.3	4.0	4.5	5.0	27	114	77	36	27	56
2	11	7.7	6.0	4.0	4.5	4.5	27	55	65	43	31	44
3	7.2	6.7	6.0	4.0	5.1	4.0	23	29	47	41	48	49
4	6.9	6.7	4.6	4.5	5.7	3.8	18	23	43	41	51	51
5	8.6	7.0	4.8	4.6	5.7	3.8	17	72	40	42	45	55
6	9.9	6.7	5.1	4.6	6.2	3.8	14	82	30	43	49	59
7	10	7.7	5.2	4.0	6.2	4.1	13	109	29	43	44	58
8	9.7	6.4	4.6	4.0	6.1	4.1	12	120	27	45	27	45
9	9.5	6.3	3.9	4.0	5.5	4.4	12	126	20	51	27	40
10	9.7	6.1	3.5	4.2	5.5	4.7	10	102	24	51	25	61
11	9.1	5.8	3.6	4.5	5.5	5.7	7.0	79	23	51	34	66
12	9.3	5.8	3.9	5.1	5.5	6.1	11	59	21	47	33	72
13	7.8	6.7	4.2	5.1	5.5	6.1	9.9	56	20	48	29	82
14	7.6	7.0	4.6	4.6	5.0	6.1	11	86	17	49	28	74
15	7.6	6.8	5.4	4.0	5.0	6.1	8.9	84	14	48	29	71
16	7.4	5.8	5.4	4.0	5.0	6.6	8.9	59	16	49	27	62
17	7.2	6.0	5.4	4.0	5.0	8.1	7.7	55	17	47	38	51
18	7.0	5.6	5.6	4.0	5.1	11	8.5	1620	15	45	37	71
19	7.7	4.9	5.7	4.0	5.6	16	8.5	7960	16	44	32	229
20	7.7	4.2	5.5	4.0	6.2	31	8.3	3470	16	40	36	59
21	6.7	3.8	5.4	4.6	6.2	51	7.7	580	15	44	38	51
22	6.4	3.8	5.8	5.1	6.2	101	8.9	209	14	51	40	44
23	7.0	4.1	5.6	5.1	6.7	201	8.5	135	13	61	45	40
24	7.1	4.5	5.1	5.1	6.2	291	7.9	166	15	62	62	44
25	6.3	4.8	5.1	5.1	5.1	351	7.6	134	88	64	64	45
26	7.3	5.3	5.1	5.1	5.1	401	7.2	85	92	43	48	38
27	6.0	6.0	5.1	5.1	5.0	325	10	67	78	39	53	40
28	6.5	6.1	5.1	5.1	5.0	324	12	50	64	30	53	33
29	6.3	6.3	5.1	5.1	---	137	14	49	52	43	51	24
30	7.1	6.2	5.1	5.1	---	79	47	59	42	32	58	24
31	5.8	---	4.5	4.5	---	44	---	56	---	33	49	---
TOTAL	245.4	178.4	156.3	140.2	153.9	2450.0	393.5	15950	1050	1406	1258	1738
MEAN	7.92	5.95	5.04	4.52	5.50	79.0	13.1	515	35.0	45.4	40.6	57.9
MAX	12	7.7	6.3	5.1	6.7	401	47	7960	92	64	64	229
MIN	5.8	3.8	3.5	4.0	4.5	3.8	7.0	23	13	30	25	24
AC-FT	487	354	310	278	305	4860	781	31640	2080	2790	2500	3450
CAL YR 1977 TOTAL	7364.1			MEAN 20.2	MAX 86	MIN 2.8	AC-FT 14610					
WTR YR 1978 TOTAL	25119.7			MEAN 68.8	MAX 7960	MIN 3.5	AC-FT 49820					

YELLOWSTONE RIVER BASIN

06217750 FLY CREEK AT POMPEYS PILLAR, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to current year.

WATER TEMPERATURES: October 1968 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,250 micromhos Apr. 6, 1977; minimum daily, 262 micromhos Feb. 14, 1971.
WATER TEMPERATURES: Maximum daily, 26.5°C July 3, 1975; minimum daily, 0.0°C on many days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,670 micromhos May 31, June 2; minimum daily, 731 micromhos Mar. 27, 28.
WATER TEMPERATURES: Maximum daily, 25.0°C June 23, Aug. 7; minimum daily, 0.0°C on several days during November to January.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
DEC												
05...	0900	8.5	2150	9.0	740	400	140	95	240	3.8	5.1	410
NOV												
14...	0910	5.6	2370	3.0	890	570	160	120	290	4.2	5.2	400
DEC												
07...	1030	4.5	2710	.0	940	650	180	120	340	4.8	5.5	350
JAN												
10...	0930	3.2	2800	.0	980	630	180	130	370	5.1	5.1	430
FEB												
13...	1215	5.3	2380	1.0	730	360	130	99	320	5.1	4.9	460
MAR												
09...	1010	3.2	2830	1.0	980	630	180	130	360	5.0	5.3	430
APR												
10...	0930	11	3240	9.0	930	580	160	130	460	6.5	6.9	430
MAY												
09...	1025	98	2260	10.0	650	430	110	90	370	6.3	7.1	260
21...	1030	530	1430	17.5	480	340	98	58	160	3.2	8.0	180
JUN												
08...	0906	29	3680	18.0	1100	770	190	160	550	7.1	8.6	440
JUL												
17...	1230	46	1180	20.0	360	180	67	46	140	3.2	3.7	220
AUG												
03...	1025	48	1080	16.5	340	150	66	42	120	2.8	3.6	230
SEP												
19...	0850	229	2020	9.0	550	320	100	72	260	4.8	6.7	280

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
DEC												
05...	880	13	.6	15	1590	2.16	36.5	--	.00	--	20	30
NOV												
14...	1100	15	.6	15	1900	2.58	28.7	.18	.01	.00	30	60
DEC												
07...	1300	17	.5	15	2150	2.92	26.1	.30	.00	.00	20	60
JAN												
10...	1300	21	.6	16	2240	3.05	19.4	.42	.01	.00	30	80
FEB												
13...	940	22	.5	16	1760	2.39	25.2	.58	.02	.01	10	110
MAR												
09...	1300	15	.6	11	2220	3.02	19.2	.28	.00	.01	10	100
APR												
10...	1500	35	.4	10	2520	3.43	74.8	.14	.00	.00	20	160
MAY												
09...	1300	28	.3	10	2040	2.77	540	.15	.03	.01	10	30
21...	620	12	.2	11	1060	1.44	1660	.12	.00	.00	50	50
JUN												
08...	1800	39	.5	9.0	2980	4.05	233	.46	--	.01	20	70
JUL												
17...	430	9.9	.4	13	819	1.11	102	.13	.02	.01	30	50
AUG												
03...	380	9.9	.5	12	749	1.02	97.1	.28	.00	.01	20	60
SEP												
19...	850	24	.4	11	1460	1.99	903	.28	.03	.03	50	120

06217750 FLY CREEK AT POMPEYS PILLAR, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1920	2460	2410	---	2370	2380	2410	1350	3550	1610	996	905
2	1910	2460	2410	---	2360	2410	2420	1380	3670	1580	1080	891
3	2070	2480	2440	---	2360	2400	2550	1620	3420	1570	1470	959
4	2060	2490	2440	---	2340	2390	2780	1820	3390	1420	938	795
5	2110	2490	2620	---	2340	2440	3010	780	3490	1420	871	---
6	2120	2470	2620	---	2270	2450	3020	1010	3430	1340	1020	809
7	2150	2460	2650	---	2330	2370	3060	1120	3480	1240	1140	990
8	2170	2440	---	---	2320	2270	3140	1250	3450	1350	1080	877
9	2240	2410	---	---	2320	2250	3270	2150	3390	1200	1000	893
10	2220	2410	2710	2790	2300	2280	3270	1410	3410	1080	1030	939
11	2230	2430	2720	2600	2280	2280	3080	1330	3480	1310	1270	903
12	2250	2430	2670	2650	2280	2230	3020	1340	3370	1360	1410	1080
13	2300	2420	2630	2780	2300	2250	3040	1520	3310	1200	1420	1080
14	2350	2350	2590	---	2330	2250	3150	1860	3290	1350	1240	1600
15	2370	2340	2550	---	2320	2260	3140	1930	3090	1170	1260	1520
16	2350	2470	2620	---	2300	2100	3140	1310	3260	1130	1320	1560
17	2320	2410	2620	2330	2270	2050	3180	1260	3250	1120	1220	1680
18	2300	---	2620	2360	2320	2160	3120	1650	3280	1260	1030	1300
19	2330	---	2800	2340	2290	2730	3120	1010	3280	1270	1030	---
20	2340	---	2800	2340	2320	2900	3130	1770	3200	1110	1160	1450
21	2370	---	2870	2360	2330	1970	3170	1780	3100	1150	1110	1750
22	2420	---	2880	2340	2210	1260	3210	2800	3210	1110	---	1730
23	2360	---	---	2360	2270	1200	3240	2780	3230	1060	882	1620
24	2350	---	---	2400	2230	949	3100	2920	3100	980	885	2240
25	2340	---	---	---	2230	940	3120	2570	1440	1180	858	3100
26	2350	2460	---	---	2330	857	3020	2830	1430	1060	882	1820
27	2350	2470	---	2350	2340	731	2930	2880	1280	1170	1020	1860
28	2390	2460	---	2360	2330	731	2960	3160	1170	1410	947	1770
29	2400	2440	---	2340	---	1090	2940	3080	1420	1400	779	1880
30	2400	2430	---	2330	---	1370	1340	3350	1640	1020	836	2450
31	2440	---	---	2330	---	1870	---	3670	---	1010	893	---
MEAN	2270	2440	2630	2430	2310	1930	2970	1960	2950	1250	1070	1450
WTR YR 1978	MEAN	2100	MAX	3670	MIN	731						

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.0	10.0	2.5	.0	1.0	1.5	12.0	13.0	13.0	23.0	21.0	21.0
2	14.5	9.0	2.0	.0	2.0	2.0	12.5	14.0	15.5	21.0	19.5	18.5
3	12.5	8.0	2.5	.0	2.0	2.0	10.5	15.5	16.0	18.5	20.0	22.0
4	12.0	7.0	1.0	.0	1.5	2.5	13.0	13.0	17.5	20.0	19.0	21.5
5	11.5	8.0	.5	.0	2.0	3.0	12.0	13.5	17.0	19.5	19.0	---
6	11.0	6.0	.0	.0	1.5	3.0	11.0	11.0	17.5	17.0	24.0	22.5
7	10.0	7.0	.0	.0	1.0	3.0	12.0	10.5	18.5	20.0	25.0	22.0
8	10.0	5.5	.0	.0	1.0	3.0	13.5	11.0	21.0	18.0	20.5	20.0
9	9.0	4.5	.0	.0	1.5	4.5	12.0	15.0	22.0	17.0	22.0	19.5
10	9.5	5.5	1.5	.0	1.5	4.5	13.0	13.0	19.0	20.0	23.0	19.0
11	9.0	5.0	2.0	.5	2.0	5.5	12.0	13.5	17.0	20.5	20.0	16.0
12	10.5	5.5	1.5	2.0	1.0	5.0	8.5	15.0	19.5	20.0	20.5	15.0
13	10.5	4.5	4.0	1.0	1.5	5.0	13.5	17.5	20.0	21.0	19.5	12.5
14	10.0	5.5	3.0	.0	1.0	5.5	14.5	19.0	23.0	19.0	19.5	15.0
15	7.0	5.0	2.5	.0	1.5	7.0	10.5	21.0	19.0	19.5	20.5	17.0
16	10.5	5.0	2.5	.0	1.5	8.0	12.0	17.0	20.5	21.5	17.0	16.5
17	13.0	4.5	2.5	1.0	1.5	7.0	10.0	14.0	21.0	20.5	19.0	15.0
18	13.5	---	2.0	1.0	1.5	7.5	11.0	11.0	22.0	19.5	19.0	11.0
19	10.0	.0	1.0	1.0	2.0	6.0	11.0	11.0	20.5	18.0	16.5	9.0
20	10.5	.0	2.5	1.5	2.5	6.5	14.5	17.5	16.5	18.0	18.0	10.0
21	11.0	.0	2.0	2.0	3.0	4.5	10.5	19.0	17.0	19.5	19.5	12.5
22	10.5	.0	3.0	3.0	3.0	4.0	10.0	20.0	17.5	21.5	---	14.0
23	11.0	.0	---	2.0	3.5	5.0	14.0	18.5	25.0	20.5	20.5	13.5
24	12.0	.0	---	2.5	3.5	5.5	16.5	16.5	24.0	23.0	22.0	16.0
25	12.0	---	.0	---	3.0	6.0	18.0	15.5	18.5	22.5	23.0	14.0
26	10.5	3.5	.0	---	3.5	8.5	19.0	17.5	18.0	21.0	19.0	14.5
27	12.0	3.0	.0	3.5	3.0	11.5	14.5	18.5	21.5	21.5	19.5	14.0
28	11.0	3.5	.0	4.0	3.0	12.0	13.5	16.5	22.0	21.0	21.0	14.0
29	10.5	3.0	.0	2.0	---	14.5	13.0	15.0	22.0	20.0	20.0	16.0
30	11.0	2.5	.0	1.5	---	12.5	13.0	15.0	22.5	22.0	19.0	16.0
31	7.5	---	.0	1.0	---	12.5	---	12.0	---	23.5	21.5	---
MEAN	11.0	4.5	1.5	1.0	2.0	6.0	12.5	15.0	19.5	20.0	20.5	16.0
WTR YR 1978	MEAN	11.0	MAX	25.0	MIN	.0						

06279500 BIGHORN RIVER AT KANE, WY

LOCATION.--Lat 44°45'31", long 108°10'51", in NW¼NE¼SW¼ sec.9, T.55 N., R.94 W., Big Horn County, Hydrologic Unit 10080010, on right bank 180 ft (55 m) upstream from Bighorn Canyon National Recreation Area boundary, 0.5 mi (0.8 km) upstream from normal high-water line of Bighorn Lake at elevation 3,660 ft (1,116 m), 1.3 mi (2.1 km) upstream from Five Springs Creek, and 5.9 mi (9.5 km) south of Kane.

DRAINAGE AREA.--15,765 mi² (40,831 km²). Area at sites used prior to May 17, 1956, 15,846 mi² (41,041 km²).

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. Altitude of gage is 3,660 ft (1,116 m), from topographic map. 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 (20.1 km) downstream at different datum.

REMARKS.--Records fair except those for December to March, which are poor. Some regulation by Boysen Reservoir (station 06258900) since October 1951. Diversions for irrigation of about 376,000 acres (1,522 km²) above station.

AVERAGE DISCHARGE.--50 years, 2,293 ft³/s (64.94 m³/s), 1,661,000 acre-ft/yr (2,048 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,200 ft³/s (714 m³/s) June 16, 1935, gage height, 11.10 ft (3.383 m), site and datum then in use; minimum daily, 179 ft³/s (5.07 m³/s) July 22, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 14.8 ft (4.51 m) Sept. 30, 1923, site and datum in use April 1932 to May 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20,700 ft³/s (586 m³/s) May 20, gage height, 9.89 ft (3.014 m); minimum daily, 470 ft³/s (13.3 m³/s) Nov. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1210	870	730	740	870	1000	3070	4970	4930	7370	3590	1530
2	1280	860	730	720	860	1050	3000	4330	4350	7410	3640	1500
3	1220	860	720	700	880	1100	2930	3680	3680	7460	3680	1480
4	1270	890	710	730	880	1100	2830	3360	3730	7350	3520	1500
5	1210	900	700	780	880	1100	2780	4010	3700	6990	3370	1410
6	1200	890	670	820	860	1100	2750	3840	3880	6400	2950	1340
7	1190	870	650	850	880	1100	2720	3590	4610	6090	2900	1310
8	1170	860	630	850	880	1100	2670	3340	5070	6070	2740	1260
9	1110	840	610	850	880	1150	2720	2830	5190	6300	2540	1260
10	1060	820	600	860	900	1200	2690	2620	6590	6280	2200	1290
11	1040	860	620	860	900	1200	2590	2460	7020	6150	2160	1430
12	990	940	650	850	900	1200	2670	2500	5310	6000	2180	2420
13	960	920	690	850	900	1200	2660	2540	4370	5840	2180	2520
14	910	910	730	850	900	1200	2700	2580	5030	5650	2360	2320
15	910	900	790	850	900	1200	2720	2720	7100	5650	3520	2120
16	920	890	820	850	900	1300	2670	3290	7520	5670	2960	2050
17	930	870	840	850	900	1300	2640	4050	6680	5670	2780	2110
18	900	850	840	850	910	1300	2590	10800	5110	5610	2860	2380
19	900	830	830	850	940	1600	2610	17000	4750	5410	2820	3820
20	930	498	800	850	950	2050	2580	17900	4670	5210	2740	3120
21	930	470	800	850	950	2150	2540	7620	4040	5310	2610	2830
22	910	490	800	850	950	2100	2530	5730	4270	6190	2440	2770
23	900	540	800	850	950	2200	2480	5630	5130	5750	2360	2750
24	900	580	800	860	950	2280	2410	6760	5350	5510	2280	2740
25	900	640	800	860	950	2500	2360	7410	5550	5110	2220	2720
26	900	670	780	860	1000	2860	2020	7150	5190	4670	2150	2670
27	900	700	780	860	1000	2900	1950	6570	4060	4310	1830	2610
28	890	710	760	860	1000	2270	5880	6030	4020	3790	1750	2640
29	840	730	760	860	---	3000	8240	5590	5270	3610	1710	2690
30	870	730	760	860	---	3190	6220	5610	6740	3930	1700	2720
31	870	---	760	860	---	3100	---	5770	---	3710	1550	---
TOTAL	31120	23388	22960	25840	25660	53100	91220	172280	153110	176470	80290	65310
MEAN	1004	780	741	834	916	1713	3041	5557	5104	5693	2590	2177
MAX	1280	940	840	860	1000	3190	8240	17900	7520	7460	3680	3820
MIN	840	470	600	700	870	1000	1950	2460	3700	3610	1550	1260
AC-FT	61730	46390	45540	51250	50900	105300	180900	341700	303700	350000	159300	129500
CAL YR 1977 TOTAL	472841			1295	MAX	4140	MIN	470	AC-FT	937900		
WTR YR 1978 TOTAL	920748			MEAN	2523	MAX	17900	MIN	470	AC-FT	1826000	

06279500 BIGHORN RIVER AT KANE, WY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1947 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
OCT										
03...	1015	1190	1100	--	10.0	600	8.8	140	400	200
19...	1400	860	--	--	10.0	--	--	--	--	--
31...	1100	850	--	--	8.0	--	--	--	--	--
NOV										
13...	0900	920	1100	--	1.0	8	11.8	92	420	210
DEC										
12...	1630	650	1400	--	.0	7	10.6	76	500	250
JAN										
04...	0920	730	1200	--	.0	3	11.6	110	470	220
FEB										
04...	1610	880	1200	--	.0	45	10.5	230	390	160
16...	1145	900	--	--	.5	--	--	--	--	--
MAR										
05...	1540	1100	1150	--	.0	30	11.2	210	400	200
APR										
01...	1645	3070	1150	--	13.0	140	9.5	270	350	150
05...	1400	2800	--	--	11.0	--	--	--	--	--
MAY										
02...	1330	4350	--	--	10.5	--	--	--	--	--
11...	1145	2420	--	--	13.0	--	--	--	--	--
13...	1700	2520	900	--	15.0	350	8.8	680	290	130
20...	1350	20700	--	--	9.0	--	--	--	--	--
JUN										
10...	1720	7300	430	8.3	14.0	650	8.9	1600	140	42
JUL										
23...	0815	5050	700	8.3	17.0	55	8.3	200	210	79
27...	1250	4250	--	--	22.0	--	--	--	--	--
AUG										
20...	0815	2720	820	8.2	15.0	40	8.5	260	260	110
SEP										
17...	0945	2040	890	8.1	14.5	70	10.2	310	310	140

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)
UCT									
03...	95	40	150	3.3	5.7	250	0	200	--
19...	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--
NOV									
13...	94	45	110	2.3	4.6	260	0	210	--
DEC									
12...	140	36	160	3.1	5.9	300	0	250	--
JAN									
04...	120	40	160	3.2	5.7	300	0	250	--
FEB									
04...	96	38	140	3.1	3.9	280	0	230	--
16...	--	--	--	--	--	--	--	--	--
MAR									
05...	120	4.0	5.8	.1	4.6	240	0	200	--
APR									
01...	90	31	130	3.0	4.4	240	0	200	--
05...	--	--	--	--	--	--	--	--	--
MAY									
02...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
13...	72	26	85	2.2	2.9	190	0	160	--
20...	--	--	--	--	--	--	--	--	--
JUN									
10...	36	11	36	1.3	1.5	120	0	98	1.0
JUL									
23...	56	17	62	1.9	.3	160	0	140	1.3
27...	--	--	--	--	--	--	--	--	--
AUG									
20...	68	21	74	2.0	3.3	180	0	150	1.8
SEP									
17...	84	25	86	2.1	3.6	210	0	170	2.7

YELLOWSTONE RIVER BASIN

06279500 BIGHORN RIVER AT KANE, WY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SULFATE DIS- SOLVED (MG/L AS SO ₄)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO ₂)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TUNS PER AC-FT)	SOLIDS, DIS- SOLVED (TUNS PER DAY)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
OCT									
03...	450	33	.6	11	906	1.23	2910	.54	.00
19...	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--
NOV									
13...	400	28	.6	9.5	824	1.12	2050	.54	.00
DEC									
12...	510	35	.6	13	1050	1.43	1840	1.5	.00
JAN									
04...	470	34	.8	12	998	1.36	1970	.84	.01
FEB									
04...	420	40	.6	9.4	890	1.21	2120	.38	.08
16...	--	--	--	--	--	--	--	--	--
MAR									
05...	560	25	.6	10	1020	1.39	3030	.50	.59
APR									
01...	230	14	.6	4.8	628	.85	5210	.47	.12
05...	--	--	--	--	--	--	--	--	--
MAY									
02...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
13...	300	14	.6	13	600	.82	4080	.43	.07
20...	--	--	--	--	--	--	--	--	--
JUN									
10...	110	1.1	.2	.0	320	.44	6310	.56	1.2
JUL									
23...	200	8.1	.4	7.0	434	.59	5920	.99	.25
27...	--	--	--	--	--	--	--	--	--
AUG									
20...	250	11	.5	8.0	528	.72	3860	.61	.19
SEP									
17...	280	15	.5	9.0	609	.83	3350	.50	.04

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	LINDANE TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDE, TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)
OCT												
19...	1400	.00	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00
MAY												
11...	1145	.00	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00

DATE	TOX- APHENE, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	PCB, TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT												
19...	0	.00	.00	.0	.00	.00	.11	.00	.00	.01	.00	.00
MAY												
11...	0	.00	.00	.0	.00	.00	.00	.00	.00	.09	.00	.00

DATE	TOTAL DICAMBA (UG/L)	DICAMBA IN BOTTOM MA- TERIAL (UG/KG)	TOTAL PICLORAM (UG/L)	PICLORAM IN BOTTOM MA- TERIAL (UG/KG)
MAY				
11...	.00	0	.01	0

06279500 BIGHORN RIVER AT KANE, WY--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DAVE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT 19...	1400	.0	.0	0	.0	.1	.0	.4
MAY 11...	1145	.0	.0	0	.0	.0	.0	.0

DATE	TIME	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATERIAL (UG/KG)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SILVEX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT 19...		.1	0	.0	.1	0	--	--	--
MAY 11...		.0	0	.0	.0	0	0	0	.0

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM
OCT 31...	1100	8.0	830	32	72	--	--	--	--	--	--	--
FEB 16...	1145	.5	900	76	185	--	--	--	--	--	--	--
APR 05...	1400	11.0	2800	951	7190	20	33	68	87	100	--	--
MAY 02...	1330	10.5	4350	7060	82900	62	85	92	97	98	99	100
MAY 20...	1350	9.0	20700	11700	654000	54	67	92	96	98	100	--
JUL 27...	1250	22.0	4250	440	5050	--	--	--	--	--	--	--

YELLOWSTONE RIVER BASIN

06285100 SHOSHONE RIVER NEAR LOVELL, WY

LOCATION.--Lat 44°50'20", long 108°26'00", in NW¼NW¼ sec.16, T.56 N., R.96 W., Big Horn County, Hydrologic Unit 10080014, on right bank 30 ft (9 m) upstream from bridge on U.S. Highway 310 and 1.5 mi (2.4 km) west of Lovell.

DRAINAGE AREA.--2,350 mi² (6,090 km²), approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 3,850 ft (1,173 m), from topographic map. Prior to Oct. 1, 1976, at datum 1.00 ft (0.305 m) higher.

REMARKS.--Water-discharge records fair except those for November to February, which are poor. Natural flow of stream affected by storage reservoirs, power development, diversions above station for irrigation of about 143,000 acres (579 km²), of which about 8,000 acres (32.4 km²) are below station, and return flow from irrigated areas.

AVERAGE DISCHARGE.--12 years, 1,058 ft³/s (29.96 m³/s), 766,500 acre-ft/yr (945 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s (379 m³/s) July 1, 1967, gage height, 7.49 ft (2.283 m) present datum; maximum gage height, 9.09 ft (2.771 m) Feb. 3, 1972 (backwater from ice) present datum; minimum daily discharge, 27 ft³/s (0.76 m³/s) May 31, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,680 ft³/s (217 m³/s) May 18, gage height, 6.25 ft (1.905 m); maximum gage height, 7.20 ft (2.195 m) Mar. 3 (backwater from ice); minimum daily discharge, 254 ft³/s (7.19 m³/s) June 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	418	418	450	440	600	510	610	1640	717	6520	2070	554
2	456	480	440	420	600	520	596	1580	574	6920	1860	625
3	442	493	440	420	610	520	581	1500	493	6880	1720	640
4	418	480	440	400	620	520	574	1060	344	6520	1590	670
5	418	474	460	390	620	520	574	1060	388	5770	1430	625
6	400	500	470	390	620	510	547	1170	254	4670	1260	560
7	382	480	460	390	640	510	547	1120	354	4780	1380	493
8	360	468	450	390	640	513	424	1080	394	4700	1090	526
9	337	468	470	390	620	540	533	994	424	4830	834	554
10	343	466	490	390	600	632	547	733	1240	4910	725	663
11	376	455	490	380	560	632	547	686	1290	5070	766	1270
12	376	461	470	380	560	632	533	655	1530	5090	725	1370
13	567	461	440	380	560	618	560	618	1310	4810	702	1360
14	455	474	430	380	560	596	603	603	2070	4570	791	1200
15	400	461	493	380	570	567	758	655	2180	4520	775	1240
16	400	461	436	450	580	567	949	412	2320	4480	750	1230
17	436	455	352	500	580	603	931	1300	2840	4440	825	1210
18	430	455	348	600	580	733	913	5350	3540	4290	878	1660
19	371	430	371	560	570	965	800	4340	3540	3690	922	1000
20	382	440	343	600	560	1000	783	1710	2890	3540	913	1590
21	455	450	343	620	560	1120	860	1430	2770	3330	886	1460
22	430	450	388	600	570	1020	895	1350	2280	3150	670	1430
23	424	460	436	550	560	702	886	1260	2170	2690	647	1380
24	418	460	418	540	550	758	843	1220	2160	2400	647	1370
25	424	460	420	560	540	783	709	1090	2220	2240	640	1320
26	430	470	430	570	520	800	783	949	2220	2040	526	1240
27	418	470	430	600	510	742	742	886	2260	1970	540	1170
28	424	460	440	610	510	686	2440	860	2680	1900	567	1120
29	424	460	440	610	---	647	1350	742	3910	2340	520	1080
30	418	450	440	610	---	652	1360	717	5600	2530	493	1110
31	394	---	440	600	---	618	---	725	---	2360	547	---
TOTAL	12806	13872	13348	15100	16170	20736	23778	39495	57012	128150	28689	31720
MEAN	413	462	431	487	578	669	793	1274	1900	4134	925	1057
MAX	567	500	493	620	640	1120	2440	5350	5600	6920	2070	1660
MIN	337	418	332	380	510	510	424	412	254	1900	493	493
AC-FT	25400	27520	26480	29950	32070	41130	47160	78340	113100	254200	56900	62920
CAL YR 1977	TOTAL	127604	MEAN	350	MAX	940	MIN	27	AC-FT	253100		
WTR YR 1978	TOTAL	400876	MEAN	1098	MAX	6920	MIN	254	AC-FT	795100		

YELLOWSTONE RIVER BASIN

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06285100 SHOSHONE RIVER NEAR LOVELL, WY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1966 to current year.

WATER TEMPERATURES: October 1966 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,580 micromhos Apr. 15, 1977; minimum daily, 238 micromhos June 26, 1974.

WATER TEMPERATURES: Maximum, 30.0°C June 6, 1969; minimum, 0.0°C on many days during winter period most years.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum observed, 1,560 micromhos Nov. 14; minimum daily, 256 micromhos July 4.

WATER TEMPERATURES: Maximum 20.5°C July 29; minimum, 0.0°C on several days during November to February.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT									
03...	1200	448	900	--	10.0	340	130	86	31
03...	1440	447	--	--	9.5	--	--	--	--
31...	1300	386	--	--	10.0	--	--	--	--
NOV									
13...	1030	461	1150	--	4.5	490	230	120	45
DEC									
12...	0915	470	1200	--	.0	510	260	130	45
14...	1245	416	--	--	5.0	--	--	--	--
JAN									
04...	1030	400	1350	--	.0	620	320	160	53
FEB									
05...	0900	620	1300	--	.0	560	240	140	50
MAR									
06...	0900	510	950	--	.0	380	140	100	31
16...	1450	568	--	--	3.0	--	--	--	--
APR									
02...	0900	618	940	--	8.0	360	130	97	29
03...	1145	582	--	--	8.0	--	--	--	--
14...	0900	618	--	--	--	--	--	--	--
MAY									
04...	1115	1140	--	--	12.0	--	--	--	--
14...	0900	--	740	--	13.5	270	99	74	21
JUN									
11...	0830	1300	570	8.4	11.0	180	51	49	15
21...	1230	2950	--	--	15.0	--	--	--	--
JUL									
06...	1430	4740	--	--	17.0	--	--	--	--
23...	0930	2740	450	8.3	16.0	140	37	42	9.3
AUG									
01...	1345	2130	--	--	20.0	--	--	--	--
20...	0930	922	690	8.2	14.5	230	71	58	20
SEP									
06...	1140	619	--	--	20.0	--	--	--	--
17...	1110	1210	650	8.2	13.0	240	78	64	20

YELLOWSTONE RIVER BASIN

06285100 SHOSHONE RIVER NEAR LOVELL, WY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT									
03...	100	2.4	4.7	260	--	210	--	320	17
03...	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--
NOV									
13...	110	2.2	6.8	310	--	250	--	440	20
DEC									
12...	110	2.1	7.1	300	--	250	--	400	23
14...	--	--	--	--	--	--	--	--	--
JAN									
04...	120	2.1	8.2	360	--	300	--	480	29
FEB									
05...	110	2.0	7.3	390	--	320	--	400	21
MAR									
06...	74	1.7	5.0	290	--	240	--	280	12
16...	--	--	--	--	--	--	--	--	--
APR									
02...	86	2.0	4.7	280	--	230	--	290	13
03...	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--
MAY									
04...	--	--	--	--	--	--	--	--	--
14...	72	1.9	3.8	210	--	170	--	220	13
JUN									
11...	52	1.7	3.1	160	1	130	1.0	140	6.8
21...	--	--	--	--	--	--	--	--	--
JUL									
06...	--	--	--	--	--	--	--	--	--
23...	38	1.4	2.3	130	0	110	1.0	100	4.4
AUG									
01...	--	--	--	--	--	--	--	--	--
20...	68	2.0	3.2	190	0	160	1.9	190	8.2
SEP									
06...	--	--	--	--	--	--	--	--	--
17...	64	1.8	3.4	200	0	160	2.0	210	8.9

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER 4C-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, TOTAL (MG/L AS P)
OCT								
03...	.7	14	707	.96	855	1.2	.00	.10
03...	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--
NOV								
13...	.9	14	917	1.25	1140	1.7	.01	.08
DEC								
12...	.8	16	886	1.21	1120	1.4	.02	.05
14...	--	--	--	--	--	--	--	--
JAN								
04...	1.1	19	1060	1.44	1150	1.7	.03	.04
FEB								
05...	1.0	18	945	1.29	1580	1.3	.04	.20
MAR								
06...	.7	13	662	.90	912	.66	.03	.11
16...	--	--	--	--	--	--	--	--
APR								
02...	.6	12	673	.92	1120	.50	.01	.01
03...	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--
MAY								
04...	--	--	--	--	--	--	--	--
14...	.6	12	522	.71	--	.45	.00	.16
JUN								
11...	.4	15	364	.50	1280	.74	.09	.25
21...	--	--	--	--	--	--	--	--
JUL								
06...	--	--	--	--	--	--	--	--
23...	.3	15	279	.38	2060	.72	.05	.13
AUG								
01...	--	--	--	--	--	--	--	--
20...	.6	14	460	.63	1150	1.0	.02	.06
SEP								
06...	--	--	--	--	--	--	--	--
17...	.6	16	490	.67	1600	.97	.11	.09

YELLOWSTONE RIVER BASIN

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06285100 SHOSHONE RIVER NEAR LOVELL, WY--Continued

SPECIFIC CONDUCTANCE (MICROMH/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1040	1250	1250	1400	1180	979	920	636	710	291	454	782
2	1040	1220	1260	1400	1170	984	925	714	715	271	466	779
3	972	1200	1260	1410	1080	909	920	738	776	266	492	768
4	993	1180	1270	933	1090	909	894	728	813	256	527	757
5	993	1220	1260	1110	1080	915	883	690	766	273	545	779
6	1020	1240	1310	1190	1110	875	865	650	890	286	571	806
7	1050	1200	1280	1200	1080	905	848	666	819	291	541	815
8	1020	1220	1260	1200	1100	895	826	705	778	313	572	815
9	1060	1230	1510	1080	1080	899	881	664	834	293	617	806
10	1090	1240	1320	1210	1100	941	837	673	581	290	661	780
11	1040	1240	1240	1140	1060	975	848	721	551	285	673	749
12	1020	1240	1150	1320	1140	983	846	697	532	281	656	782
13	965	1240	1310	1270	1140	999	831	715	540	278	682	748
14	1050	1560	1250	1300	1120	1020	808	698	461	286	689	744
15	1110	1310	1160	1180	1000	1040	765	665	427	281	709	732
16	1110	1220	1270	1350	1020	1040	688	754	419	276	725	705
17	1130	1250	1270	1190	1020	1020	660	708	395	296	708	697
18	1280	1270	1260	1180	1010	1040	647	755	360	286	694	709
19	1200	1180	1260	1200	804	966	631	892	337	307	677	646
20	1240	1460	1210	1190	985	994	650	924	367	333	638	695
21	1210	1310	1270	1200	967	933	678	813	350	368	649	700
22	1200	1320	1270	1210	965	994	650	742	380	368	703	689
23	1200	1310	1270	1280	941	1050	645	713	395	393	719	679
24	1220	1280	1260	1220	901	1010	614	700	376	419	739	629
25	1210	1270	1320	1200	936	951	665	679	386	414	722	660
26	1210	1210	1280	1180	936	874	720	668	381	425	754	682
27	1170	1550	1330	1140	936	946	669	657	365	428	768	678
28	1240	1310	1210	1160	948	949	614	672	360	426	809	697
29	1240	1300	1260	1150	---	954	709	654	325	408	825	714
30	1240	1300	1250	1150	---	970	612	705	311	403	821	714
31	1260	---	1280	1180	---	959	---	695	---	408	793	---
MEAN	1120	1270	1270	1210	1030	964	758	713	524	329	664	731
WTR YR 1978	MEAN	882	MAX	1560	MIN	256						

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.0	5.0	2.0	1.0	.5	.5	13.0	11.5	11.0	15.5	17.5	15.5
2	12.0	7.0	2.0	.0	1.0	.5	12.0	12.0	15.0	15.0	17.0	16.0
3	13.0	7.0	4.0	1.0	.5	.5	10.5	11.5	13.0	14.5	17.0	16.0
4	11.0	7.0	4.0	1.0	1.0	.5	11.0	9.0	14.5	15.5	17.0	17.0
5	11.0	7.0	1.0	1.0	1.0	1.0	11.0	9.0	15.0	14.5	17.0	17.0
6	10.0	7.0	1.0	1.0	1.0	1.0	11.0	7.0	17.0	14.5	18.0	17.5
7	10.0	6.0	1.0	1.0	1.0	3.0	11.0	7.0	16.0	15.0	18.0	18.0
8	10.0	4.0	1.0	.5	1.0	5.0	13.0	7.0	17.0	15.0	18.0	18.0
9	11.0	2.0	1.0	.5	1.0	6.5	9.0	12.0	16.0	15.0	18.0	14.0
10	9.0	5.0	1.0	1.0	1.0	8.0	10.0	12.5	15.0	15.0	18.0	14.5
11	9.0	5.0	1.0	.5	1.0	7.0	2.5	13.0	14.0	15.5	18.0	13.5
12	9.0	6.0	2.0	.5	1.0	4.5	10.0	12.0	13.0	16.0	18.0	11.0
13	8.0	6.0	2.0	.0	.5	7.0	11.0	12.0	14.5	15.5	17.0	10.0
14	12.0	6.0	2.0	.5	.5	6.0	11.5	13.0	15.0	16.0	15.0	11.0
15	11.0	5.0	1.0	.0	.5	6.0	13.0	17.0	17.0	16.0	17.0	12.0
16	11.0	5.0	3.0	.5	.5	6.0	12.0	13.0	14.0	17.0	15.0	13.0
17	12.0	3.0	2.0	1.0	.5	6.5	9.0	7.0	13.0	17.0	14.0	12.5
18	11.0	2.0	1.0	1.0	.0	6.0	8.0	6.5	13.0	16.0	13.0	8.0
19	11.0	.0	2.0	1.0	.0	5.5	11.0	9.0	13.0	16.0	14.0	9.0
20	12.0	1.0	1.5	.5	.0	8.0	11.5	13.0	12.0	15.0	20.0	11.0
21	12.0	1.0	.0	.5	1.0	7.5	9.0	12.0	14.0	14.5	17.0	11.0
22	11.0	2.0	2.0	1.0	1.0	5.5	9.0	12.0	17.0	15.0	17.0	13.0
23	10.0	1.0	2.0	1.0	1.0	8.0	9.0	15.0	17.5	17.0	14.5	14.0
24	10.0	1.0	1.5	1.0	.5	7.0	10.0	16.0	15.0	17.5	16.0	13.0
25	10.0	2.0	1.5	.5	.5	8.5	13.0	14.0	14.5	18.0	15.5	15.5
26	10.0	2.0	2.0	1.0	1.0	7.0	15.0	15.0	14.0	18.0	15.0	15.5
27	9.0	3.0	1.0	1.0	1.5	11.0	13.5	14.0	15.0	18.0	15.0	15.0
28	9.0	4.0	1.0	1.0	1.0	11.0	9.0	16.0	15.0	17.0	15.0	15.5
29	10.0	3.0	1.0	1.0	---	11.5	10.0	14.0	15.0	20.5	15.0	13.5
30	10.0	4.0	1.0	1.0	---	13.0	10.5	9.0	15.0	17.0	16.0	13.0
31	8.0	---	1.0	.5	---	13.0	---	10.0	---	18.0	15.5	---
MEAN	10.5	4.0	1.5	.5	1.0	6.0	10.5	11.5	14.5	16.0	16.5	14.0
WTR YR 1978	MEAN	9.0	MAX	20.5	MIN	.0						

YELLOWSTONE RIVER BASIN

06285100 SHOSHONE RIVER NEAR LOVELL, WY--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLDN, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT						
03...	1440	9.5	447	190	229	87
31...	1300	10.0	386	156	163	--
DEC						
14...	1245	5.0	416	385	432	77
MAR						
16...	1450	3.0	568	246	377	91
APR						
03...	1145	8.0	582	144	226	88
MAY						
04...	1115	12.0	1140	1330	4090	84
JUN						
21...	1230	15.0	2950	701	5580	45
JUL						
06...	1430	17.0	4740	799	10200	45
AUG						
01...	1345	20.0	2150	165	949	77
SEP						
06...	1140	20.0	619	82	137	96

YELLOWSTONE RIVER BASIN

06286200 SHOSHONE RIVER AT KANE, WY

LOCATION.--Lat 44°51'31", long 108°19'52", in NW¼SE¼SE¼ sec.6, T.56 N., R.95 W., Big Horn County, Hydrologic Unit 10080014, at bridge on county road, 3.4 mi (5.5 km) northeast of Lovell, 6.5 mi (10.5 km) west of Kane, 6.6 mi (10.6 km) upstream from high-water line of Bighorn Lake at elevation 3,640 ft (1,109 m) and 7.8 mi (12.6 km) upstream from former discharge station.

DRAINAGE AREA.--2,989 mi² (7,742 km²), at former discharge station.

PERIOD OF RECORD.--Water years 1976 to current year.

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	LINDANE TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)
OCT 19...	1430	.00	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00
MAY 11...	1215	.00	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00

DATE	TIME	TOX- APHENE, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	PCB, TOTAL (UG/L)	MALA- THION, TOTAL (JG/L)	PARA- THION, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT 19...	0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.01	.00	.00
MAY 11...	0	.00	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	TIME	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT 19...	1430	.0	.0	0	.0	.1	.0	.0
MAY 11...	1215	.0	.0	0	.2	.1	.1	.0

DATE	TIME	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOX- APHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOT. IN BOT- TOM MA- TERIAL (UG/KG)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SILVEX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT 19...		.0	0	.0	.0	0	--	--	--
MAY 11...		.0	0	.0	.0	0	0	0	.0

YELLOWSTONE RIVER BASIN

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06286258 BIG COULEE NEAR LOVELL, WY

LOCATION.--Lat 44°58'04", long 108°17'24", in SE¼NE¼NE¼ sec.34, T.58 N., R.95 W., Big Horn County, Hydrologic Unit 10080010, on right bank 300 ft (91 m) downstream from county road, 0.6 mi (1.0 km) upstream from mouth, and 10 mi (16 km) northeast of Lovell.

DRAINAGE AREA.--30.1 mi² (78.0 km²). Area at site used Aug. 31, 1972, to Apr. 23, 1974, 28.8 mi² (74.6 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1970 to September 1978 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 3,750 ft (1,143 m), from topographic map. Aug. 31, 1972, to Apr. 23, 1974, water-stage recorder at site 0.7 mi (1.1 km) upstream at different datum.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--8 years, 0.087 ft³/s (2.46 dm³/s), 63 acre-ft/yr (77,700 m³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,840 ft³/s (52.1 m³/s) July 5, 1975, gage height, 5.54 ft (1.689 m), from rating curve extended above 17 ft³/s (0.48 m³/s) on basis of slope-area measurements at gage heights 3.60 ft (1.097 m), 4.66 ft (1.420 m), and 5.54 ft (1.689 m); no flow most of each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 10 ft³/s (0.28 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 3	0130	*110 3.12	a2.75 0.838	May 30	1430	17.2 0.48	2.24 0.683
May 17	0030	20 .57	2.27 .692	Sept. 11	0900	52 1.47	2.48 .756
May 24	1330	74 2.10	a2.59 .789				

a-From floodmarks.

No flow for most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	4.6	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.60	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.7
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.75	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00	.50
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	1.9	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.50	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.47	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	.00	.47	7.65	.00	.50	.00	5.20
MEAN	.000	.000	.000	.000	.000	.000	.016	.25	.000	.016	.000	.17
MAX	.00	.00	.00	.00	.00	.00	.47	4.6	.00	.50	.00	4.7
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.9	15	.00	1.0	.00	10

CAL YR 1977 TOTAL 18.93 MEAN .052 MAX 8.8 MIN .00 AC-FT 38
WTR YR 1978 TOTAL 13.82 MEAN .038 MAX 4.7 MIN .00 AC-FT 27

YELLOWSTONE RIVER BASIN

06286258 BIG COULEE NEAR LOVELL, WY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED SEDIMENT DISCHARGE: April 1970 to September 1978 (discontinued).

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, not determined; minimum daily mean, no flow for many days each year.

SEDIMENT DISCHARGE: Maximum daily, 57,100 tons (51,800 tonnes) July 5, 1975; minimum daily, 0 tons on many days each year.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, not determined; minimum daily mean, no flow for many days during year.

SEDIMENT DISCHARGE: Maximum daily, 940 tons (853 tonnes) May 3; minimum daily, 0 tons on many days during year.

MONTHLY AND ANNUAL SUMMARY OF WATER AND SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

MONTH	DISCHARGE (CFS-DAYS)	RUNOFF (ACRE-FEET)	DISCHARGE (TONS)	SUSPENDED SEDIMENT			CONCENTRATION (MG/L)	
				DAILY DISCHARGE (TONS)			WEIGHTED MEAN	MAXIMUM OBSERVED
				MEAN	MAXIMUM	MINIMUM		
OCTOBER 1977...	0	0	0	0	0	0		
NOVEMBER.....	0	0	0	0	0	0		
DECEMBER.....	0	0	0	0	0	0		
JANUARY 1978...	0	0	0	0	0	0		
FEBRUARY.....	0	0	0	0	0	0		
MARCH.....	0	0	0	0	0	0		
APRIL.....	.47	.93	26	.87	26	0		
MAY.....	7.65	15	1,254.2	40	940	0		
JUNE.....	0	0	0	0	0	0		
JULY.....	.50	.99	29*	.94	29	0		
AUGUST.....	0	0	0	0	0	0		
SEPTEMBER.....	4.70	9.3	849	28	820	0		
WATER YEAR...	13.32	26.22	2,158.2	5.9	940	0		

YELLOWSTONE RIVER BASIN

383

06286400 BIGHORN LAKE NEAR ST. XAVIER, MT

LOCATION.--Lat 45°18'27", long 107°57'26", in SW¼SE¼ sec.18, T.6 S., R.31 E., Big Horn County, Hydrologic Unit 10080010, in block 13 of Yellowtail Dam on Bighorn River, 1.3 mi (2.1 km) upstream from Grapevine Creek, 15.5 mi (24.9 km) southeast of St. Xavier, and at mile 81.0 (130.3 km).

DRAINAGE AREA.--19,626 mi² (50,831 km²).

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 in Helena district office.

GAGE.--Water-stage recorder in powerhouse control room. Datum of gage is at mean sea level (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, 1,356,000 acre-ft (1.67 km³) between elevation 3,296.50 ft (1,004.773 m), river outlet invert, and 3,657.00 ft (1,114.654 m), top of flood control. Elevation of spillway crest, 3,593.00 ft (1,095.146 m). Normal maximum operating level, 1,097,000 acre-ft (1.35 km³), elevation, 3,640.00 ft (1,109.472 m). Minimum operating level, 483,400 acre-ft (596 hm³), elevation, 3,547.00 ft (1,081.126 m). Dead storage, 18,970 acre-ft (23.4 hm³) below elevation 3,296.50 ft (1,004.773 m). 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-feet (1.66 km³) July 6, 1967 (elevation, 3,656.43 ft or 1,114.480 m); minimum since first filling, 660,700 acre-feet (815 hm³) Mar. 11, 1970 (elevation, 3,584.45 ft or 1,092.540 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,219,000 acre-ft (1.50 km³) July 13, elevation, 3,648.60 ft (1,112.093 m); minimum, 747,000 acre-ft (921 hm³) Apr. 15, elevation, 3,599.15 ft (1,097.021 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date		Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.	30	3,624.20	931,100	--
Oct.	31	3,628.58	971,000	+ 39,900
Nov.	30	3,631.01	994,900	+ 23,900
Dec.	31	3,627.62	961,900	- 33,000
CAL YR 1977				+ 14,000
Jan.	31	3,620.43	899,400	- 62,500
Feb.	28	3,610.09	820,800	- 78,600
Mar.	31	3,603.07	772,600	- 48,200
Apr.	30	3,607.34	801,800	+ 29,200
May	31	3,640.11	1,098,000	+296,200
June	30	3,643.11	1,138,000	+ 40,000
July	31	3,644.27	1,154,000	+ 16,000
Aug.	31	3,633.38	1,020,000	-134,000
Sept.	30	3,635.41	1,042,000	+ 22,000
WTR YR 1978				+110,900

YELLOWSTONE RIVER BASIN

06287000 BIGHORN RIVER NEAR ST. XAVIER, MT

LOCATION.--Lat 45°19'00", long 107°55'05", in NW¼NE¼ sec.16, T.6 S., R.31 E., Big Horn County, Hydrologic Unit 10080015, on right bank 800 ft (244 m) downstream from Yellowtail afterbay dam, 1,500 ft (460 m) downstream from Lime Kiln Creek, and 14 mi (23 km) southwest of St. Xavier.

DRAINAGE AREA.--19,667 mi² (50,938 km²). Area at site used prior to Apr. 16, 1963, 19,626 mi² (50,831 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1934 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,158.38 ft (962.558 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Army Engineers). Prior to Apr. 16, 1963, and June 13, 1964, to Mar. 31, 1965, water-stage recorder at site 1.2 mi (1.9 km) upstream at different datum. Apr. 1, 1965, to July 31, 1966, water-stage recorder at site 1,300 ft (400 m) downstream at present datum.

REMARKS.--Water-discharge records good except those for October through January, which are 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 (1,726 km³) and complete regulation by Bighorn Lake (see preceding page) since Nov. 3, 1965. Diversions for irrigation of about 375,000 acres (1,520 km²) above station.

AVERAGE DISCHARGE.--44 years, 3,603 ft³/s (102.0 m³/s), 2,610,000 acre-ft/yr (3.22 km³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,400 ft³/s (1,060 m³/s) June 16, 1935; minimum observed, 49 ft³/s (1.39 m³/s) Mar. 29, 1966, result of discharge measurement (dam closure); minimum daily, 112 ft³/s (3.17 m³/s) Apr. 2, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,600 ft³/s (329 m³/s) July 28; minimum daily, 562 ft³/s (15.9 m³/s) Oct. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1550	909	1450	2100	2650	3400	4410	2830	7490	7440	8080	4450
2	1540	903	1440	2110	2650	3400	4410	2860	7540	7480	8090	3860
3	1440	905	1450	2110	2670	3480	4410	2830	7500	7980	7380	3870
4	1500	882	1450	2120	2780	3580	4420	2820	7500	8570	7360	3870
5	1290	891	1520	2130	2800	3580	4390	2810	7520	8590	7240	3880
6	1290	890	1580	2130	2820	3600	4410	1720	7470	8620	7340	3800
7	1290	884	1730	2130	2820	3590	4400	2270	7540	9840	7190	3870
8	1280	879	1730	2140	2830	3590	4420	2250	7530	11100	6360	3860
9	1280	884	1820	2150	2840	3590	4420	2260	7550	11100	6370	3200
10	1280	977	1810	2140	2850	3610	4400	2250	7540	11100	6410	3200
11	1280	931	1960	2140	2850	3610	4390	2250	7530	11100	6440	3200
12	1270	865	1970	2140	2860	3610	4340	2240	7530	11100	6460	3200
13	1270	857	1960	2150	2880	3620	4400	2240	7530	11100	6460	3200
14	1270	849	1980	2150	3010	3640	3610	2220	7530	11100	6460	3200
15	1260	851	1980	2210	3040	3640	3590	2230	7550	11100	6460	3200
16	1250	843	1990	2280	3060	3640	3590	2210	7550	11100	6460	3200
17	1250	841	2000	2280	3020	3640	3590	2240	7560	11100	6470	3200
18	1240	910	2000	2280	3100	3640	3580	2260	7550	11200	6460	3200
19	1230	1080	2000	2300	3100	3640	2930	1630	7520	11400	6460	3270
20	1230	1080	2000	2300	3140	3650	2900	1270	7530	11400	6460	3260
21	1230	1320	2010	2350	3230	3650	2910	1270	7510	11400	6460	3260
22	1220	1460	2010	2440	3230	3640	2890	1280	7530	11400	6450	3250
23	1220	1460	2020	2460	3230	3650	2890	1640	7430	11400	6390	3250
24	1210	1460	2040	2460	3240	3630	2880	2850	7450	11400	6370	3250
25	1210	1460	2030	2470	3310	3620	2880	4250	7470	11400	6380	3250
26	1200	1460	2040	2480	3390	3620	2860	5890	7460	11400	6380	3610
27	1190	1450	2030	2480	3380	3630	2870	6860	7430	11400	6340	3800
28	562	1460	2050	2570	3400	3620	2860	6920	7410	9830	6020	3820
29	965	1450	2050	2630	---	4280	2840	6920	7420	8230	5040	3820
30	437	1450	2070	2630	---	4410	2840	6950	7410	8080	4480	3850
31	915	---	2090	2640	---	4410	---	7470	---	8080	4460	---
TOTAL	37949	32541	58260	71100	84180	113890	109730	97990	225080	317540	201180	105150
MEAN	1224	1085	1879	2294	3006	3674	3658	3161	7503	10240	6490	3505
MAX	1550	1460	2090	2640	3400	4410	4420	7470	7560	11400	8090	4450
MIN	562	841	1440	2100	2650	3400	2840	1270	7410	7440	4460	3200
AC-FT	75270	64550	115600	141000	167000	225900	217600	194400	446400	629800	399000	208600
CAL YR 1977 TOTAL	738490			MEAN 2023	MAX 4580	MIN 562	AC-FT 1465000					
WTR YR 1978 TOTAL	1454590			MEAN 3985	MAX 11400	MIN 562	AC-FT 2885000					

06287000 BIGHORN RIVER NEAR ST. XAVIER, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1966 to current year.

WATER TEMPERATURES: December 1962 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,180 micromhos on several days during 1966-67; minimum daily, 492 micromhos Aug. 28, 1971.

WATER TEMPERATURES: Maximum, 24.5°C on several days during 1963-65; minimum, 0.0°C on many days during winter periods most years prior to 1966; minimum, 1.0°C at times during winter months since regulation by Bighorn Lake.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,160 micromhos Feb. 9, 11; minimum daily, 537 micromhos Aug. 23.

WATER TEMPERATURES: Maximum observed, 19.0°C Aug. 25, 28, Sept. 6, 7, 9; minimum, 2.0°C Feb. 27, Mar. 2.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

		STREAM- FLJW, INSTAN- TANEJUS (CFS)	SPE- CIFIC CON- DUCTI- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	
DATE	TIME												
OCT 12...	1050	1290	830	10.0	310	140	77	28	74	1.8	3.5	210	
NOV 15...	1020	847	1030	9.0	360	180	90	34	90	2.1	4.2	220	
DEC 12...	1000	1960	1030	7.5	360	180	90	32	94	2.2	4.2	220	
JAN 12...	1025	2110	1100	5.0	390	210	96	37	100	2.2	4.6	220	
FEB 15...	0900	3030	1140	3.0	410	210	100	38	110	2.4	4.5	240	
MAR 14...	1030	3640	1150	3.0	410	200	100	38	96	2.1	4.8	250	
APR 19...	1000	2950	1090	4.0	400	200	100	36	100	2.2	4.6	240	
MAY 15...	1030	2220	1070	6.5	370	180	94	34	96	2.2	4.9	240	
JUN 02...	0930	7560	1030	7.0	410	220	110	32	100	2.2	4.6	230	
JUL 13...	0940	10900	888	12.0	280	140	74	24	80	2.1	4.2	180	
AUG 09...	1020	6310	589	19.0	190	80	50	17	45	1.4	2.6	140	
SEP 20...	1430	3160	672	18.5	220	93	60	18	58	1.7	2.9	160	
		SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 12...	290	12	.5	11	602	.82	2100	.43	.02	.01	40	0	
NOV 15...	340	12	.5	11	693	.94	1590	.69	.03	.01	10	10	
DEC 12...	340	13	.5	10	695	.95	3680	.61	.01	.04	30	8	
JAN 12...	390	20	.5	10	770	1.05	4390	.66	.02	.02	10	20	
FEB 15...	390	16	.6	11	792	1.08	6480	.71	.02	.01	0	10	
MAR 14...	380	17	.1	.2	760	1.03	7470	.03	.06	.01	10	0	
APR 19...	370	14	.5	8.6	755	1.03	6010	.63	.00	.01	10	10	
MAY 15...	360	14	.6	9.4	734	1.00	4400	.59	.02	.05	0	0	
JUN 02...	350	15	.5	8.8	738	1.00	15100	.93	.00	.01	0	0	
JUL 13...	280	11	.5	8.3	574	.78	16900	.64	.01	.00	10	10	
AUG 09...	170	6.3	.3	9.3	371	.50	6320	.34	.01	.02	<10	7	
SEP 20...	200	7.7	.3	10	437	.59	3730	.37	.00	.01	10	0	

YELLOWSTONE RIVER BASIN

06287000 BIGHORN RIVER NEAR ST. XAVIER, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHDS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	875	960	999	1060	1120	1150	1110	1100	1060	929	688	581
2	880	959	994	1040	1150	1140	1090	1110	1040	941	672	601
3	873	949	1010	1020	1140	1140	1090	1100	1050	930	657	614
4	882	968	---	1050	1100	1140	1100	1100	1040	924	648	618
5	879	981	1030	1060	1130	1140	1100	1100	1040	912	643	652
6	893	986	1050	1020	1110	1140	1100	1100	1040	912	628	669
7	866	992	1040	1020	1120	---	1110	---	1040	938	623	698
8	875	1010	---	1060	---	1140	1120	1070	1040	935	608	689
9	877	999	1040	1070	1160	1130	1110	---	1040	917	592	689
10	847	1000	1040	1100	1150	1140	1110	1060	1020	922	595	---
11	862	1040	1010	1100	1160	1140	---	1070	1020	911	597	732
12	859	1030	1000	1100	---	1120	1090	1080	1020	900	577	700
13	859	1010	1010	1070	1140	1140	---	1060	1020	903	572	708
14	864	1020	1010	1090	1130	1130	1110	1080	1020	887	572	720
15	876	1010	1020	1090	1140	1120	1110	1060	1020	887	553	731
16	866	1030	1020	---	1140	1130	1110	1070	1000	887	569	739
17	881	995	1020	1120	1150	1120	---	1070	1000	883	562	742
18	872	---	1020	1090	---	1070	1080	---	990	880	553	770
19	879	---	1020	1120	---	1120	---	---	---	889	547	693
20	878	---	1020	1130	---	1090	1090	1020	980	880	550	669
21	894	1020	1030	1070	1150	1080	1110	1050	990	869	546	633
22	893	1020	1020	1080	1130	1110	1090	1080	980	---	540	631
23	887	1000	1020	1060	1130	1130	1080	1080	980	858	537	663
24	906	1030	1040	1100	1130	1120	1070	1090	990	850	540	703
25	914	1010	1040	---	1150	1110	1080	1060	---	842	540	752
26	911	1030	1030	---	1150	1100	1080	---	970	829	546	773
27	915	997	1030	1110	1150	1060	1090	---	960	818	543	792
28	1010	1010	1020	---	1150	1090	1060	1060	950	790	547	800
29	935	1000	1030	1140	---	1100	1080	1080	940	726	551	826
30	948	999	1040	1140	---	1070	1090	1050	940	715	560	850
31	955	---	1070	1120	---	1090	---	1060	---	698	573	---
MEAN	891	1000	1020	1080	1140	1120	1090	1070	1010	872	582	705

WTR YR 1978 MEAN 957 MAX 1160 MIN 537
TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.5	8.0	7.5	4.5	3.5	2.5	3.0	5.0	6.0	10.0	17.5	18.0
2	10.0	8.5	7.5	4.0	4.0	2.0	4.0	5.0	7.0	10.0	16.5	18.0
3	9.5	10.0	8.5	4.5	4.0	2.5	3.5	4.5	6.5	10.0	17.0	18.0
4	9.0	9.0	---	4.0	4.0	2.5	4.0	4.0	7.0	11.0	17.5	16.0
5	9.5	10.0	6.5	4.5	4.0	3.0	4.0	4.5	6.5	10.5	17.5	18.5
6	9.5	9.0	6.0	5.0	4.0	2.5	3.5	5.0	7.5	10.5	17.5	19.0
7	9.0	9.0	5.5	4.0	4.0	---	3.5	---	7.0	10.0	17.5	19.0
8	9.5	8.5	---	4.5	---	3.0	3.5	5.0	8.5	10.0	18.0	18.5
9	9.0	8.5	4.0	4.5	3.5	3.0	2.5	---	8.0	10.5	18.0	19.0
10	8.5	9.0	5.0	4.5	3.5	3.0	3.5	6.0	7.5	11.0	17.5	---
11	9.5	10.0	7.0	5.0	3.5	3.0	---	5.0	8.0	11.5	18.0	16.0
12	10.0	10.0	7.5	5.0	---	2.5	3.0	5.0	8.0	11.5	18.0	16.5
13	10.0	9.5	6.5	4.5	3.0	3.0	---	6.5	8.0	12.0	17.5	17.5
14	9.5	9.0	7.0	4.5	3.5	2.5	4.5	6.0	9.0	12.0	17.5	17.5
15	9.5	9.0	7.0	4.0	3.5	2.0	3.5	7.0	8.0	12.0	18.0	18.5
16	10.0	8.5	6.0	---	3.0	2.5	4.0	5.0	8.0	12.5	17.5	18.0
17	9.5	8.0	6.0	4.0	3.5	3.0	---	4.5	8.5	12.5	17.0	18.0
18	10.0	---	5.5	4.0	---	3.0	3.5	---	8.5	13.0	18.0	16.0
19	10.0	---	5.0	4.0	---	3.0	4.0	---	---	12.5	18.5	17.5
20	10.0	---	4.0	4.0	---	3.5	4.5	7.0	8.5	13.0	18.0	17.5
21	9.5	7.0	4.5	4.0	3.5	3.5	3.5	7.0	9.0	13.5	18.0	17.0
22	9.0	7.5	5.5	4.0	3.5	2.5	3.5	7.5	9.0	---	18.0	18.0
23	10.0	7.0	5.0	4.0	3.5	3.0	4.0	7.0	9.0	13.5	18.0	17.5
24	10.0	7.0	4.5	3.0	3.0	3.0	5.0	6.5	10.0	14.0	18.0	18.0
25	10.0	8.0	4.5	---	2.5	3.0	5.0	6.5	---	14.0	19.0	17.0
26	9.0	8.0	5.0	---	3.0	3.0	5.5	---	10.0	15.0	18.5	16.5
27	9.5	8.0	4.0	4.0	2.0	4.0	4.0	---	10.0	15.0	18.0	16.5
28	11.0	8.5	5.5	---	2.5	4.0	4.0	7.0	10.0	15.0	19.0	15.0
29	9.5	8.0	5.0	4.0	---	3.5	4.5	7.0	10.5	17.0	18.5	15.0
30	9.5	8.0	4.5	3.5	---	4.0	5.0	6.0	10.5	16.5	18.0	15.0
31	8.0	---	4.5	3.5	---	3.5	---	5.5	---	17.0	18.0	---
MEAN	9.5	8.5	5.5	4.0	3.5	3.0	4.0	6.0	8.5	12.5	18.0	17.5

WTR YR 1978 MEAN 8.5 MAX 19.0 MIN 2.0

YELLOWSTONE RIVER BASIN

387

06288200 Beauvais Creek near St. Xavier, MT

LOCATION.--Lat 45°28'40", long 108°00'33", on west line of sec.15, T.4 S., R.30 E., Big Horn County, Hydrologic Unit 10080015, 1 mi (2 km) downstream from Point Creek, 3 mi (5 km) upstream from Muddy Creek, and 14 mi (23 km) west of St. Xavier.

DRAINAGE AREA.--100 mi² (259 km²).

PERIOD OF RECORD.--Water years 1967 to current year.

REMARKS.--Flow not regulated except for diversions for irrigation of about 200 acres (809,000 m²) above stations.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHDS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 JM-MF (COLS./ 100 ML)
OCT											
12...	1100	5.8	0	1530	8.2	19.0	7.0	10.6	100	4600	1600
NOV											
29...	1215	9.8	1	1470	8.3	10.0	1.0	12.4	99	1300	670
DEC											
12...	1120	25	1	922	8.3	7.0	.0	12.8	99	800	630
FEB											
03...	1350	5.4	3	1800	8.0	3.0	.0	12.0	92	130	16
MAR											
24...	1315	17	3	1280	8.1	11.0	8.0	10.4	100	320	13
APR											
25...	1000	9.7	1	1460	8.3	16.0	12.0	9.6	101	440	1
JUN											
02...	1115	99	0	1370	8.3	23.0	11.0	10.0	103	30000	580
JUL											
06...	1015	26	3	1560	8.2	20.0	17.0	8.2	96	2600	520
AUG											
03...	1045	22	0	1360	8.1	17.0	15.0	9.0	101	7200	220
SEP											
21...	1030	43	0	1080	8.4	12.0	7.0	10.6	98	3100	1900

DATE	STREP- TOCOCCE FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CACO3)
OCT											
12...	11000	590	430	170	41	94	1.7	4.7	200	0	160
NOV											
29...	9100	490	350	140	34	99	1.9	4.5	170	0	140
DEC											
12...	19000	350	250	100	25	72	1.7	3.1	130	0	110
FEB											
03...	74	950	720	260	62	66	.9	2.8	290	0	240
MAR											
24...	430	510	320	140	38	98	1.9	4.1	230	0	190
APR											
25...	21	740	550	210	53	64	1.0	2.5	230	0	190
JUN											
02...	1630	510	290	140	40	120	2.3	4.0	--	--	220
JUL											
06...	480	730	550	210	51	71	1.1	3.3	--	--	180
AUG											
03...	370	730	580	200	56	60	1.0	2.8	--	--	150
SEP											
21...	7000	290	160	82	20	130	3.3	3.9	--	--	130

YELLOWSTONE RIVER BASIN

06288200 BEAUVAIS CREEK NEAR ST. XAVIER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLOR- IDE, DIS- SOLVED (MG/L AS CL)	FLUOR- IDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER DAY)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
OCT 12...	580	4.8	.6	11	1150	1000	1.56	18.0	.08	.05
NOV 29...	540	4.5	.5	9.2	1010	916	1.37	26.7	.38	.62
DEC 12...	380	6.7	.4	8.6	661	660	.90	44.6	.38	.80
FEB 03...	840	4.2	.4	15	1470	1410	2.00	21.4	.31	.06
MAR 24...	500	5.3	.4	9.7	927	909	1.26	42.5	.07	.21
APR 25...	640	4.3	.4	11	1120	1100	1.52	29.3	.05	.04
JUN 02...	470	5.7	.5	11	941	923	1.28	252	.12	.20
JUL 06...	650	4.8	.4	11	1120	1110	1.52	78.6	.15	.08
AUG 03...	640	4.0	.4	13	1120	1070	1.52	66.5	.00	.03
SEP 21...	430	4.5	.6	7.8	763	757	1.04	88.6	.33	.86

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)
NOV 29...	1215	6	600	1	30	31	19000
JUN 02...	1115	3	200	13	5	31	4800

DATE	TIME	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)
NOV 29...	1215	26	740	.0	3	0	160	.01
JUN 02...	1115	57	300	.1	3	2	40	.00

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL (UG/KG)	CHLOR- DANE, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/KG)	DDD, TOTAL (UG/L)	DDD, TOTAL (UG/KG)	DDE, TOTAL (UG/L)	DDE, TOTAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL (UG/KG)	DI- AZINON, TOTAL (UG/L)
NOV 29...	1215	.00	.0	.0	0	.00	.0	.00	.0	.00	.0	.00

06288200 BEAUVAIS CREEK NEAR ST. XAVIER, MT--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	DI-ELDRIN TOTAL (UG/L)	DI-ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL (UG/L)
NOV 29...	.00	.0	.00	.00	.0	.00	.00	.0	.00	.0	.00

DATE	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	MALA- THION, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
NOV 29...	.0	.00	.00	.00	.00	.00	0	0	.00	.0	0

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS- SOLVED (PCI/L AS Sr-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS Sr-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)	URANIUM DIS- SOLVED, EXTRAC- TION (UG/L)
NOV 29...	1215	14	82	8.1	44	7.3	40	.12	3.5

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 12...	1100	7.0	5.8	396	6.2	--
NOV 29...	1215	1.0	9.8	1220	32	100
FEB 03...	1350	.0	5.4	386	5.6	93
MAR 24...	1315	8.0	17	244	11	97
APR 25...	1000	12.0	9.7	79	2.1	--
JUN 02...	1115	11.0	99	342	91	95
JUL 06...	1015	17.0	26	150	11	97
AUG 03...	1045	15.0	22	126	7.5	88
SEP 21...	1030	7.0	43	2210	257	100

YELLOWSTONE RIVER BASIN

06289000 LITTLE BIGHORN RIVER AT STATE LINE, NEAR WYOLA, MT

LOCATION.--Lat 45°00'25", long 107°37'05", in SW¼NW¼ sec.36, T.9 S., R.33 E., Bighorn County, Hydrologic Unit 10080016, on right bank 20 ft (6 m) downstream from county bridge, 0.5 mi (0.8 km) north of Wyoming-Montana State line, 1 mi (2 km) downstream from West Fork, and 13 mi (21 km) southwest of Wyola.

DRAINAGE AREA.--193 mi² (500 km²).

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. Altitude of gage is 4,450 ft (1,360 m), from topographic map.

REMARKS.--Records good. Diversions for irrigation of 163 acres (660,000 m²) above station.

AVERAGE DISCHARGE.--39 years, 158 ft³/s (4.475 m³/s), 114,500 acre-ft/yr (141 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,730 ft³/s (77.3 m³/s) June 3, 1944, gage height, 4.87 ft (1.484 m), from rating curve extended above 1,400 ft³/s (39.6 m³/s); maximum gage height recorded, 5.93 ft (1.807 m) June 9, 1944 (log jam); minimum discharge, 21 ft³/s (0.59 m³/s) Dec. 27, 1954, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 510 ft³/s (14.4 m³/s) and maximums(*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 19	0115	794 22.5	3.09 0.942	June 10	0645	1720 48.7	4.18 1.274
May 24	2030	1120 31.7	3.53 1.076	June 15	0115	*1790 50.7	*4.24 1.292

Minimum discharge, 40 ft³/s (1.13 m³/s) Dec. 8, gage height, 0.83 ft (0.253 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	73	77	50	54	66	76	157	639	800	241	152
2	89	85	78	54	60	58	76	152	589	761	238	149
3	88	81	77	64	70	51	76	164	578	705	231	147
4	88	83	76	78	72	64	72	159	616	674	222	145
5	86	82	55	79	72	67	73	152	767	622	216	145
6	86	81	50	74	72	68	71	145	954	600	213	145
7	92	79	46	69	72	67	72	142	1150	562	207	142
8	86	73	43	64	72	67	73	136	1170	556	204	142
9	88	64	44	66	71	66	77	142	1330	515	202	140
10	85	83	60	65	71	67	73	186	1540	485	199	138
11	78	82	88	66	67	67	73	225	1220	466	196	149
12	88	83	79	71	62	68	72	216	1040	442	193	147
13	88	81	77	71	56	68	71	216	1160	420	193	145
14	89	81	77	69	63	68	72	277	1530	398	213	145
15	85	81	76	68	67	67	74	433	1610	381	202	142
16	86	81	76	64	72	67	73	583	1380	372	190	145
17	85	77	74	62	72	68	77	530	1210	360	193	140
18	85	76	76	60	72	69	73	616	1150	344	185	149
19	85	65	73	58	79	69	73	711	1180	332	180	138
20	85	54	67	60	77	71	73	594	1030	325	177	136
21	85	50	66	63	77	69	77	600	1010	352	174	134
22	82	58	78	69	77	69	74	729	1110	321	172	134
23	82	66	74	73	77	68	72	868	1120	299	172	134
24	83	74	68	68	76	68	71	998	1150	288	167	134
25	82	89	66	69	74	67	73	954	1160	277	162	131
26	82	88	64	68	74	68	77	889	976	267	162	131
27	82	81	62	68	74	69	101	827	910	260	162	129
28	81	79	62	66	72	69	188	827	925	270	159	129
29	82	77	60	64	---	72	185	889	932	260	157	129
30	85	77	56	62	---	74	167	861	868	247	154	127
31	79	---	52	58	---	77	---	736	---	244	152	---
TOTAL	2642	2284	2077	2040	1974	2093	2555	15116	32004	13205	5888	4193
MEAN	85.2	76.1	67.0	65.8	70.5	67.5	85.2	488	1067	426	190	140
MAX	93	89	88	79	79	77	188	998	1610	800	241	152
MIN	78	50	43	50	54	51	71	136	578	244	152	127
AC-FT	5240	4530	4120	4050	3920	4150	5070	29980	63480	26190	11680	6320
CAL YR 1977	TOTAL	57604	MEAN 158	MAX 1000	MIN 43	AC-FT 114300						
WTR YR 1978	TOTAL	86071	MEAN 236	MAX 1610	MIN 43	AC-FT 170700						

LOCATION.--Lat 45°10'38", long 107°23'36", in W²SW⁴ sec.35, T.7 S., R.35 E., Big Horn County, Hydrologic Unit 10080016, on right bank 3.5 mi (5.6 km) north of Wyola and 6 mi (10 km) downstream from Pass Creek.

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.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Diversions for irrigation of about 8,300 acres (33.6 km²) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,010 ft³/s (277 m³/s) May 19, 1978, gage height, 10.02 ft (3.054 m), from rating curve extended above 2,800 ft³/s (79.3 m³/s) on basis of slope-area measurement of peak flow; minimum, 12 ft³/s (0.34 m³/s) Aug. 5, 7, 8, 1961, gage height, 0.89 ft (0.271 m).

Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)		Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)	
Apr. 29	0545	1,470	41.6	5.02	1.530	June 10	1330	1,900	53.8	5.88	1.792
May 8	0545	1,670	47.3	5.33	1.625	June 15	1115	1,810	51.3	5.74	1.750
May 19	0300	*8,010	227	*10.02	3.054						

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	133	113	117	70	90	95	169	431	1100	1040	307	173
2	127	112	119	75	90	85	167	348	966	981	316	159
3	123	113	119	90	95	80	153	354	901	936	295	159
4	123	113	120	110	105	80	145	487	892	896	277	154
5	125	114	98	130	110	85	139	769	991	849	268	144
6	127	114	74	140	110	85	135	758	1160	790	265	139
7	136	110	66	140	110	90	131	843	1360	777	265	144
8	136	115	64	130	110	95	129	1460	1490	738	253	146
9	127	105	65	120	105	100	132	807	1550	738	248	154
10	132	108	80	110	100	100	132	630	1780	667	236	154
11	127	116	110	110	100	100	129	626	1650	624	236	175
12	127	116	140	120	90	100	125	626	1370	592	230	230
13	125	116	150	130	90	110	124	581	1300	557	222	198
14	123	114	145	130	85	110	121	607	1520	534	253	187
15	121	115	140	130	85	118	124	723	1720	534	268	178
16	120	114	127	120	90	113	122	1020	1680	523	245	173
17	119	113	121	110	90	131	143	1280	1520	473	239	173
18	118	115	116	110	100	215	135	3800	1400	452	233	230
19	118	100	110	100	100	306	127	6090	1440	435	224	236
20	118	90	105	90	110	464	124	2560	1330	435	216	195
21	118	80	105	90	120	414	123	1660	1250	459	207	184
22	118	90	110	100	120	322	129	1520	1290	459	201	178
23	118	110	115	110	120	211	123	1570	1360	407	204	170
24	117	140	110	110	120	201	118	1630	1340	379	195	167
25	116	164	105	105	110	205	117	1610	1390	356	190	167
26	115	155	105	105	110	222	116	1510	1260	340	184	162
27	114	146	105	105	100	256	130	1390	1150	331	198	159
28	114	122	105	105	95	253	990	1300	1110	334	198	159
29	114	119	100	100	---	203	1170	1290	1150	347	190	159
30	120	120	85	95	---	192	656	1370	1110	316	184	159
31	120	---	70	90	---	185	---	1220	---	310	175	---
TOTAL	3789	3472	3301	3380	2860	5326	6378	40870	39530	17609	7222	5165
MEAN	122	116	106	109	102	172	213	1318	1318	568	233	172
MAX	136	164	150	140	120	464	1170	6090	1780	1040	316	236
MIN	114	80	64	70	85	80	116	348	892	310	175	139
AC-FT	7520	6890	6550	6700	5670	10560	12650	81070	78410	34930	14320	10240
CAL YR 1977	TOTAL	76959	MEAN 211	MAX 1240	MIN 64	AC-FT 152600						
WTR YR 1978	TOTAL	138902	MEAN 381	MAX 6090	MIN 64	AC-FT 275500						

LOCATION (REVISED). -- Lat 45°44'08", long 107°33'27", in SE¼NE¼NE¼ sec.19, T.1 S., R.34 E., Big Horn County, Hydro-logic Unit 10080016, on left bank 50 ft (15 m) downstream from bridge on Sarpy Road, 0.2 mi (0.3 km) upstream of terminal wasteway of Agency Canal, 0.6 mi (1.0 km) upstream from mouth, and 2.3 mi (3.7 km) east of Hardin.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,891.64 ft (881.372 m) National Geodetic Vertical Datum of 1929 (levels by Army Corps of Engineers). Prior to Oct. 7, 1953, nonrecording gage at site 0.4 mi (0.6 km) downstream. Oct. 7, 1953, to May 6, 1963, water-stage recorder at site 0.3 mi (0.5 km) downstream. May 6, 1963, to Nov. 6, 1963, nonrecording gage at site 0.4 mi (0.6 km) downstream. All at different datums. Nov. 7, 1963, to Aug. 15, 1976, water-stage recorder at site 35 ft (11 m) downstream at present datum. Aug. 15, 1976, to current year, water-stage recorders are located on each bank downstream of Sarpy Road bridge and are used depending on control conditions. The left bank station is given in the "LOCATION" paragraph. The right bank station location is lat 45°44'10", long 107°33'25", in SW1/4NW1/4, sec.20, T.1 S., R.34 E., at approximately the same datum.

REMARKS.--Water-discharge records fair except those for winter period, which are poor. Flow partly regulated by Willow Creek Reservoir (capacity 23,000 acre-ft, 28.4 hm³). Diversions for irrigation of about 17,000 acres (68.8 km²) above station. Figures of discharge given herein include flow of terminal wasteway of Agency Canal.

AVERAGE DISCHARGE.--25 years, 325 ft³/s (9.204 m³/s), 235,500 acre-ft/yr (290 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft³/s (640 m³/s) May 19, 1978, gage height, 11.20 ft (3.414 m), used gage height as obtained at bridge on Sarpy Road; maximum gage height, 11.78 ft (3.591 m) Mar. 20, 1960, site and datum then in use (backwater from ice); minimum discharge observed, 0.20 ft³/s (0.006 m³/s) Aug. 7, 1961, result of discharge measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximums (*):

Date	Time	Discharge		Gage height		Date	Time	Discharge		Gage height	
		(ft ³ /s)	(m ³ /s)	(ft)	(m)			(ft ³ /s)	(m ³ /s)	(ft)	(m)
Mar. 27	0515	1,200	34.0	3.77	1.149	May 9	2330	2,970	83.5	5.59	1.704
Apr. 30	1330	2,630	74.5	5.30	1.615	May 19	2245	*22,600	640	*11.20	3.414

Minimum daily discharge, 100 ft³/s (2.83 m³/s) Nov. 21, Dec. 9, Jan. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	167	165	160	120	120	140	565	1450	1960	1420	352	286
2	180	165	160	100	120	120	489	1020	1830	1380	348	272
3	175	158	160	110	120	110	429	896	1580	1300	356	260
4	168	157	160	140	140	120	367	853	1420	1220	356	265
5	163	154	150	150	140	130	316	1130	1340	1140	341	262
6	163	156	140	150	140	140	283	1680	1280	1100	328	259
7	175	156	140	140	140	150	270	1580	1540	1020	308	157
8	184	156	110	130	140	150	258	1640	1680	981	287	154
9	189	154	100	120	140	160	249	2700	1820	900	277	158
10	187	155	110	110	130	160	239	2360	1950	891	272	161
11	178	144	170	110	130	160	236	1690	2100	794	262	179
12	178	156	170	110	130	170	233	1540	2370	749	270	260
13	171	162	160	120	120	170	225	1510	2280	695	256	439
14	172	162	160	120	120	180	219	1390	2000	649	262	431
15	167	161	160	120	120	180	213	1340	2000	616	282	331
16	165	162	160	120	130	190	208	1380	2150	585	325	276
17	160	162	150	120	140	221	216	1570	2380	570	306	243
18	159	160	150	120	140	252	222	3860	2230	540	269	279
19	158	141	150	110	140	322	236	10700	1980	526	261	445
20	157	120	150	110	160	403	227	15800	1950	508	255	503
21	154	100	140	110	160	473	219	8070	1900	503	259	384
22	152	120	140	120	160	605	216	4680	1720	486	230	323
23	154	120	150	130	160	705	216	2900	1720	521	216	293
24	155	140	150	130	160	807	216	2470	1710	478	216	280
25	157	171	140	130	160	934	208	2360	1710	441	214	286
26	156	180	140	130	160	963	200	2290	1830	396	199	272
27	156	180	140	130	160	1120	197	2120	1710	351	200	260
28	155	170	130	130	150	1060	239	1930	1550	351	201	265
29	156	160	120	130	---	934	1730	1790	1420	342	214	262
30	156	160	120	120	---	732	2380	1780	1430	371	206	259
31	161	---	130	120	---	651	---	1930	---	358	198	---
TOTAL	5128	4607	4470	3810	3930	12612	11521	88409	54540	22182	8326	8504
MEAN	165	154	144	123	140	407	384	2852	1818	716	269	283
MAX	189	180	170	150	160	1120	2380	15800	2380	1420	356	503
MIN	152	100	100	100	120	110	197	853	1280	342	198	154
AC-FT	10170	9140	8870	7560	7800	25020	22850	175400	108200	44000	16510	16870
CAL YR 1977	TOTAL	112210	MEAN 307	MAX 1960	MIN 86	AC-FT	222600					
WTR YR 1978	TOTAL	228039	MEAN 625	MAX 15800	MIN 100	AC-FT	452300					

06294000 LITTLE BIGHORN RIVER NEAR HARDIN, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1969 to current year.

WATER TEMPERATURES: October 1969 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,430 micromhos Apr. 14, 1975; minimum daily, 377 micromhos June 18, 1974.

WATER TEMPERATURES: Maximum daily, 30.0°C Aug. 9, 12, 1971; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,180 micromhos Sept. 20; minimum daily, 468 micromhos June 26.

WATER TEMPERATURES: Maximum daily, 24.0°C July 16; minimum daily, 0.0°C on many days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HC03)
OCT												
13...	1300	164	740	10.0	320	110	67	37	43	1.0	2.6	260
NOV												
16...	1600	165	779	3.0	340	110	71	40	45	1.1	2.3	280
DEC												
16...	1100	160	754	--	370	130	82	39	31	.7	2.3	290
JAN												
12...	1630	104	848	.0	400	140	91	41	44	1.0	2.5	310
FEB												
15...	1720	120	834	.0	380	120	87	40	48	1.1	2.2	320
MAR												
25...	1030	945	932	7.0	310	140	62	38	91	2.2	5.0	210
APR												
20...	1050	233	983	8.5	330	89	50	49	93	2.2	3.0	290
MAY												
10...	1140	2230	735	10.5	280	100	59	31	59	1.5	5.9	210
JUN												
15...	0930	2110	--	17.5	270	54	66	25	27	.7	2.0	260
JUL												
20...	1145	504	626	17.0	290	86	67	30	30	.8	2.2	250
AUG												
17...	1000	281	706	19.0	290	96	63	33	38	1.0	2.6	240
SEP												
21...	0830	385	1020	9.0	390	180	79	46	87	1.9	3.9	250

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, DITHIO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT												
13...	200	3.6	.2	7.8	490	.67	217	.03	.00	.01	10	0
NOV												
16...	190	3.4	.2	7.7	498	.68	222	.12	.02	.00	30	20
DEC												
16...	180	3.2	.2	8.1	490	.67	212	.26	.00	.00	160	10
JAN												
12...	220	3.5	.5	9.5	566	.77	159	.29	.02	.01	10	20
FEB												
15...	200	3.6	.2	9.1	549	.75	178	.30	.01	.01	0	20
MAR												
25...	290	6.4	.2	7.7	605	.82	1540	.33	.05	.01	20	20
APR												
20...	280	5.4	.2	5.2	629	.86	396	.06	.00	.01	10	10
MAY												
10...	230	4.0	.2	9.8	504	.69	3030	.34	.09	.00	110	20
JUN												
15...	120	2.6	.1	7.6	380	.52	2160	.28	.01	.01	20	10
JUL												
20...	130	2.7	.2	7.1	393	.53	535	.15	.00	.01	50	10
AUG												
17...	160	3.4	.0	7.2	426	.58	323	.01	.00	.01	10	3
SEP												
21...	360	7.1	.2	7.5	714	.97	742	.07	.00	.00	30	10

YELLOWSTONE RIVER BASIN

06294000 LITTLE BIGHORN RIVER NEAR HARDIN, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	695	722	---	934	818	827	959	801	920	470	709	758
2	709	731	---	933	808	836	1020	841	987	478	702	772
3	723	736	862	918	808	836	1030	875	928	526	703	758
4	712	749	843	896	808	831	1060	901	896	522	699	772
5	724	761	848	880	814	---	1090	940	928	516	713	772
6	729	708	849	884	819	906	1090	981	910	511	719	776
7	739	765	878	918	867	907	1080	861	815	527	722	787
8	751	752	941	882	824	907	1080	826	702	548	719	779
9	733	758	942	940	817	882	1080	856	623	564	709	773
10	730	745	943	912	---	808	1060	749	608	547	712	766
11	741	782	933	897	---	812	1050	871	575	568	730	767
12	752	780	905	---	---	803	1040	935	539	586	719	742
13	751	769	912	841	---	781	1020	912	562	589	705	842
14	742	773	895	---	---	784	1020	880	588	592	719	1030
15	751	781	858	838	---	808	1020	849	568	598	728	1100
16	742	777	780	862	---	833	1010	790	521	595	719	1010
17	734	774	811	---	856	---	1020	690	495	607	709	969
18	730	776	804	---	852	---	1010	878	519	601	712	889
19	728	780	837	---	855	896	969	923	515	---	732	1040
20	730	837	886	833	868	916	1020	647	519	639	711	1180
21	740	---	849	870	856	---	1020	761	498	640	721	1060
22	751	---	886	868	849	862	1060	953	529	649	724	1140
23	749	940	900	879	857	849	1020	1050	511	647	725	1080
24	749	947	---	863	856	---	1020	1020	497	659	741	990
25	742	---	879	---	857	1060	1000	938	479	667	733	950
26	740	---	873	889	808	1060	985	867	468	662	---	925
27	742	---	891	880	804	478	967	829	479	671	---	902
28	751	---	873	---	859	874	962	803	501	688	732	884
29	755	---	904	---	870	1000	815	507	686	730	882	882
30	751	---	960	---	---	906	710	804	497	683	725	877
31	751	---	984	---	---	941	---	826	---	685	745	---
MEAN	738	779	884	887	836	876	1020	860	623	597	720	899

WTR YR 1978 MEAN 806 MAX 1180 MIN 468
TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.5	7.0	---	.0	.0	.0	12.5	12.5	9.5	20.0	22.0	19.0
2	14.5	8.0	---	.0	.0	.0	13.5	12.5	10.0	22.0	20.0	20.0
3	12.0	7.0	.0	.0	.0	.0	13.0	15.0	12.5	23.0	17.0	23.5
4	11.0	7.0	.0	.0	.0	.0	13.5	13.5	14.0	20.5	18.0	21.0
5	11.5	9.0	.0	.0	.0	.0	12.0	11.5	14.0	18.5	20.0	21.0
6	10.0	7.5	.0	.0	.0	.0	9.0	10.0	16.0	18.5	20.0	22.0
7	11.0	5.5	.0	.0	.0	.0	10.0	8.5	16.5	18.5	22.0	22.0
8	10.5	5.0	.0	.0	.0	.0	14.0	8.5	16.5	19.5	22.0	21.5
9	10.0	4.0	.0	.0	.0	.0	12.0	8.5	16.0	21.0	22.0	18.0
10	7.5	3.5	.0	.0	.0	.0	12.5	11.0	16.0	19.0	22.0	19.5
11	9.0	5.0	.0	.0	.0	.0	12.0	12.0	13.5	20.0	23.0	18.0
12	7.0	4.0	.0	.0	.0	.0	10.5	11.5	13.0	20.5	23.5	11.5
13	9.0	5.0	.0	.0	.0	.0	9.5	12.0	13.0	20.5	22.0	10.0
14	10.5	4.0	.0	.0	.0	.0	9.5	14.0	15.5	21.0	20.5	12.5
15	9.0	5.0	.0	.0	.0	.0	11.5	15.5	17.0	21.5	18.0	13.5
16	9.5	3.5	.0	.0	.0	.0	12.0	17.0	17.0	24.0	19.0	15.5
17	10.0	2.0	.0	.0	.0	---	11.0	14.5	15.5	22.0	18.0	15.0
18	10.0	1.0	.0	.0	.0	---	7.5	11.0	15.5	20.0	17.0	12.5
19	10.0	1.0	.0	.0	.0	.0	9.5	10.5	16.5	---	17.5	9.0
20	10.5	.0	.0	.0	.0	.0	13.5	10.0	15.0	17.0	22.0	10.0
21	9.5	.0	.0	.0	.0	---	10.5	13.5	15.5	17.0	19.5	10.0
22	11.5	.0	.0	.0	.0	.0	9.0	14.0	16.5	17.0	19.5	11.0
23	12.0	.0	.0	.0	.0	1.0	11.0	15.0	17.5	23.0	18.0	12.0
24	10.0	.0	.0	.0	.0	---	10.5	16.0	18.0	21.0	23.0	14.0
25	10.5	.0	.0	.0	.0	7.0	13.0	15.0	18.0	22.0	20.0	15.0
26	10.5	.0	.0	.0	.0	---	15.0	14.5	16.5	21.0	---	16.0
27	12.0	---	.0	.0	.0	6.0	15.0	15.0	7.0	22.5	---	15.0
28	10.0	---	.0	.0	.0	10.0	14.0	15.0	18.0	23.0	21.0	16.5
29	10.0	---	.0	.0	---	12.0	13.0	15.0	19.5	21.0	21.0	15.0
30	11.0	---	.0	.0	---	13.0	11.5	13.0	19.5	23.0	18.5	16.5
31	9.5	---	.0	.0	---	11.0	---	11.0	---	21.0	20.0	---
MEAN	10.5	3.5	.0	.0	.0	2.5	11.5	13.0	15.5	20.5	20.0	16.0

WTR YR 1978 MEAN 9.5 MAX 24.0 MIN .0

YELLOWSTONE RIVER BASIN

395

06294690 TULLOCK CREEK NEAR BIGHORN, MT

LOCATION.--Lat 46°05'08", long 107°24'20", in NE¼NE¼NE¼ sec.19, T.4 N., R.35 E., Treasure County, Hydrologic Unit 10080015, on right bank at old diversion dam, 0.3 mi (0.5 km) upstream from Thunder Creek, 5.6 mi (9.0 km) south of Bighorn, and 8 mi (13 km) upstream from mouth.

DRAINAGE AREA.--446 mi² (1,155 km²).

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,770 ft (844 m), from topographic map.

REMARKS.--Records poor. Diversions for irrigation of about 215 acres (87 km²) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,960 ft³/s (55.5 m³/s) Mar. 2, 1975, gage height, 7.4 ft (2.26 m), from floodmark; no flow on many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.83 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Mar. 25	1600	353	10.0	4.52	1.378	Sept. 13	1100	353	10.0	4.52	1.378
May 20	1800	*1,160	32.9	*6.39	1.948	Sept. 19	0100	280	7.93	4.23	1.289

No flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	42	11	50	12	1.1	.07
2	.00	.00	.00	.00	.00	.00	34	8.3	34	11	1.1	.14
3	.00	.00	.00	.00	.00	.00	30	10	29	9.1	.80	.14
4	.00	.00	.00	.00	.00	.00	22	10	29	7.9	.80	.11
5	.00	.00	.00	.00	.00	.00	21	11	29	7.7	.80	.14
6	.00	.00	.00	.00	.00	.00	21	13	27	6.9	.75	.18
7	.00	.00	.00	.00	.00	.00	22	18	28	6.0	.71	.44
8	.00	.00	.00	.00	.00	.00	21	19	28	5.4	.66	.52
9	.00	.00	.00	.00	.00	.40	18	16	25	5.1	.52	.35
10	.00	.00	.00	.00	.00	1.0	15	14	22	4.6	.44	.18
11	.00	.00	.00	.00	.00	2.0	13	14	19	3.8	.26	.59
12	.00	.00	.00	.00	.00	2.6	13	18	18	3.6	.21	.13
13	.00	.00	.00	.00	.00	3.1	12	16	17	3.5	.35	179
14	.00	.00	.00	.00	.00	3.4	9.8	12	15	3.1	.28	.29
15	.00	.00	.00	.00	.00	3.5	8.6	10	14	2.9	.52	4.1
16	.00	.00	.00	.00	.00	4.2	7.9	10	13	2.9	.61	1.6
17	.00	.00	.00	.00	.00	6.0	7.7	18	11	2.9	.57	6.3
18	.00	.00	.00	.00	.00	6.5	7.9	164	10	3.0	.57	43
19	.00	.00	.00	.00	.00	23	7.7	383	11	3.3	.57	150
20	.00	.00	.00	.00	.00	68	7.9	777	14	7.7	.52	107
21	.00	.00	.00	.00	.00	142	8.3	718	12	4.6	.32	47
22	.00	.00	.00	.00	.00	211	8.3	279	13	3.5	.32	29
23	.00	.00	.00	.00	.00	211	7.1	128	8.1	2.9	.25	38
24	.00	.00	.00	.00	.00	292	5.8	83	8.1	2.5	.21	19
25	.00	.00	.00	.00	.00	299	6.9	66	9.6	2.2	.11	12
26	.00	.00	.00	.00	.00	285	8.6	79	6.7	2.0	.11	11
27	.00	.00	.00	.00	.00	234	7.9	43	7.9	1.8	.14	8.3
28	.00	.00	.00	.00	.00	224	7.9	38	9.6	1.6	.14	6.9
29	.00	.00	.00	.00	---	155	8.3	33	7.3	1.4	.14	4.6
30	.00	.00	.00	.00	---	100	8.3	33	9.8	1.2	.04	3.9
31	.00	---	.00	.00	---	65	---	36	---	1.1	.04	---
TOTAL	.00	.00	.00	.00	.00	2341.70	418.9	3088.3	535.1	137.6	15.98	695.36
MEAN	.000	.000	.000	.000	.000	75.5	14.0	99.6	17.8	4.44	.45	23.2
MAX	.00	.00	.00	.00	.00	299	42	777	50	12	1.1	179
MIN	.00	.00	.00	.00	.00	.00	5.8	8.3	6.7	1.1	.04	.07
AC-FT	.00	.00	.00	.00	.00	4640	831	6130	1060	273	26	1380
CAL YR 1977	TOTAL	1209.14	MEAN	3.31	MAX	74	MIN	.00	AC-FT	2400		
WTR YR 1978	TOTAL	7230.94	MEAN	19.8	MAX	777	MIN	.00	AC-FT	14340		

YELLOWSTONE RIVER BASIN

06294700 BIGHORN RIVER AT BIGHORN, MT

LOCATION.--Lat 46°08'50", long 107°28'00", in NE¼NE¼NE¼ sec.33, T.5 N., R.34 E., Treasure County, Hydrologic Unit 10080015, on right bank 150 ft (46 m) downstream from bridge on old U.S. Highway 10, 0.3 mi (0.5 km) downstream from bridge on Interstate Highway 94, 0.7 mi (1.1 km) upstream from mouth, 1.3 mi (2.1 km) southwest of Bighorn, and 4.4 mi (7.1 km) east of Custer.

DRAINAGE AREA.--22,885 mi² (59,727 km²). Area at site used prior to Oct. 7, 1955, 22,410 mi² (58,042 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1945 to current year. Prior to Oct. 7, 1955, published as "near Custer".

GAGE.--Water-stage recorder. Altitude of gage is 2,690 ft (820 m), by barometer. May 11 to Dec. 6, 1945, non-recording gage, and Dec. 7, 1945, to Oct. 6, 1955, water-stage recorder, at site 4 mi (6 km) upstream at different datum.

REMARKS.--Water-discharge records poor. Major regulation by 14 reservoirs in Wyoming and 1 in Montana with combined usable storage of about 1,400,000 acre-ft (1.73 km³), and Bighorn Lake (see p. 383). Diversions for irrigation of about 465,000 acres (1,880 km²) above station.

AVERAGE DISCHARGE.--33 years, 3,966 ft³/s (112.3 m³/s), 2,873,000 acre-ft/yr (3.54 km³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,200 ft³/s (1,680 m³/s) May 20, 1978, gage height, 14.15 ft (4.313 m); maximum gage height recorded, 14.21 ft (4.331 m) Apr. 2, 1965 (ice jam); minimum discharge, about 275 ft³/s (7.79 m³/s) Nov. 15, 1959, result of freezeup; minimum daily, 400 ft³/s (11.3 m³/s) Apr. 4, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 59,200 ft³/s (1,680 m³/s) May 20, gage height, 14.15 ft (4.313 m); minimum daily, 600 ft³/s (17.0 m³/s) Nov. 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1800	1140	1700	2000	2400	3580	5370	6000	9440	10000	8300	4260
2	1800	1130	1700	1900	2600	3580	5440	4570	9080	10100	8320	4010
3	1780	1130	1700	2000	2800	3580	5300	4080	8610	9940	8250	3580
4	1790	1100	1700	2200	3000	3200	5190	3990	8170	10700	7740	3540
5	1630	1080	1700	2400	3200	3200	5060	4820	8200	10600	7770	3660
6	1540	1090	1750	2400	3400	3500	4930	5900	8380	10200	7570	3640
7	1590	1090	1600	2500	3500	4950	4860	4950	8620	10000	7740	3540
8	1610	1090	1300	2400	3400	4470	4820	5510	9310	10900	7300	3540
9	1570	1080	1200	2400	3200	4030	4820	6360	9840	11300	6660	3520
10	1610	1070	1300	2500	3200	3870	4770	5990	10100	11700	6560	2930
11	1550	1140	1500	2600	3200	4050	4770	4400	10500	11500	6440	2890
12	1560	1160	1750	2600	3200	4770	4720	4180	11400	11400	6320	3440
13	1550	1070	2100	2600	3000	4750	4660	4260	9750	11500	6320	4090
14	1520	1070	2550	2600	3000	4510	4600	3890	9340	11300	6340	4140
15	1560	1050	3000	2500	2800	4200	3800	3560	9780	11200	6370	3580
16	1510	1050	3100	2500	2800	4070	3760	3740	10900	11200	6340	3200
17	1480	1030	3000	2500	2800	4030	3790	5160	11400	11100	6370	3100
18	1470	1030	2760	2500	3000	4840	3760	11000	10400	11100	6340	3680
19	1460	1100	2690	2400	3200	6390	3660	25400	9890	11100	6270	5390
20	1460	820	2590	2200	3400	5980	3020	50000	9780	11100	6270	5590
21	1450	600	2570	2200	3600	6920	2950	23700	9940	11000	6270	4280
22	1460	650	2560	2400	4000	7690	2970	10000	9420	11000	6200	3560
23	1450	750	2550	2600	4200	7840	2910	6900	9490	11000	6270	3440
24	1440	950	2400	2800	4000	7100	2900	6630	9920	11000	6100	3420
25	1430	1250	2200	3000	3760	6510	2840	7420	10100	10900	6060	3420
26	1440	1650	2300	3000	3600	6220	2820	8350	10400	10800	6030	3460
27	1420	2250	2300	2800	3760	5820	2800	9160	10100	10800	5980	3950
28	1410	2400	2300	2800	3700	5530	3160	9110	9180	10600	6100	4050
29	917	2400	2300	2800	---	5300	7640	8650	8950	8710	5780	4140
30	1090	2250	2300	2600	---	5660	8570	8790	9310	8350	4930	4180
31	1140	---	2300	2400	---	5440	---	9050	---	8450	4280	---
TOTAL	46487	36690	66770	77100	91720	155580	130880	275720	289880	330550	203590	113220
MEAN	1500	1223	2154	2487	3276	5019	4363	8894	9663	10650	6567	3774
MAX	1800	2400	3100	3000	4200	7840	8570	50000	11400	11700	8320	5590
MIN	917	600	1200	1900	2400	3200	2800	3560	8170	8350	4280	2890
AC-FT	92210	72770	132400	152900	181900	308600	259600	546900	575000	655600	403800	224600

CAL YR 1977 TOTAL 855077 MEAN 2343 MAX 5010 MIN 600 AC-FT 1696000
WTR YR 1978 TOTAL 1818187 MEAN 4981 MAX 50000 MIN 600 AC-FT 3606000

06294700 BIGHORN RIVER AT BIGHORN, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1951 to current year.

WATER TEMPERATURES: April 1949 to September 1951, August 1952 to current year.

INSTRUMENTATION.--Temperature recorder May to September 1974, July to current year.

REMARKS.--Prior to October 1948, published as "near Custer." Temperature probe buried in silt Aug. 29 to Sept. 30.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,940 micromhos July 10, 1961; minimum daily, 384 micromhos June 20, 1951.

WATER TEMPERATURES: Maximum, 30.0°C July 17, 18, 1953; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,460 micromhos May 24; minimum daily, 589 micromhos Aug. 24.

WATER TEMPERATURES: Maximum recorded 23.0°C Aug. 12; minimum daily, 0.0°C on several days during November to March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (AMD CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT											
07...	1350	1630	3	935	8.5	11.0	9.5	7	--	10.5	102
NOV											
04...	1445	1100	3	1040	8.5	14.0	6.5	5	--	11.9	106
29...	1045	2400	1	1040	8.3	5.5	.0	15	--	11.0	83
JAN											
05...	1150	2400	3	1090	8.3	-9.0	.0	4	--	12.6	98
FEB											
06...	1030	3400	62	1120	8.2	-1.0	.0	4	--	12.1	92
MAR											
14...	1100	4560	75	1120	8.2	4.5	3.5	190	--	11.1	93
APR											
05...	1310	5040	1	1200	8.3	15.0	11.0	30	--	10.6	106
MAY											
03...	1400	4160	3	1150	8.2	18.5	11.5	150	--	9.4	96
21...	1230	20000	0	910	8.0	24.5	14.5	--	1200	8.0	86
JUN											
09...	1600	9970	1	1000	8.4	32.5	17.0	75	--	9.0	102
JUL											
18...	1040	10700	1	870	8.5	23.5	16.5	--	39	8.8	99
AUG											
07...	1200	7640	1	660	8.5	29.0	20.5	--	20	7.8	96
SEP											
05...	1200	3660	1	650	8.5	27.5	20.5	--	17	8.0	98
DATE	COLI- FORM, FECAL, U.F JM-WF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACCS)	HARD- NESS, NONCAR- BONATE (MG/L CACCS)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT											
07...	32	650	340	180	79	35	87	2.1	3.5	200	0
NOV											
04...	K2	K12	380	190	92	36	84	1.9	3.8	220	2
29...	220	930	380	190	94	35	87	1.9	4.1	230	0
JAN											
05...	20	54	380	200	94	35	97	2.2	4.4	220	0
FEB											
06...	60	89	400	200	99	36	100	2.2	4.4	240	0
MAR											
14...	170	4400	400	210	98	37	100	2.2	4.9	230	0
APR											
03...	<1	56	410	220	100	39	100	2.1	4.5	230	0
MAY											
03...	440	780	390	180	90	40	110	2.4	4.7	250	0
21...	--	--	310	170	68	33	81	2.0	7.2	--	--
JUN											
09...	110	92	360	170	87	35	90	2.1	4.1	220	4
JUL											
18...	70	100	300	140	79	25	86	2.2	3.9	--	--
AUG											
07...	51	8800	220	88	56	19	51	1.5	3.0	--	--
SEP											
05...	64	380	220	87	54	20	58	1.7	2.8	--	--

YELLOWSTONE RIVER BASIN

06294700 BIGHORN RIVER AT BIGHORN, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 07...	160	1.0	330	12	.5	8.3	617	654	.84	2720	.20
NOV 04...	160	1.1	340	12	.5	8.2	712	685	.97	2120	.09
29...	190	1.6	340	13	.5	8.0	761	695	1.04	4930	.47
JAN 05...	180	1.8	360	16	.5	9.5	750	727	1.02	4860	.62
FEB 06...	200	2.4	360	15	.6	8.3	787	762	1.07	7230	.45
MAR 14...	190	2.3	390	15	.5	8.9	759	768	1.03	9350	.54
APR 05...	190	1.8	410	17	.5	9.4	806	794	1.10	11000	.47
MAY 03...	210	2.5	390	17	.6	9.4	800	785	1.09	8990	.47
21...	140	--	320	6.6	.3	8.5	616	749	.84	33300	.56
JUN 04...	190	1.5	320	14	.4	8.0	686	671	.93	18500	.47
JUL 18...	160	--	290	9.8	.4	9.0	601	600	.82	17400	.54
AUG 07...	130	--	200	6.8	.3	8.4	439	423	.60	9060	.20
SEP 05...	130	--	200	7.0	.3	10	449	430	.61	4440	.22

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS- SOLVED (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT 07...	--	.01	--	.05	--	.00	.00	--	4.0	.4
NOV 04...	--	.01	--	.23	--	.01	.02	3.1	--	--
29...	--	.04	--	.18	--	.02	.00	3.5	--	--
JAN 05...	--	.09	--	.41	--	.02	.01	--	3.6	.3
FEB 06...	.33	.02	.35	.23	.80	.02	.01	4.3	--	--
MAR 14...	.84	.04	.88	.55	1.4	.23	.00	7.8	--	--
APR 05...	.45	.01	.46	.25	.93	.01	.01	--	4.2	--
MAY 03...	1.4	.10	1.5	.69	2.0	.26	.03	9.5	--	--
21...	--	.06	--	.35	--	1.4	.03	--	6.0	3.3
JUN 04...	.73	.01	.74	.39	1.2	.13	.00	7.0	--	--
JUL 18...	.51	.00	.51	.49	1.1	.08	.00	--	3.7	1.0
AUG 07...	.43	.00	.43	.44	.63	.07	.00	5.0	--	--
SEP 05...	.48	.01	.49	.36	.71	.06	.02	3.7	--	--

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHROMIUM, DIS- SOLVED (UG/L AS CR)
OCT 07...	1330	2	1	200	100	10	0	10	0
JAN 05...	1130	2	2	0	0	3	0	0	0
APR 05...	1310	2	1	200	0	2	1	10	0
MAY 21...	1230	6	2	800	0	0	0	60	5
JUL 18...	1040	5	3	300	200	3	2	0	10

YELLOWSTONE RIVER BASIN

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06294700 BIGHORN RIVER AT BIGHORN, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COBALT, TOTAL RECOV- ERABLE (UG/L AS CU)	COBALT, DIS- SOLVED (UG/L AS CU)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PH)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)
OCT 07...	<50	0	10	1	340	0	<100	3	20
JAN 05...	0	0	20	2	290	20	8	0	20
APR 05...	1	1	5	0	2000	10	9	2	90
MAY 21...	18	0	70	3	51000	100	60	1	1100
JUL 18...	2	3	13	4	3300	20	44	6	90

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 07...	0	.0	.0	3	0	<10	0	10	10
JAN 05...	20	.0	.0	3	3	0	0	30	20
APR 05...	10	.0	.0	2	1	1	0	30	10
MAY 21...	20	.3	.2	4	0	0	0	220	20
JUL 18...	0	.0	.0	2	1	0	0	40	10

DATE	TIME	SPE- CIFIC CON- DUCTI- VANCE (MICRO- MHDS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
07...	1100	660	8.5	27.0	20.5	7.7	95
07...	1200	660	8.5	29.0	20.5	7.8	96
07...	1300	660	8.4	30.0	21.5	7.6	95
07...	1400	665	8.4	32.5	21.0	7.7	96
07...	1500	669	8.4	31.5	22.5	7.8	94
07...	1600	660	8.4	32.0	22.0	7.2	90
07...	1700	650	8.4	31.0	22.0	7.7	96
07...	1800	660	8.4	31.0	22.0	7.6	96
07...	1900	660	8.5	30.0	22.0	7.3	92
07...	2000	670	8.2	28.5	21.5	7.3	91
07...	2100	660	8.3	24.0	21.5	7.3	91
07...	2200	665	8.3	19.5	21.0	7.4	91
07...	2300	660	8.3	20.0	20.5	7.3	90
07...	2400	650	8.3	20.0	20.5	7.2	88
08...	0100	645	8.2	20.5	20.5	7.1	87
08...	0200	640	8.2	20.0	20.5	7.1	87
08...	0300	635	8.2	19.5	20.0	7.1	87
08...	0400	620	8.2	19.0	20.0	7.2	88
08...	0500	610	8.2	18.0	20.0	7.4	90
08...	0600	610	8.2	18.5	20.0	7.2	88
08...	0700	660	8.3	23.5	20.0	7.3	89
08...	0800	650	8.3	25.5	20.0	7.3	89
08...	0900	650	8.5	28.0	20.0	7.1	87
08...	1000	660	8.4	29.5	20.5	7.4	90
08...	1100	650	8.3	29.5	20.5	7.6	93

YELLOWSTONE RIVER BASIN

06294700 BIGHORN RIVER AT BIGHORN, MT--Continued

SPECIFIC CONDUCTANCE (MICROMH/S/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	941	1020	1050	---	1140	1170	1140	1000	1140	878	739	631
2	942	1020	1040	---	1130	1210	1160	1050	1200	871	722	642
3	934	1030	1060	---	1150	1210	1180	1110	1180	895	715	654
4	939	1040	1080	---	1090	---	1160	1120	1120	882	710	671
5	937	1050	1130	---	1140	---	1170	1120	1120	871	692	680
6	941	1040	1110	---	1090	1180	1160	1180	1120	874	697	684
7	946	1060	1130	---	1080	1170	1170	1130	1100	880	682	710
8	938	1070	---	1090	1070	1180	1160	1050	1040	889	655	719
9	948	1080	---	1050	1090	1160	1160	1100	1060	920	657	739
10	959	1080	---	1040	1120	1160	1150	988	1020	912	645	750
11	957	1090	---	1090	1130	1160	1160	1030	---	909	641	764
12	961	1090	---	1110	1160	1090	1160	1100	982	908	633	762
13	988	1100	---	1090	1160	977	1120	1160	980	899	635	802
14	976	1090	1030	1070	1140	994	1160	1160	1000	899	621	860
15	961	1100	1010	1090	1140	1120	1170	1090	998	897	615	698
16	950	1090	1000	1110	1130	1160	1160	1080	972	883	620	858
17	965	1100	1060	1110	1110	1150	1170	1040	952	889	615	841
18	961	1100	1060	1130	1170	925	1170	998	948	887	621	825
19	952	1120	1050	1130	1150	999	1150	1080	950	882	612	850
20	951	1170	1050	1130	1110	1070	1170	812	957	880	609	923
21	962	1210	1080	1170	1040	1160	1190	923	960	883	602	889
22	965	1230	1070	1160	970	1040	1190	1180	948	879	592	866
23	963	1090	1070	1090	1090	991	1170	1350	962	867	590	809
24	972	1110	1050	1090	1130	1030	1160	1460	950	862	589	783
25	972	1090	1090	980	1140	1050	1150	1340	935	849	591	794
26	989	1050	1040	1120	1140	1090	1150	1250	917	847	592	817
27	981	1070	1080	1100	1150	1140	1160	1130	939	847	591	848
28	980	1050	1090	1090	1150	1130	1160	1140	939	828	596	861
29	987	1050	1090	1140	---	1130	1280	1150	935	818	594	863
30	992	1060	---	1140	---	1150	1030	1150	929	752	605	877
31	1050	---	---	1180	---	1140	---	1130	---	734	620	---
MEAN	963	1090	1070	1100	1120	1110	1160	1120	1010	870	635	789
WTR YR 1978	MEAN	997	MAX	1460	MIN	589						

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.0	10.5	10.5	8.0	6.5	7.0	2.5	1.5	2.0	.0	.0	.0
2	11.5	9.5	10.5	7.0	6.0	6.5	2.5	2.0	2.0	.0	.0	.0
3	12.0	10.0	11.0	6.5	5.0	6.0	3.0	2.0	2.5	.0	.0	.0
4	11.5	10.5	11.0	6.5	5.0	6.0	2.5	.0	2.0	.0	.0	.0
5	10.5	9.0	10.0	6.0	4.5	5.5	.0	.0	.0	.0	.0	.0
6	9.5	8.0	9.0	6.5	5.5	6.0	.0	.0	.0	.0	.0	.0
7	9.5	9.0	9.5	6.0	5.0	5.5	.0	.0	.0	.0	.0	.0
8	10.5	8.5	9.5	5.0	3.5	4.5	.0	.0	.0	.0	.0	.0
9	10.0	8.5	9.0	3.5	2.0	3.0	.0	.0	.0	.0	.0	.0
10	8.0	7.0	7.5	3.0	1.5	2.5	.0	.0	.0	.0	.0	.0
11	7.5	5.0	6.5	4.0	2.0	3.0	.0	.0	.0	.0	.0	.0
12	9.0	6.5	7.5	5.5	4.0	4.5	.0	.0	.0	.0	.0	.0
13	9.5	8.0	9.0	5.0	4.5	4.5	.0	.0	.0	.0	.0	.0
14	10.5	8.5	9.5	5.0	4.0	4.5	.0	.0	.0	.0	.0	.0
15	10.5	8.5	9.5	5.0	4.0	4.5	.0	.0	.0	.0	.0	.0
16	10.5	8.5	9.5	4.5	3.0	4.0	2.0	.0	.5	.0	.0	.0
17	11.0	9.0	10.0	3.5	2.0	2.5	3.5	2.5	3.0	.0	.0	.0
18	11.0	9.0	10.0	2.0	1.0	1.5	2.5	1.5	2.0	.0	.0	.0
19	11.5	9.5	10.5	1.0	.0	.0	1.5	1.0	1.5	.0	.0	.0
20	11.5	9.5	10.5	.0	.0	.0	1.0	.0	.5	.0	.0	.0
21	11.0	9.5	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	10.5	8.5	9.5	.0	.0	.0	1.5	.0	.5	.0	.0	.0
23	10.5	8.5	9.5	.0	.0	.0	1.5	.5	1.5	.0	.0	.0
24	11.0	9.0	10.0	.0	.0	.0	.5	.0	.0	.0	.0	.0
25	11.5	9.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	11.0	9.5	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	11.5	9.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	10.5	9.0	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	10.5	9.0	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	11.0	10.0	10.5	1.5	.0	.5	.0	.0	.0	.0	.0	.0
31	10.0	8.0	9.0	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	12.0	5.0	9.5	8.0	.0	2.5	3.5	.0	.5	.0	.0	.0

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	.0	.0	.0	.0	.0	.0	7.5	6.0	7.0	11.5	10.5	11.0
2	.0	.0	.0	.0	.0	.0	8.5	6.5	7.0	12.0	9.0	10.5
3	.0	.0	.0	.0	.0	.0	8.0	6.0	7.0	12.0	11.0	11.5
4	.0	.0	.0	.0	.0	.0	7.5	5.5	6.5	11.0	9.0	9.5
5	.0	.0	.0	.0	.0	.0	8.0	5.5	6.5	9.0	7.5	8.0
6	.0	.0	.0	1.5	.0	.5	7.5	5.0	6.5	8.5	7.5	8.0
7	.0	.0	.0	3.0	.5	2.0	8.0	5.5	6.5	7.5	7.5	7.5
8	.0	.0	.0	4.0	1.5	3.0	9.0	6.0	7.5	8.5	6.5	7.5
9	.0	.0	.0	5.0	3.0	4.0	8.0	6.0	7.0	11.0	7.5	9.5
10	.0	.0	.0	5.5	3.5	4.5	8.0	5.0	6.5	11.5	10.0	10.5
11	.0	.0	.0	5.0	3.0	4.0	7.0	6.0	6.5	11.0	10.5	10.5
12	.0	.0	.0	3.5	2.0	3.0	6.5	5.0	6.0	11.5	9.5	10.5
13	.0	.0	.0	4.5	2.0	3.5	8.0	5.0	6.5	14.0	10.5	12.0
14	.0	.0	.0	4.5	3.0	4.0	9.0	5.5	7.0	15.0	12.0	13.5
15	.0	.0	.0	4.0	2.0	3.0	8.0	7.5	7.5	17.0	13.5	15.0
16	.0	.0	.0	4.0	1.5	3.0	9.5	6.0	8.0	15.5	13.5	15.0
17	.0	.0	.0	4.5	2.5	3.5	8.5	6.0	7.5	14.5	10.5	12.5
18	.0	.0	.0	5.0	3.5	4.0	6.0	5.0	5.5	10.5	9.0	9.5
19	.0	.0	.0	3.5	2.5	3.0	7.0	5.0	6.0	10.5	9.0	9.5
20	.0	.0	.0	5.5	3.0	4.0	9.5	5.5	7.5	13.0	9.5	11.0
21	.0	.0	.0	4.5	3.5	4.0	8.5	7.5	7.5	16.5	13.0	15.0
22	.0	.0	.0	4.0	3.5	3.5	7.5	6.0	7.0	18.5	16.0	17.0
23	.0	.0	.0	4.0	2.0	3.0	8.0	6.0	7.0	18.5	16.0	17.5
24	2.5	.0	1.0	3.5	3.0	3.5	10.0	6.0	8.0	17.5	16.0	16.5
25	2.0	1.0	1.5	5.5	3.0	4.0	12.0	8.0	10.0	16.0	14.0	15.0
26	2.0	.0	1.0	7.5	4.5	6.0	13.0	10.0	11.5	15.0	13.0	14.0
27	1.5	.5	1.0	8.5	6.0	7.0	12.0	10.5	11.0	13.5	12.0	13.0
28	1.0	.0	.5	9.0	7.0	8.0	11.0	8.5	9.5	13.5	11.5	12.5
29	---	---	---	10.0	7.0	8.5	10.0	7.5	8.5	13.0	10.5	12.0
30	---	---	---	9.5	7.0	8.5	12.0	10.0	11.0	10.5	9.0	9.5
31	---	---	---	9.5	7.5	8.0	---	---	---	9.0	8.5	9.0
MONTH	2.5	.0	.0	10.0	.0	3.5	13.0	5.0	7.5	18.5	6.5	11.5
JUNE				JULY			AUGUST			SEPTEMBER		
1	9.5	8.5	8.5	18.0	16.0	16.5	21.0	19.5	20.0			
2	11.0	9.0	10.0	17.5	16.0	16.5	19.5	17.0	18.5			
3	12.0	10.5	11.0	17.5	16.0	16.5	19.5	17.0	18.0			
4	12.5	11.0	11.5	16.5	15.0	16.0	21.0	18.0	19.5			
5	13.0	11.5	12.0	15.5	14.0	15.0	21.5	19.0	20.0			
6	13.0	12.0	12.5	15.0	14.5	15.0	22.5	19.5	21.0			
7	13.0	12.0	12.5	16.5	14.5	15.5	22.0	20.0	21.0			
8	13.0	12.0	12.5	16.0	14.0	15.5	22.0	20.0	21.0			
9	14.0	12.5	13.0	14.5	13.5	14.0	22.5	20.0	21.0			
10	13.5	11.5	12.5	16.0	13.5	14.5	22.5	20.5	21.5			
11	12.0	11.0	11.5	16.0	15.0	15.5	22.5	20.0	21.5			
12	12.5	11.0	12.0	16.5	15.0	15.5	23.0	20.0	21.5			
13	13.5	12.0	13.0	16.5	15.0	16.0	21.5	19.5	20.5			
14	14.5	13.0	13.5	17.0	15.5	16.0	19.5	18.0	19.0			
15	13.5	12.5	13.5	17.0	15.5	16.0	20.0	17.5	18.5			
16	13.5	12.0	13.0	17.0	15.5	16.0	20.5	18.5	19.5			
17	13.5	12.5	13.0	16.5	16.0	16.0	19.0	18.0	18.5			
18	14.5	12.5	13.5	17.5	16.0	16.5	19.0	17.0	18.0			
19	14.0	12.5	13.5	16.0	14.5	15.5	20.0	17.5	18.5			
20	13.5	11.5	12.5	14.5	14.0	14.5	20.5	18.0	19.5			
21	15.0	13.0	14.0	15.5	14.0	14.5	21.0	18.5	20.0			
22	16.0	14.0	15.0	16.5	14.5	15.5	20.5	19.0	20.0			
23	16.5	14.5	15.5	18.0	16.5	17.0	20.0	18.5	19.0			
24	16.5	15.0	15.5	18.5	17.5	18.0	20.0	18.5	19.5			
25	15.0	13.5	14.5	18.5	17.5	18.0	20.5	19.0	19.5			
26	15.0	13.0	13.5	18.5	17.5	18.0	20.5	19.5	19.5			
27	16.0	14.0	15.0	19.0	17.5	18.0	19.5	19.0	19.0			
28	17.0	15.0	16.0	18.5	16.5	18.0	18.5	18.0	18.0			
29	18.0	16.0	17.0	19.0	16.5	17.5	---	---	---			
30	17.0	15.5	16.0	21.0	19.0	20.0	---	---	---			
31	---	---	---	21.5	19.5	20.0	---	---	---			
MONTH	18.0	8.5	13.0	21.5	13.5	16.5	23.0	17.0	19.5			
YEAR	23.0	.0	7.5									

YELLOWSTONE RIVER BASIN

06294700 BIGHORN RIVER AT BIGHORN, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM
OCT											
07...	1330	9.5	1630	43	189	--	--	--	--	--	97
NOV											
04...	1445	6.5	1100	8	24	--	--	--	--	--	90
24...	1045	.0	2400	51	330	--	--	--	--	--	76
JAN											
05...	1130	.0	2400	20	130	--	--	--	--	--	--
FEB											
06...	1030	.0	3400	14	129	--	--	--	--	--	--
MAR											
14...	1100	3.5	4560	426	5250	--	--	--	--	--	84
APR											
05...	1310	11.0	5040	196	2670	--	--	--	--	--	67
MAY											
03...	1400	11.5	4160	444	4990	--	--	--	--	--	90
21...	1230	14.5	20000	2800	151000	66	86	95	99	100	--
JUN											
09...	1600	17.0	9970	441	11900	--	--	--	--	--	76
JUL											
18...	1040	16.5	10700	301	3700	--	--	--	--	--	51
AUG											
07...	1200	20.5	7640	79	1630	--	--	--	--	--	96
SEP											
05...	1200	20.5	3660	73	721	--	--	--	--	--	83

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPJ- SURE (DAYS)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORESC (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORESC (MG/M2)
OCT						
07...	1330	21	27.3	25.7	.870	.071
APR						
05...	1310	22	.704	.551	.000	.000
SEP						
05...	1200	24	3.15	3.15	.170	.000

06294700 BIGHORN RIVER AT BIGHORN, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NJV 4,77 1445	MAR 14,78 1100	MAY 3,78 1400	MAY 21,78 1230				
TOTAL CELLS/ML	19000	670	450	1200				
DIVERSITY: DIVISION	1.5	0.1	1.1	0.1				
..CLASS	1.5	0.1	1.1	0.1				
...ORDER	1.5	0.1	1.3	0.1				
....FAMILY	1.7	2.0	1.6	0.1				
.....GENUS	1.8	2.1	1.6	0.1				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....JOCYSTACEAE								
....ANKISTRUMESMUS	9000# 48	-- -	-- -	-- -	-- -	-- -	-- -	-- -
...SCENEDESMACEAE								
....CHUCIGENIA	560 3	-- -	-- -	-- -	-- -	-- -	-- -	-- -
...SCENEDESMUS	420 2	-- -	-- -	-- -	-- -	-- -	-- -	-- -
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CARTERIA	-- -	14 2	-- -	-- -	-- -	-- -	-- -	-- -
....CHLAMYDOMONAS	-- -	-- -	14 3	-- -	-- -	-- -	-- -	-- -
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...PENNALES								
...NAVICULACEAE								
....ENTOMONEIS	-- -	14 2	-- -	-- -	-- -	-- -	-- -	-- -
...CENTRALES								
...COSCINOUSCACEAE								
....CYCLOTELLA	5600# 20	-- -	27 6	-- -	-- -	-- -	-- -	-- -
...PENNALES								
...CYMBELLACEAE								
....CYMBELLA	-- -	14 2	-- -	-- -	-- -	-- -	-- -	-- -
...DIATOMACEAE								
....DIATOMA	-- -	14 2	-- -	-- -	-- -	-- -	-- -	-- -
...FRAGILARIACEAE								
....FRAGILARIA	-- -	400# 46	-- -	-- -	-- -	-- -	-- -	-- -
...GOMPHONEMACEAE								
....GOMPHONEMA	-- -	100 11	14 3	-- -	-- -	-- -	-- -	-- -
...NAVICULACEAE								
....NAVICULA	-- -	240# 28	27 6	-- -	-- -	-- -	-- -	-- -
...NITZSCHIACEAE								
....NITZSCHIA	-- -	57 7	14 3	14 1	-- -	-- -	-- -	-- -
...SURIRELLACEAE								
....SURIRELLA	-- -	14 2	14 3	-- -	-- -	-- -	-- -	-- -
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCALES								
....CHROCOCCACEAE								
....ANACYSTIS	-- -	-- -	530# 73	-- -	-- -	-- -	-- -	-- -
...HORMODONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	4900# 26	-- -	-- -	1200# 99	-- -	-- -	-- -	-- -
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....TRACHELOMONAS	-- -	-- -	14 3	-- -	-- -	-- -	-- -	-- -

YELLOWSTONE RIVER BASIN

06294700 BIGHORN RIVER AT BIGHORN, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUN 9,78 1600	JUL 18,78 1040	AUG 7,78 1200	SEP 5,78 1200
TOTAL CELLS/ML	530	930	1100	240
DIVERSITY: DIVISION	1.4	1.6	1.5	1.3
..CLASS	1.4	1.6	1.5	1.3
..ORDER	1.5	1.9	2.4	1.6
...FAMILY	2.6	2.9	3.0	2.0
....GENUS	2.8	3.0	3.3	2.2

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....DUCYSTACEAE								
....ANKISTRODESUS	--	-	--	-	28	3	4	1
....DUCYSTIS	--	-	22	2	28	3	--	-
...SCENEDESMACEAE								
....CRUCIGENIA	--	-	--	-	--	-	7	3
....SCENEDESMUS	--	-	--	-	--	-	140#	58
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	22	2	42	4	4	1
...VOLVOCAEAE								
....PANDURINA	--	-	--	-	110	11	--	-
...ZYGNEMATALES								
....DESMIDIACEAE								
....CLOSTERIUM	73	14	22	2	--	-	--	-
CHYSSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCIHODISCACEAE								
....CYCLOTELLA	15	3	22	2	140	13	4	4
....MELUSIRA	--	-	--	-	140	13	--	-
....STEPHANODISCUS	--	-	--	-	--	-	2	1
...PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	-	22	2	--	-	2	1
...COCCONEIS	15	3	--	-	--	-	--	-
...CYMBELLACEAE								
....CYMBELLA	29	6	44	5	--	-	--	-
...DIATOMACEAE								
....DIATOMA	15	3	--	-	42	4	--	-
...FRAGILARIACEAE								
....FRAGILARIA	44	8	--	-	--	-	--	-
...HANNAEA	--	-	44	5	--	-	--	-
...SYNEURA	44	8	--	-	--	-	--	-
...NAVICULACEAE								
....NAVICULA	130#	25	44	5	110	11	27	11
...NITZSCHIALEAE								
....NITZSCHIA	15	3	150#	17	98	9	7	3
...SURIHELLACEAE								
....CYMATOPLEURA	--	-	--	-	14	1	--	-
...TABELLARIACEAE								
....TABELLARIA	--	-	88	10	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCALES								
....CHROCOCCACEAE								
....ANACYSTIS	--	-	--	-	200#	18	--	-
...HORMIGONALES								
...NOSTOCACEAE								
....ANABAENA	--	-	--	-	--	-	18	7
...OSCILLATORIACEAE								
....OSCILLATORIA	150#	28	350#	38	110	11	--	-
...RIVULARIACEAE								
....RAPIDIOPSIS	--	-	--	-	--	-	23	10
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....EUGLENA	--	-	22	2	--	-	--	-
....TRACHELOMONAS	--	-	66	7	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06294940 SARPY CREEK NEAR HYSHAM, MT

LOCATION.--Lat 46°14'12", long 107°08'03", in SE¼SE¼ sec.30, T.6 N., R.37 E., Treasure County, Hydrologic Unit 10100001, on left bank 100 ft (30 m) upstream from bridge on FAS Route 415, 0.8 mi (1.3 km) upstream from Hysham Canal, and 5.5 mi (8.8 km) southeast of Hysham.

DRAINAGE AREA.--453 mi² (1,173 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 2,680 ft (817 m), from topographic map.

REMARKS.--Water-discharge records fair except those for Oct. 1 to Mar. 22, which are poor. Diversions for irrigation of about 970 acres (3.52 km²) above station.

AVERAGE DISCHARGE.--5 years, 8.42 ft³/s (0.238 m³/s), 6,100 acre-ft/yr (7.52 m³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 428 ft³/s (12.1 m³/s) Mar. 4, 1975, gage height, 12.43 ft (3.789 m); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.83 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 23	0015	309 8.75	10.74 3.274	Sept. 20	2230	162 4.59	8.34 2.542
May 21	0400	*372 10.5	*11.63 3.545				

No flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	.00	.00	.00	.00	.40	27	4.9	43	2.5	1.3	.00
2	.00	.00	.00	.00	.40	.40	25	4.9	39	2.2	1.4	.00
3	.00	.00	.00	.00	.60	.40	20	5.2	31	2.9	1.6	.00
4	.00	.00	.00	.00	.60	.40	18	5.5	26	3.0	1.6	.00
5	.00	.00	.00	.00	.50	.40	14	6.7	24	3.3	1.6	.00
6	.00	.00	.00	.00	.50	.40	12	7.6	21	3.3	1.5	.00
7	.00	.00	.00	.00	.50	.40	11	8.3	19	3.2	1.2	.00
8	1.0	.00	.00	.00	.50	.60	9.9	8.6	20	3.0	1.0	.00
9	.80	.00	.00	.00	.50	.90	9.2	24	19	2.9	.90	.00
10	.50	.00	.00	.00	.50	6.0	8.9	21	16	2.7	.83	.00
11	.30	.00	.10	.00	.50	16	10	14	14	2.5	.75	.00
12	.00	.00	.10	.00	.50	50	10	13	13	2.2	.64	.50
13	.00	.00	.20	.00	.40	47	9.4	15	12	2.2	.57	11
14	.00	.00	.30	.00	.40	54	6.2	10	11	2.8	.54	46
15	.00	.00	.30	.00	.40	62	5.7	10	11	2.8	.60	19
16	.00	.00	.20	.00	.40	56	5.5	7.1	9.7	2.5	.64	15
17	.00	.00	.10	.00	.40	72	6.4	12	9.2	2.1	.55	5.2
18	.00	.00	.10	.00	.40	66	6.6	37	8.9	1.9	.40	30
19	.00	.00	.10	.00	.40	108	8.9	266	8.1	1.8	.20	77
20	.00	.00	.05	.00	.40	150	8.6	339	7.3	2.1	.20	108
21	.00	.00	.20	.00	.60	200	8.0	340	6.7	2.9	.20	140
22	.00	.00	.10	.00	2.5	240	7.7	204	6.5	2.2	.20	53
23	.00	.00	.00	.00	5.0	260	7.4	93	5.8	2.0	.20	19
24	.00	.00	.00	.00	10	141	7.0	68	5.4	1.7	.20	11
25	.00	.00	.00	.00	10	118	6.5	59	6.0	1.5	.15	8.1
26	.00	.00	.00	.00	3.0	75	6.0	70	5.8	1.2	.10	6.4
27	.00	.00	.00	.00	1.0	86	5.8	44	5.2	1.2	.10	5.0
28	.00	.00	.00	.00	.60	76	5.5	33	4.4	1.2	.10	4.2
29	.00	.00	.00	.00	---	64	5.2	29	3.2	1.1	.00	3.3
30	.00	.00	.00	.00	---	47	5.1	28	2.7	.92	.00	3.1
31	.00	---	.00	.00	---	37	---	33	---	1.1	.00	---
TOTAL	3.60	.00	1.85	.00	41.70	2035.30	296.7	1822.8	413.9	68.62	19.27	564.80
MEAN	.12	.000	.060	.000	1.49	65.7	9.89	58.8	13.8	2.22	.62	18.8
MAX	1.0	.00	.30	.00	10	260	27	340	43	3.3	1.6	140
MIN	.00	.00	.00	.00	.00	.40	5.1	4.9	2.7	.92	.00	.00
AC-FT	7.1	.00	3.7	.00	83	4040	589	3620	821	137	36	1120
CAL YR 1977	TOTAL	950.02	MEAN	2.60	MAX	52	MIN	.00	AC-FT	1880		
WTR YR 1978	TOTAL	5268.74	MEAN	14.4	MAX	340	MIN	.00	AC-FT	10450		

YELLOWSTONE RIVER BASIN

06294940 SARPY CREEK NEAR HYSHAM, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (AMD) CODE	SPE- CIFIC CON- DUCTI- VANCE (MICRO- MH/S)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)
FEB 15...	1345	--	.40	3	2370	8.0	-10.0	.0	3	9.8
MAR 09...	1105	--	.90	3	2020	8.1	10.0	.0	15	8.8
23...	1420	--	260	3	399	8.1	6.0	3.0	280	10.6
APR 14...	1125	--	5.4	0	3400	8.4	20.0	8.0	50	10.4
MAY 11...	1120	--	14	60	2540	8.2	12.0	12.5	60	8.4
JUN 08...	1140	--	22	1	4210	8.1	20.0	18.5	40	7.2
AUG 25...	1100	99001	.17	--	3400	8.3	32.0	16.0	--	--

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
FEB 15...	74	.9	520	0	86	73	380	7.3	7.1	670
MAR 09...	67	1.9	490	0	91	64	330	6.5	8.2	600
23...	89	7.0	130	27	24	16	36	1.4	7.3	120
APR 14...	97	3.3	1200	660	150	190	440	5.6	14	610
MAY 11...	88	2.6	850	450	110	140	340	5.1	13	490
JUN 08...	85	.9	1400	810	150	240	490	5.8	14	670
AUG 25...	--	--	720	180	91	120	520	8.4	10	656

YELLOWSTONE RIVER BASIN

407

06294940 SARPY CREEK NEAR HYSHAM, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)
FEB 15...	0	550	11	720	22	.4	15	1030	2.22	1.70
MAR 09...	0	490	7.6	710	5.5	.4	12	1520	2.07	3.09
23...	0	98	1.5	100	3.0	.1	6.2	252	.34	177
APR 14...	0	500	3.9	1400	17	.3	8.3	2520	3.43	36.7
MAY 11...	0	400	4.9	1100	13	.3	6.5	1960	2.67	74.1
JUN 08...	0	550	8.5	1700	20	.3	8.0	2950	4.01	175
AUG 25...	0	540	5.3	1300	19	.5	3.8	2390	3.30	1.12

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
FEB 15...	.22	.14	.20	.34	.56	.02	--	280	40
MAR 09...	.26	.44	.66	1.1	1.4	.07	--	260	140
23...	.15	.27	.93	1.2	1.4	.43	--	120	70
APR 14...	.02	.00	.90	.90	.92	.09	--	520	20
MAY 11...	.01	.04	2.3	2.3	2.3	.10	--	490	30
JUN 08...	.02	.06	.94	1.0	1.0	.07	--	780	30
AUG 25...	.01	.02	.83	.85	.86	.03	.01	490	20

DATE	TIME	ALUM- INUM, TOTAL RECUM- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECUM- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECUM- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECUM- ERABLE (UG/L AS CR)
FEB 15...	1345	--	40	--	3	--	0	--	3	--
MAR 23...	1420	2400	40	4	3	0	0	1	2	10
APR 14...	1125	--	0	--	3	--	0	--	0	--

YELLOWSTONE RIVER BASIN

06294940 SARPY CREEK NEAR HYSHAM, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHROMIUM, DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGANESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGANESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
FEB 15...	0	--	6	--	6	--	40	--	30	--
MAR 23...	0	25	2	10000	56	10	10	210	50	.0
APR 14...	0	--	0	--	1	--	50	--	170	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYBDENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYBDENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELENIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELENIUM, DIS- SOLVED (UG/L AS SE)	VANADIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
FEB 15...	.0	--	4	1	--	0	.0	--	40
MAR 23...	.0	10	0	4	2	0	1.0	80	50
APR 14...	.0	--	2	0	--	0	.0	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDIMENT, SUS- PENDED (MG/L)	SEDIMENT CHARGE, SUS- PENDED (T/DAY)	SEDIMENT SUSP. SIEVE DIAM. % FINE THAN .062 MM
FEB 15...	1345	.0	.40	8	.01	--
MAR 09...	1105	.0	.90	43	.10	--
MAR 23...	1420	3.0	260	416	292	98
APR 14...	1125	8.0	5.4	184	2.7	--
MAY 11...	1120	12.5	14	153	5.8	--
JUN 08...	1140	18.5	22	175	10	97

YELLOWSTONE RIVER BASIN

409

06294980 EAST FORK ARMELLS CREEK NEAR COLSTRIP, MT

LOCATION.--Lat 45°58'42", long 106°38'38", in SE½SW¼SW¼ sec.28, T.3 N., R.41 E., Rosebud County, Hydrologic Unit 10100001, on private road bridge, 0.9 mi (1.4 km) downstream from Corral Creek, and 6.7 mi (10.8 km) north of Colstrip.

DRAINAGE AREA.--155 mi² (401 km²).

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
05...	1240	.79	0	4500	6.4	10.0	10.5	4	11.4	114
DEC										
05...	1545	.86	0	4600	8.4	-15.0	.0	2	11.0	84
FEB										
14...	0910	.75	63	4730	7.7	5.0	.0	2	9.0	69
MAR										
07...	1445	1.9	0	4600	7.8	3.0	.0	2	9.2	70
APR										
12...	1430	2.3	1	4600	8.2	7.0	9.0	6	11.8	115
MAY										
09...	1505	6.9	1	3530	7.9	16.0	15.0	3	9.5	104
JUN										
06...	1500	2.5	3	4420	8.1	24.0	22.5	2	11.0	141
JUL										
11...	1625	.26	3	5200	8.1	27.0	26.0	1	9.0	125

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT									
05...	1.4	2300	1900	280	390	380	3.4	21	470
DEC									
05...	1.3	2500	2000	290	430	410	3.6	17	560
FEB									
14...	.9	2400	1900	290	400	350	3.1	17	600
MAR									
07...	.5	2400	1900	290	400	380	3.4	17	610
APR									
12...	1.3	2300	1900	280	400	380	3.4	18	540
MAY									
09...	1.6	1800	1400	220	300	280	2.9	17	430
JUN									
06...	1.2	2300	1800	260	390	380	3.5	17	530
JUL									
11...	1.3	2100	1800	160	410	420	4.0	18	390

YELLOWSTONE RIVER BASIN

06294980 EAST FORK ARMELLS CREEK NEAR COLSTRIP, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)
OCT 05...	0	390	3.0	2500	65	.6	17	3840	5.29
DEC 05...	0	460	3.6	2700	45	.2	13	4180	5.68
FEB 14...	0	490	19	2600	50	.2	17	4020	5.47
MAR 07...	0	500	15	2400	45	.2	14	3850	5.24
APR 12...	0	440	5.5	2600	44	.2	5.4	4000	5.44
MAY 09...	0	350	8.7	1900	33	.2	11	2970	4.04
JUN 06...	0	430	6.7	2500	37	.2	2.8	3850	5.24
JUL 11...	0	320	5.0	2600	46	.2	.5	3850	5.24

DATE	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 05...	8.30	.02	.01	.74	.75	.77	.03	1200	40
DEC 05...	9.71	.28	.08	.27	.35	.63	.02	1500	70
FEB 14...	8.14	.07	1.5	.90	2.4	2.5	.03	870	40
MAR 07...	19.8	.12	1.3	.70	2.0	2.1	.04	800	30
APR 12...	24.8	.00	.03	.68	.71	.71	.04	860	20
MAY 09...	71.4	.05	.03	.69	.72	.77	.06	780	40
JUN 06...	26.0	.01	.03	.69	.72	.73	.02	1000	30
JUL 11...	2.91	.00	.03	.91	.94	.94	.04	1200	40

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS Pb)
OCT 05...	1240	20	1	10	2	10	1	13
FEB 14...	0910	0	1	0	1	10	0	5
APR 12...	1430	0	4	0	1	0	0	4
JUL 11...	1625	0	3	0	0	10	3	41

YELLOWSTONE RIVER BASIN

411

06294980 EAST FORK ARMELLS CREEK NEAR COLSTRIP, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DEVUM, DIS- SOLVED (UG/L AS MJ)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 05...	90	20	.0	2	3	0	.0	10
FEB 14...	60	650	.0	2	2	0	.0	20
APR 12...	70	440	.0	2	4	0	.0	10
JUL 11...	80	60	.0	5	0	0	.0	20

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLUX, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER 149 microns
OCT 05...	1240	10.5	.79	8	.02	79
DEC 05...	1545	.0	.66	70	.16	--
FEB 14...	0910	.0	.75	40	.08	--
MAR 07...	1445	.0	1.9	20	.10	--
APR 12...	1430	9.0	2.3	82	.51	--
MAY 09...	1505	15.0	6.4	34	.82	--
JUN 06...	1500	22.5	2.5	64	.43	--
JUL 11...	1625	26.0	.20	12	.01	--

YELLOWSTONE RIVER BASIN

06294995 ARMELLS CREEK NEAR FORSYTH, MT

LOCATION.--Lat 46°14'59", long 106°48'22", in SE¼NW¼NE¼ sec.26 T.6 N., R.39 E., Rosebud County, Hydrologic Unit 10100001, on right bank 300 ft (90 m) upstream from bridge on Interstate Highway I-94, 2 mi (3 km) upstream from mouth, and 6 mi (10 km) southwest of Forsyth.

DRAINAGE AREA.--370 mi² (958 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,560 ft (780 m), from topographic map.

REMARKS.--Water-discharge records fair except those below 1.0 ft³/s (0.28 m³/s) and prior to Mar. 23, which are poor. No gage height record Dec. 27 to Mar. 10. Diversions of about 200 acres (809,000 m²) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 808 ft³/s (22.9 m³/s) Mar. 18, 1978, gage height, 4.94 ft (1.506 m); maximum gage height observed, 6.62 ft (2.018 m) Mar. 12, 1978 (backwater from ice); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 130 ft³/s (3.68 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 12	----	ice jam	*a6.62 2.018	May 20	0700	711 20.1	4.91 1.497
Mar. 18	----	*808 22.9	4.94 1.506	Sept. 14	1900	156 4.42	3.49 1.064
May 9	0200	166 4.70	3.53 1.076	Sept. 20	1100	239 6.77	3.80 1.158

a--maximum gage height observed.

No flow Nov. 20-25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	.05	.25	.25	.30	.20	9.9	2.8	41	1.9	.51	.04
2	.10	.05	.25	.25	.30	.20	9.3	3.5	46	1.6	.74	.04
3	.05	.05	.25	.25	.30	.20	8.3	1.9	24	1.9	.90	.02
4	.03	.05	.25	.25	.30	.20	8.3	.07	16	.74	.74	.02
5	.02	.05	.25	.25	.30	.20	7.8	1.9	14	.44	.90	.02
6	.01	.05	.25	.25	.30	.30	7.3	6.3	13	.51	.60	.02
7	.15	.05	.25	.25	.30	.55	6.8	12	11	.90	.37	.02
8	.15	.05	.25	.25	.30	.40	6.8	40	8.8	.60	.25	.02
9	.10	.05	.25	.25	.30	.60	6.3	127	8.3	18	.09	.02
10	.01	.05	.20	.25	.30	6.0	5.9	46	6.8	10	.07	.02
11	.01	.05	.20	.25	.30	80	5.9	31	6.8	5.0	.07	.02
12	.01	.05	.20	.25	.30	340	5.4	21	5.9	3.2	.06	.06
13	.01	.05	.20	.25	.30	300	5.4	22	7.3	1.6	.05	16
14	.01	.05	.30	.25	.30	202	5.0	16	5.9	8.3	.06	115
15	.01	.05	.40	.25	.30	115	4.2	14	5.4	4.2	.05	92
16	.01	.05	.30	.30	.30	77	4.2	13	5.9	1.3	.05	26
17	.01	.01	.25	.30	.30	69	4.2	15	5.9	.74	.07	12
18	.01	.01	.25	.30	.30	549	4.6	142	5.9	.51	.05	14
19	.01	.01	.25	.30	.40	436	5.0	311	5.0	.51	.06	54
20	.01	.00	.25	.30	.50	191	5.0	509	5.0	.51	.05	207
21	.01	.00	.25	.30	.40	121	5.0	168	4.2	.60	.05	113
22	.01	.00	.25	.30	.30	87	4.2	83	3.8	.90	.04	44
23	.01	.00	.25	.30	.30	43	3.5	47	3.5	1.6	.06	26
24	.01	.00	.25	.30	.30	28	3.2	36	3.2	1.9	.04	17
25	.01	.00	.25	.30	.20	21	2.6	27	3.5	5.0	.03	14
26	.01	.10	.25	.30	.20	19	2.1	21	3.8	2.1	.05	12
27	.01	.20	.25	.30	.20	18	1.9	18	3.8	.90	.90	8.8
28	.01	.25	.25	.30	.20	16	2.1	16	5.9	.74	.06	5.9
29	.05	.35	.25	.30	---	12	2.1	15	5.4	.60	.05	4.2
30	.20	.30	.25	.30	---	12	2.1	15	3.5	.74	.04	3.8
31	.10	---	.25	.30	---	12	---	16	---	.90	.04	---
TOTAL	1.20	2.03	7.80	8.55	8.40	2556.65	154.6	1799.47	288.5	78.44	7.10	785.02
MEAN	.039	.068	.25	.28	.30	82.5	5.15	58.0	9.62	2.53	.23	26.2
MAX	.20	.35	.40	.30	.50	436	9.9	509	46	18	.90	207
MIN	.01	.00	.20	.25	.20	.20	1.9	.07	3.2	.44	.03	.02
AC-FT	2.4	4.0	15	17	17	5070	307	3570	572	156	14	1560
CAL YR 1977 TOTAL	416.04		MEAN 1.14	MAX 43	MIN .00	AC-FT 825						
WTR YR 1978 TOTAL	5697.76		MEAN 15.6	MAX 509	MIN .00	AC-FT 11300						

YELLOWSTONE RIVER BASIN

413

06294995 ARMELLS CREEK NEAR FORSYTH, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (NMJ CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	
MAR											
09...	0855	--	.59	3	4400	8.2	10.0	.0	15	10.4	
15...	1700	--	97	3	684	8.2	5.0	3.0	190	11.0	
18...	1245	--	394	3	932	8.1	2.0	4.0	780	11.0	
APR											
14...	0910	--	4.5	0	5670	8.3	10.0	8.0	30	9.8	
MAY											
11...	0900	--	32	60	2230	8.3	15.0	11.5	220	8.6	
JUN											
08...	0920	--	9.5	1	5500	8.2	21.0	19.5	60	7.2	
AUG											
25...	0915	99001	.04	--	3930	8.2	22.0	19.0	--	--	
SEP											
05...	1015	--	.03	0	3250	8.3	25.0	23.0	3	8.6	
DATE		OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CALC3)	HARD- NESS, VOLATIL- E (MG/L AS CALC3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HC33)
MAR											
09...	78	2.3	710	86	120	100	840	14	9.8	700	
15...	90	6.9	200	91	33	28	64	2.0	7.4	130	
18...	92	6.5	250	130	43	35	110	3.0	7.6	150	
APR											
14...	91	2.0	1600	1100	220	260	800	5.7	13	670	
MAY											
11...	87	2.3	560	320	96	81	320	5.8	9.6	320	
JUN											
08...	86	1.4	1400	930	190	230	540	9.7	12	600	
AUG											
25...	--	--	560	93	76	95	700	13	10	595	
SEP											
05...	110	2.2	490	76	76	72	560	11	8.7	500	
DATE		CAR- BONATE (MG/L AS CO3)	ALKAL- INITY (MG/L AS CALC3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIU2)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)
MAR											
09...	0	620	7.7	1900	15	.6	11	3370	4.58	5.37	
15...	0	110	1.3	210	4.5	.1	6.4	418	.57	109	
18...	0	120	1.9	350	5.6	.1	.0	626	.85	666	
APR											
14...	0	550	5.4	2800	37	.4	7.6	4470	6.08	54.3	
MAY											
11...	0	260	2.6	990	13	.3	9.3	1680	2.28	145	
JUN											
08...	0	490	6.1	2500	29	.4	5.5	4100	5.58	105	
AUG											
25...	0	490	6.0	1500	22	.5	8.0	2710	3.93	.31	
SEP											
05...	0	410	4.0	1300	18	.5	9.0	2290	3.11	.19	

YELLOWSTONE RIVER BASIN

06294995 ARMELLS CREEK NEAR FORSYTH, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	
MAR										
09...	.18	.59	.91	1.5	1.7	.12	--	490	130	
15...	.23	.33	1.2	1.5	1.7	.40	--	130	160	
18...	.18	.21	3.1	3.3	3.5	.86	--	120	40	
APR										
14...	.01	.00	.82	.82	.83	.05	--	570	60	
MAY										
11...	.02	.04	1.1	1.1	1.1	.22	--	270	60	
JUN										
08...	.01	.01	.67	.68	.69	.06	--	620	20	
AUG										
25...	.00	.02	.58	.60	.60	.02	.00	510	20	
SEP										
05...	.01	.03	.86	.89	.90	.03	--	420	40	
	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	
MAR										
09...	0855	--	20	--	2	--	0	1	--	
18...	1245	17000	10	1	1	10	10	1	50	
	TIME	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	CUPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
MAR										
09...	10	7	--	1	--	50	--	120	--	
18...	0	1	30000	1	50	10	730	100	.0	
	TIME	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR										
04...	.0	--	2	6	--	0	.0	--	30	
18...	.0	6	0	4	1	--	1.0	130	10	

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SEDI- MENT SUSP. SIEVE DIAM. % FINER THAN .062 MM
MAR						
09...	0855	.0	.59	24	.04	--
15...	1700	3.0	97	370	97	99
18...	1245	4.0	394	1860	1980	89
APR						
14...	0910	8.0	4.5	98	1.2	--
MAY						
11...	0900	11.5	32	428	37	99
JUN						
08...	0920	19.5	9.5	303	7.8	92
SEP						
05...	1015	23.0	.03	30	.00	--

06295000 YELLOWSTONE RIVER AT FORSYTH, MT

LOCATION.--Lat 46°15'58", long 106°41'24", in NE¼NW¼NW¼ sec.23, T.6 N., R.40 E., Rosebud County, Hydrologic Unit 10100001, on right bank 0.3 mi (0.5 km) downstream of U.S. Highway 12 bridge, at intake for Forsyth water supply, at Forsyth.

DRAINAGE AREA.--40,339 mi² (104,478 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 16, 1921, to September 30, 1923 (no winter records). October 1977 to September 1978. Miscellaneous discharge measurements were made in 1974 to 1976 and are on file in Helena district office.

GAGE.--Water-stage recorder. Altitude of gage is 2,510 ft (765 m), from topographic map. July 1921 to March 1922, nonrecording gage on discontinued highway bridge 10 ft (0.3 m) downstream from gage at different datum. March 1922 to September 1923, nonrecording gage on discontinued highway bridge 10 ft (0.3 m) downstream from gage at datum 2 ft (0.6 m) higher.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Diversions for irrigation of about 464,700 acres (1,880 km²) above station. Some regulation on tributary streams. Small diversion dam about 4,200 ft (1,280 m) below station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 109,800 ft³/s (3,110 m³/s) May 21, 1978, gage height, 14.53 ft (4.429 m); minimum daily, 1,400 ft³/s (39.6 m³/s) Nov. 23, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1918 reached a stage of about 20 ft (6.1 m), datum used in 1921, information from local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 109,800 ft³/s (3,110 m³/s) May 21, gage height, 14.53 ft (4.429 m); minimum daily, 1,400 ft³/s (39.6 m³/s) Nov. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5780	4750	5400	4800	5500	6000	13600	15400	32000	40800	21200	9330
2	5740	4670	5300	4800	5800	6300	14000	12900	30800	42300	20200	9320
3	5660	4710	5000	4700	5000	6000	13900	11900	28600	41600	19600	9050
4	5980	4670	4800	4600	6200	6000	12600	11800	26800	41400	18700	8660
5	5960	4600	4500	4800	6400	5900	11700	12800	27400	41400	17900	8590
6	5860	4600	4000	4900	6700	6000	11000	14300	24200	41000	17000	8530
7	5860	4630	3700	4300	6900	6200	10300	14600	32600	38300	16500	8480
8	5940	4670	3500	4500	6900	6400	9940	14200	37300	36800	16100	8340
9	5900	4630	3300	4300	6800	7200	9610	14900	40200	37300	14900	8510
10	5860	4600	3200	4200	6700	7500	9500	14800	41400	39200	14300	8610
11	5940	4450	3000	4100	6600	8500	9380	13200	45800	38900	13900	8300
12	5940	4410	3200	4100	6400	9400	9370	12600	50800	37800	13500	9730
13	5900	4300	3700	4000	6200	9800	9290	13800	43900	38200	13200	12500
14	5740	4410	4500	4000	6400	9800	9360	13900	36900	37400	13100	13300
15	5660	4370	5600	4000	6600	9000	9000	12700	36900	35400	13300	12700
16	5740	4370	6800	4100	6600	8400	8510	12400	43100	34400	13200	11100
17	5700	4300	6800	4100	6300	8500	8470	13900	46600	33700	13200	10500
18	5660	4300	6400	4200	6400	10500	8390	25300	43200	33300	12900	10800
19	5620	4300	5800	4400	6400	12500	8360	46700	38200	32800	12800	16900
20	5580	4100	5400	4600	6400	14000	8060	70600	37200	31200	13100	20500
21	5490	2000	5000	4900	6500	15000	7500	97000	36800	30700	12900	16700
22	5450	1500	4800	5500	6700	16800	7360	41000	37100	30900	12600	15200
23	5410	1400	4700	5900	7000	18300	7400	32200	37900	30000	12100	13600
24	5330	1600	4700	6400	7200	16100	7490	30400	40300	28100	11700	12500
25	5300	3000	4700	6600	7300	14900	7420	32200	41900	26800	11600	11700
26	5180	5000	4700	6300	7200	15200	7170	34000	43000	26000	11500	11400
27	5140	8000	4700	5900	7000	16600	6990	33500	42200	25500	11500	11300
28	5060	10000	4700	5600	6800	16800	7190	31700	37300	25100	11300	11300
29	5060	11000	4800	5800	---	15800	11000	29900	34700	23900	11200	11200
30	4670	6500	4800	5800	---	15400	17300	29500	36700	22300	10500	11100
31	4900	---	4800	5700	---	14200	---	31800	---	22300	9520	---
TOTAL	173230	139840	146300	152400	184100	339600	291180	797900	1138800	1044800	435020	339750
MEAN	5588	4661	4719	4916	6575	10950	9706	25740	37960	33700	14030	11330
MAX	5980	11000	6800	6600	7300	18300	17300	97000	50800	42300	21200	20500
MIN	4670	1400	3000	4000	5500	5900	6990	11800	26800	22300	9520	8300
AC-FT	343600	277400	290200	302300	365200	673600	577600	1583000	2259000	2072000	862900	673900
WTR YR 1978 TOTAL	5182920			MEAN 14200		MAX 97000	MIN 1400	AC-FT 10280000				

YELLOWSTONE RIVER BASIN

06295000 YELLOWSTONE RIVER AT FORSYTH, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: March to September 1978.

SUSPENDED-SEDIMENT DISCHARGE: March to September 1978.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum observed, 26.0°C July 27.

SEDIMENT CONCENTRATIONS: Maximum daily, 4,010 mg/L May 19; minimum daily, 25 mg/L Sept. 4.

SEDIMENT LOADS: Maximum daily, 761,000 tons (690,000 tonnes) May 20; minimum daily, 585 tons (531 tonnes) Sept. 4.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTJ)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
08...	0930	5900	0	650	8.6	9.0	10.0	8	10.0	97
NOV										
05...	0940	4600	1	685	8.6	3.5	5.0	4	11.6	99
DEC										
02...	1500	5300	74	720	8.2	1.0	.0	10	12.5	94
JAN										
05...	1500	4800	1	945	8.2	-12.0	.0	3	12.0	90
FEB										
06...	1530	6700	3	950	8.1	1.0	.0	4	11.1	84
MAR										
14...	1500	9800	1	745	8.0	4.0	.0	140	10.6	80
APR										
05...	1630	11500	1	830	8.3	13.5	10.0	85	9.7	94
MAY										
03...	1800	11800	1	780	8.2	16.0	14.5	210	8.7	94
JUN										
07...	1530	32700	2	555	8.2	20.0	17.0	60	8.7	99
JUL										
18...	1700	33700	1	435	8.3	27.0	19.0	30	8.2	96
AUG										
07...	1630	16500	1	500	8.5	31.5	24.0	20	7.7	101
SEP										
05...	1420	8660	1	565	8.6	33.5	23.0	10	8.6	111

DATE	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CAC03)
OCT										
08...	230	69	55	22	50	1.4	3.5	190	2	160
NOV										
05...	230	71	53	23	54	1.6	3.6	190	0	160
DEC										
02...	250	95	61	24	59	1.6	3.5	190	0	160
JAN										
05...	340	160	84	31	78	1.8	4.6	220	0	180
FEB										
06...	330	150	84	30	81	1.9	4.2	220	0	180
MAR										
14...	260	120	63	24	64	1.7	4.4	170	0	140
APR										
05...	280	120	70	26	72	1.9	3.9	200	0	160
MAY										
03...	250	95	56	27	68	1.9	4.1	190	0	160
JUN										
07...	180	69	44	18	45	1.4	2.6	140	0	110
JUL										
18...	150	50	38	13	36	1.3	2.3	120	0	98
AUG										
07...	160	43	40	14	35	1.2	2.8	140	0	110
SEP										
05...	190	83	45	18	44	1.4	3.1	120	3	100

06295000 YELLOWSTONE RIVER AT FORSYTH, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLOU- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NJ2+NJ3 TOTAL (MG/L AS N)
OCT									
08...	.8	150	8.7	.5	9.6	395	.54	6290	.12
NOV									
05...	.8	170	9.3	.5	8.5	416	.57	5170	.05
DEC									
02...	1.9	200	9.2	.5	13	464	.63	6640	.59
JAN									
05...	2.2	280	15	.6	14	616	.64	7980	.88
FEB									
06...	2.6	240	13	.6	12	623	.85	11300	.56
MAR									
14...	2.7	220	10	.4	9.5	479	.65	12700	.50
APR									
05...	1.6	240	12	.4	11	534	.73	16600	.40
MAY									
03...	1.9	240	9.7	.5	12	511	.70	16300	.43
JUN									
07...	1.4	140	6.6	.3	11	337	.46	29800	.25
JUL									
18...	1.0	120	5.2	.3	12	266	.39	26000	.28
AUG									
07...	.7	120	6.0	.3	9.2	297	.40	13200	.11
SEP									
05...	.5	160	7.4	.4	11	351	.46	8210	.14

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT									
08...	.01	.09	.10	.22	.00	170	20	2.4	.5
NOV									
05...	.00	.15	.15	.20	.02	190	30	2.2	.5
DEC									
02...	.06	.09	.15	.74	.04	180	20	--	--
JAN									
05...	.18	.72	.90	1.6	.03	240	20	4.3	.4
FEB									
06...	.07	.31	.38	.94	.03	200	0	--	--
MAR									
14...	.12	.66	.78	1.3	.23	170	20	--	--
APR									
05...	.06	.64	.70	1.1	.03	170	20	3.3	2.1
MAY									
03...	.11	.99	1.1	1.5	.34	160	20	--	--
JUN									
07...	.01	.54	.55	.80	.13	100	20	--	--
JUL									
18...	.00	.47	.47	.75	.09	80	20	2.5	1.1
AUG									
07...	.00	.70	.70	.81	.09	100	<10	3.2	.6
SEP									
05...	.01	.99	1.0	1.1	.06	150	20	--	--

YELLOWSTONE RIVER BASIN

06295000 YELLOWSTONE RIVER AT FORSYTH, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEDUS (CFS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TJCCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV							
10...	1430	99001	4600	5.0	3.5	K12	77
DEC							
06...	1200	99001	4000	-10.0	.5	27	91
JAN							
13...	1030	99001	6500	-10.0	.0	28	K770
FEB							
15...	1800	99001	6650	-25.0	.0	19	46
MAR							
15...	1245	99001	9000	--	.0	K220	K3600
25...	1400	99001	14600	19.0	5.0	5400	92000
APR							
26...	1330	99001	7250	28.0	13.5	K3	K8
MAY							
24...	1100	99001	30000	17.0	17.5	K630	K480
JUN							
22...	1530	99001	36700	27.0	18.0	110	120
JUL							
14...	1300	99001	37200	32.0	20.5	90	98
AUG							
15...	1230	99001	13100	23.0	20.5	23	K110
SEP							
15...	1400	99001	12800	27.0	16.0	1800	4700

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
NOV											
05...	0940	130	20	9	7	0	0	10	2	10	5
AUG											
07...	1630	3200	20	4	1	0	<1	4	4	10	10

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
NOV										
05...	10	1	170	<100	2	50	60	40	4	.0
AUG										
07...	16	3	1600	32	16	30	30	60	10	.0

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, TOTAL RECOV- ERABLE (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV										
05...	.0	7	1	<50	3	0	0	1.3	8	10
AUG										
07...	.0	4	3	3	0	1	1	.0	10	<3

06295000 YELLOWSTONE RIVER AT FORSYTH, MT--Continued

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	GRUSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GRUSS ALPHA, DIS- SOLVED (PCI/L AS U-NAT)	GRUSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GRUSS ALPHA, SUSP. TOTAL (PCI/L AS U-NAT)	GRUSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GRUSS BETA, SUSP. TOTAL (PCI/L AS CS-137)
NOV 10...	1430	<5.3	<3.6	<.4	<.3	4.8	1.2
JUL 14...	1300	4.8	3.3	5.5	3.7	4.4	4.6

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDIM- ENT, SUS- PENDED (MG/L)	SEDIM- ENT CHARGE, SUS- PENDED (1/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM
OCT 08...	0930	10.0	5900	33	526	--	--	--	--	--	97
NOV 05...	0940	5.0	4600	7	87	--	--	--	--	--	90
10...	1430	3.5	4600	12	149	--	--	--	--	--	--
DEC 02...	1500	.0	5300	61	673	--	--	--	--	--	74
JAN 05...	1500	.0	4600	54	700	--	--	--	--	--	--
FEB 06...	1530	.0	6700	20	362	--	--	--	--	--	--
MAR 14...	1500	.0	9800	284	7510	--	--	--	--	--	--
15...	1245	.0	9000	221	5370	--	--	--	--	--	--
25...	1400	5.0	14600	908	35800	--	--	--	--	--	--
APR 05...	1630	10.0	11500	223	6920	--	--	--	--	--	83
26...	1330	13.5	7250	34	666	--	--	--	--	--	--
MAY 03...	1800	14.5	11800	461	14700	60	82	100	--	--	--
21...	1430	12.0	103000	1920	534000	--	--	--	--	--	--
22...	1700	17.0	37500	1260	130000	--	--	--	--	--	--
24...	1100	17.5	30600	796	64500	--	--	--	--	--	--
JUN 07...	1330	17.0	32700	309	27300	26	43	75	86	100	--
22...	1530	18.0	36700	237	23500	--	--	--	--	--	--
JUL 14...	1300	20.5	37200	199	20000	--	--	--	--	--	73
16...	1700	19.0	33700	160	14600	--	--	--	--	--	71
31...	1055	22.0	22500	150	9110	--	--	--	--	--	64
AUG 07...	1630	24.0	16500	108	4810	--	--	--	--	--	68
15...	1230	20.5	13100	75	2650	--	--	--	--	--	69
SEP 05...	1420	23.0	8660	53	1240	--	--	--	--	--	82
15...	1400	16.0	12800	658	22700	--	--	--	--	--	--

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. FALL DIAM. % FINER THAN 2.00 MM
NOV 10...	1430	1	2	34	76	76	76
MAR 25...	1400	2	6	11	13	14	14
APR 26...	1330	1	2	16	20	20	20
JUN 22...	1530	0	0	2	2	3	3
JUL 14...	1300	--	--	--	--	1	1
SEP 15...	1400	0	1	7	8	9	9

YELLOWSTONE RIVER BASIN

06295000 YELLOWSTONE RIVER AT FORSYTH, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	BED MAT. SIEVE DIAM. % FINER THAN	BED MAT. SIEVE DIAM. % FINER THAN	BED MAT. SIEVE DIAM. % FINER THAN	BED MAT. SIEVE DIAM. % FINER THAN	BED MAT. SIEVE DIAM. % FINER THAN	BED MAT. SIEVE DIAM. % FINER THAN
	4.00 MM	8.00 MM	16.0 MM	32.0 MM	64.0 MM	128 MM
NOV						
10...	76	76	78	79	100	--
MAR						
25...	15	17	25	46	78	100
APR						
26...	20	22	30	100	--	--
JUN						
22...	3	3	6	18	67	100
JUL						
14...	2	7	12	17	59	100
SEP						
15...	9	9	10	15	100	--

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPJ- SURE (DAYS)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS DRY WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)
JUN						
07...	1330	35	2.44	2.13	1.23	.050
JUL						
14...	1300	79	.551	.236	.830	.000
AUG						
07...	1630	24	.394	.236	.350	.040
15...	1230	32	.866	.551	.320	.800
SEP						
05...	1420	29	41.4	36.4	19.4	2.76

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	11.0	14.5	11.5	19.0	21.0	19.5
2						---	10.0	16.0	13.0	19.5	21.0	19.0
3						---	12.0	15.0	15.0	18.0	22.5	20.0
4						---	11.5	13.0	17.0	19.0	22.0	21.5
5						---	11.0	11.0	19.0	18.5	23.0	22.0
6						---	11.0	11.0	18.5	17.5	20.0	21.0
7						---	9.5	12.0	18.0	17.5	24.0	21.5
8						---	8.0	12.0	19.0	18.0	---	19.0
9						---	11.0	15.5	19.0	18.5	---	18.0
10						---	9.5	13.5	17.5	19.0	---	18.5
11						---	10.0	14.0	15.0	21.0	---	18.5
12						---	10.0	14.0	16.0	19.0	---	16.0
13						---	11.0	13.5	17.0	19.5	---	16.0
14						.0	10.0	15.0	17.0	19.5	---	16.5
15						.0	9.5	16.0	18.0	21.5	---	16.0
16						.0	9.5	16.0	18.0	22.0	---	15.5
17						.0	9.5	16.5	18.5	21.0	20.0	16.0
18						.0	8.0	---	19.0	21.5	19.0	16.0
19						.0	10.0	---	15.5	20.5	20.0	16.5
20						.0	10.0	---	18.5	20.5	20.0	16.0
21						.0	9.0	---	19.0	21.0	22.0	16.5
22						2.5	9.0	---	20.0	22.0	22.0	16.0
23						2.0	11.0	18.5	19.0	21.5	22.0	16.0
24						5.0	13.0	15.0	17.0	21.5	22.5	16.5
25						6.0	14.5	14.5	16.5	24.0	22.5	17.0
26						10.0	16.0	16.0	18.0	25.0	21.0	16.5
27						12.0	15.5	17.0	19.0	26.0	21.0	16.5
28						12.5	13.5	15.5	20.5	24.0	20.5	15.0
29						13.5	13.0	14.0	19.0	24.0	19.0	15.0
30						14.5	13.0	12.0	19.5	23.0	19.0	16.0
31						12.0	---	10.0	---	24.0	20.0	---
MEAN						5.0	11.0	14.5	17.5	21.0	21.0	17.5
WTR YR 1978	MEAN	16.0		MAX	26.0		MIN	.0				

YELLOWSTONE RIVER BASIN

06295000 YELLOWSTONE RIVER AT FORSYTH, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 10, 77 1450	DEC 6, 77 1200	JAN 13, 78 1030	FEB 15, 78 1800
TOTAL CELLS/ML	940	920	220	300
DIVERSITY: DIVISION	0.8	0.8	0.5	0.7
..CLASS	0.8	0.8	0.5	0.7
...ORDER	0.9	1.1	0.8	0.7
...FAMILY	2.5	2.7	2.8	2.5
....GENUS	2.6	2.8	2.9	3.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...DUCYSTACEAE								
....ANKISTRODESMUS	7	1	--	-	--	-	--	-
...SCENEDESMACEAE								
....SCENEDESMUS	53	6	--	-	26	12	--	-
CHRYSDOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...DOSCINODISCACEAE								
....CYCLOTELLA	13	1	74	8	13	6	--	-
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	-	--	-	6	3	34	12
...CUCCONEIS	13	1	30	3	--	-	--	-
...RHODIOSPHENIA	7	1	*	0	*	0	--	-
...CYMBELLACEAE								
....AMPHURA	92	10	--	-	6	3	--	-
....CYMBELLA	--	-	44	5	19	9	28	9
....EPIITEMIA	13	1	30	3	*	0	7	2
...DIATOMACEAE								
....DIATOMA	300#	39	74	8	19	9	28	9
...FRAGILARIACEAE								
....HANNAEA	--	-	--	-	--	-	7	2
...SYNEDRA	46	5	44	5	32	15	--	-
...GOMPHONEMACEAE								
....GOMPHONEMA	20	2	--	-	6	3	7	2
...NAVICULACEAE								
....ANDMUEONEIS	7	1	--	-	--	-	--	-
...GYRUSIGMA	--	-	*	0	--	-	--	-
...NAVICULA	210#	23	200#	31	71#	32	48#	16
...NEIDIUM	--	-	--	-	--	-	62#	21
...NITZSCHACEAE								
....NITZSCHIA	--	-	120	13	19	9	21	7
...SURIKELLACEAE								
....SURIKELLA	--	-	15	2	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCALES								
...CHROCOCCACEAE								
....ANACYSTIS	92	10	210#	23	--	-	--	-
...HORMOGONALES								
...OSCILLATORIACEAE								
....LYNGBYA	--	-	--	-	--	-	55#	19

06295000 YELLOWSTONE RIVER AT FORSYTH, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	MAR 15,78 1245	MAR 25,78 1400	APR 26,78 1330	MAY 24,78 1100				
TOTAL CELLS/ML	3700	1200	4200	1100				
DIVERSITY: DIVISION	0.5	0.1	0.4	1.5				
..CLASS	0.5	0.1	0.4	1.5				
...ORDER	0.6	0.2	1.3	1.5				
...FAMILY	2.6	2.6	2.1	2.5				
....GENUS	2.8	2.9	2.2	2.8				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....MICRACTINIACEAE								
.....MICRACTINIUM	--	-	--	-	--	-	160	14
....SCENEDESMACEAE								
.....ACTINASTRUM	--	-	--	-	--	-	360#	33
.....SCENEDESMUS	140	4	--	-	--	-	--	-
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	--	-	33	1	--	-
CHRYSDOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCAEAE								
....CYCLOTELLA	--	-	14	1	2400#	57	--	-
....MELUSIRA	64	2	14	1	--	-	--	-
...PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	34	1	--	-	--	-	--	-
...CUCULONEIS	140	4	--	-	--	-	--	-
...RHODICUSPHENIA	170	5	55	5	--	-	22	2
...CYMBELLACEAE								
....AMPHURA	--	-	--	-	--	-	22	2
....CYMBELLA	310	8	120	10	200	5	22	2
....EPITHEMIA	100	3	68	6	--	-	45	4
...DIATOMACEAE								
....DIATOMA	820#	22	260#	22	260	6	45	4
...FRAGILARIACEAE								
....SYNEDRA	100	3	27	2	--	-	--	-
...GOMPHOREMATAEAE								
....GOMPHONEMA	170	5	68	6	240	7	--	-
...NAVICULACEAE								
....CALONEIS	34	1	--	-	--	-	22	2
....GYROSIGMA	--	-	14	1	33	1	--	-
...NAVICULA	1400#	39	400#	33	460	11	200#	18
...NITZSCHACEAE								
....NITZSCHIA	34	1	140	11	360	9	22	2
...SURIKELLACEAE								
....CYMATOPLEURA	*	0	--	-	--	-	--	-
....SURIKELLA	--	-	14	1	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCALES								
....CHROCOCCACEAE								
.....ANACYSTIS	--	-	--	-	160	4	--	-
...HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	140	4	--	-	--	-	--	-
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	--	-	--	-	180#	16
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....PHACUS	--	-	--	-	33	1	--	-
....TRACHELOMONAS	--	-	14	1	--	-	--	-

YELLOWSTONE RIVER BASIN

06295000 YELLOWSTONE RIVER AT FORSYTH, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUN 22,78 1530	JUL 14,78 1300	AUG 15,78 1230	SEP 15,78 1400
TOTAL CELLS/ML	2000	6000	5800	2400
DIVERSITY: DIVISION	1.4	1.8	1.4	1.2
..CLASS	1.4	2.1	1.4	1.2
..ORDER	1.7	2.6	1.9	1.4
...FAMILY	3.0	2.9	2.3	2.6
....GENUS	3.1	3.2	2.6	2.6

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCUCCALES								
....MICRACTINIACEAE	--	-	--	-	73	1	--	-
....DUCYSTACEAE								
....ANKISTRODESMUS	--	-	260	4	98	2	--	-
....KIRCHNERIELLA	--	-	300	5	--	-	--	-
....DUCYSTIS	--	-	43	1	98	2	--	-
....SCENEDESMACEAE								
....ACTINASTRUM	93	5	--	-	--	-	--	-
....SCENEDESMUS	--	-	340	6	200	3	--	-
....TETRASTRUM	--	-	170	3	--	-	--	-
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
...CHLAMYDOMONAS	23	1	390	6	120	2	45	2
...ZYGEMATALES								
...DESMIDIACEAE								
...COSMARIVUM	23	1	--	-	--	-	--	-
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINUODISCACEAE								
...CYCLOTELLA	23	1	1800#	31	810	14	89	4
....MELOSIRA	93	5	--	-	730	13	--	-
...PENNACEAE								
...ACHNANTHACEAE								
...COCCONEIS	--	-	43	1	*	0	--	-
...RHODICUSPHENIA	23	1	--	-	--	-	--	-
...CYMBELLACEAE								
...CYMBELLA	210	10	--	-	220	4	130	6
...EPIHEMIA	23	1	--	-	--	-	--	-
...DIATOMACEAE								
...DIATOMA	210	10	--	-	--	-	--	-
...FRAGILARIACEAE								
...FRAGILARIA	23	1	--	-	--	-	180	8
...SYNEURA	69	3	--	-	*	0	--	-
...GOMPHONEMACEAE								
...GOMPHONEMA	93	5	--	-	73	1	--	-
...NAVICULACEAE								
...NAVICULA	210	10	260	4	150	3	450#	19
...NITZSCHACEAE								
...NITZSCHIA	69	3	260	4	420	7	220	9
...SURIPELLACEAE								
...SURIPELLA	23	1	--	-	*	0	--	-
..CHRYSOPHYCEAE								
...CHRYSOMONADALES								
...OCHROMONADACEAE								
...OCHROMONAS	--	-	430	7	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
...CRYPTOMONADIALES								
...CRYPTOMONADACEAE								
...CRYPTOMONAS	--	-	130	2	--	-	--	-

0629500 YELLOWSTONE RIVER AT FORSYTH, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUN 22,78 1530		JUL 14,78 1300		AUG 15,78 1230		SEP 15,78 1400	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCALES								
...CHROCOCCACEAE								
....AGMENELLUM			--	-	2700#	47	--	-
....ANACYSTIS	760#	38	--	-	--	-	--	-
...HORMODONALES								
....NOSTOCACEAE								
....APHANIZUMENON	--	-	--	-	--	-	400#	17
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	170	3	--	-	800#	34
EUGLENOPHYTA (EUGLENIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
....EUGLENA	--	-	86	1	--	-	--	-
....TRACHELOMONAS	--	-	1200#	21	*	0	45	2
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
...PERIDINIALES								
....GLENODINIACEAE								
....GLENODINIUM	--	-	43	1	--	-	--	-
...PERIDINIACEAE								
....PERIDINIUM	23	1	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM; MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

YELLOWSTONE RIVER BASIN

06295110 ROSEBUD CREEK AT KIRBY, MT

LOCATION.--Lat 45°19'59", long 106°59'10", in SW¼SE¼NW¼ sec. 8, T.6 S., R.39 E., Big Horn County, Hydrologic Unit 10100003 at private bridge at Kirby, 50 ft (15 m) downstream from confluence of Cache Creek.

DRAINAGE AREA.--116 mi² (300 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 04...	1210	--	4.8	3	916	8.0	5.0	9.5	30	9.4	92
NOV 01...	0815	99001	8.3	--	910	8.4	1.0	2.5	--	11.1	95
DEC 05...	1100	--	8.9	3	898	8.5	-10.0	.0	15	11.2	88
FEB 13...	1215	--	7.9	3	929	8.2	-5.0	.5	5	11.8	94
MAR 07...	1120	--	8.8	0	928	8.1	10.0	.0	5	11.2	88
27...	1030	--	43	1	802	8.1	10.0	3.0	170	11.2	96
APR 12...	1110	--	31	3	828	8.3	7.0	5.0	45	10.6	95
MAY 09...	1150	--	231	1	657	8.0	18.0	8.0	180	8.4	82
JUN 06...	1130	--	92	0	895	8.1	19.5	13.5	35	8.8	97
AUG 24...	1200	99001	11	--	900	8.1	21.0	15.0	--	--	--
SEP 06...	1000	--	10	0	910	8.1	17.0	15.0	7	8.2	93

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT 04...	1.6	470	64	73	69	26	.5	7.9	490	0
NOV 01...	--	470	67	75	69	25	.5	8.5	440	26
DEC 05...	.8	500	79	79	73	27	.5	7.1	510	0
FEB 13...	.7	520	100	87	74	29	.6	7.0	510	0
MAR 07...	1.1	490	85	78	71	26	.5	7.8	490	0
27...	2.8	400	92	56	64	22	.5	7.7	380	0
APR 12...	.8	470	120	82	64	20	.4	5.7	420	0
MAY 09...	2.8	360	85	65	47	13	.3	10	330	0
JUN 06...	.6	490	150	84	68	18	.4	5.7	410	0
AUG 24...	--	470	82	76	67	28	.6	7.6	470	0
SEP 06...	1.8	470	76	76	68	31	.6	7.9	480	0

06295110 ROSEBUD CREEK AT KIRBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 04...	400	7.8	120	4.1	.6	19	561	.76	7.27	.07
NOV 01...	402	3.1	120	3.8	.7	18	552	.76	12.6	.10
DEC 05...	420	2.6	120	3.8	.4	19	581	.79	14.0	.22
FEB 13...	420	5.1	140	3.3	.6	19	612	.83	13.1	.19
MAR 07...	400	6.2	130	4.2	.6	15	574	.78	13.6	.16
27...	310	4.8	140	2.8	.4	11	492	.67	57.1	.31
APR 12...	340	3.4	130	2.7	.5	13	525	.71	43.9	.07
MAY 09...	270	5.3	100	2.4	.4	13	414	.56	258	.38
JUN 06...	340	5.2	130	3.1	.5	14	526	.72	131	.17
AUG 24...	380	5.9	150	3.6	.6	16	580	.78	17.0	.08
SEP 06...	390	6.1	120	3.6	.6	15	559	.76	15.7	.08

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DIS- SOLVED (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
OCT 04...	.02	.23	.25	.32	.06	--	110	30	--	--
NOV 01...	.03	.39	.42	.52	.07	.02	110	20	4.2	1.5
DEC 05...	.06	.70	.76	.98	.00	--	100	50	--	--
FEB 13...	.02	.34	.36	.55	.02	--	100	20	--	--
MAR 07...	.17	.42	.59	.75	.03	--	90	20	--	--
27...	.10	1.5	1.6	1.9	.35	--	80	100	--	--
APR 12...	.03	.45	.48	.55	.09	--	70	50	--	--
MAY 09...	.13	1.6	1.7	2.1	.37	--	170	40	--	--
JUN 06...	.00	.64	.64	.81	.08	--	80	30	--	--
AUG 24...	.00	.60	.60	.68	.05	.02	110	20	--	--
SEP 06...	.01	.44	.45	.53	.04	--	110	40	--	--

DATE	TIME	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	ALUMINUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE)	BERYLLIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)
OCT 04...	1210	--	20	--	1	--	0	--	3	--
FEB 13...	1215	--	0	--	1	--	0	--	1	--
MAR 27...	1030	6900	80	2	11	0	0	2	1	10
APR 12...	1110	--	0	--	3	--	0	--	1	--

YELLOWSTONE RIVER BASIN

06295110 ROSEBUD CREEK AT KIRBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOVERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DIS- SOLVED (UG/L AS MN)
OCT 04...	0	--	1	--	--	16	--	60	--	40
FEB 13...	0	--	2	--	--	5	--	50	--	50
MAR 27...	0	18	9	9800	19	0	40	50	380	60
APR 12...	0	--	3	--	--	9	--	40	--	30

DATE	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYBDENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SELENIUM, DIS- SOLVED (UG/L AS SE)	VANADIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 04...	--	.0	2	2	--	0	1.8	--	10
FEB 13...	--	.0	5	2	--	0	1.0	--	10
MAR 27...	.0	.0	2	2	10	4	2.0	40	30
APR 12...	--	.0	2	2	--	0	2.0	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPERATURE (DEG C)	STREAM- FLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DIS- CHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 04...	1210	9.5	4.8	86	1.1	90
DEC 05...	1100	.0	8.9	96	2.3	83
FEB 13...	1215	.5	7.9	92	2.0	93
MAR 07...	1120	.0	8.8	12	.29	--
MAR 27...	1030	3.0	43	482	56	91
APR 12...	1110	5.0	31	213	18	89
MAY 09...	1150	8.0	231	612	382	92
JUN 06...	1130	13.5	92	198	49	84
SEP 06...	1000	15.0	10	89	2.4	--

YELLOWSTONE RIVER BASIN

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06295250 ROSEBUD CREEK NEAR COLSTRIP, MT

LOCATION.--Lat 45°46'03", long 106°34'10", in SE&SW&NE¼ sec.8, T.1 S., R.42 E., Rosebud County, Hydrologic Unit 10100003, on left bank 10 ft (3 m) downstream from bridge on FAS Route 315, 1.5 mi (2.4 km) downstream from Lee Coulee, and 8.4 mi (13.5 km) southeast of Colstrip.

DRAINAGE AREA.--799 mi² (2,069 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,000 ft (914 m), from topographic map.

REMARKS.--Water-discharge records poor. Diversions for irrigation of about 800 acres (3.24 km²) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 605 ft³/s (17.1 m³/s) May 21, 1978, gage height, 9.03 ft (2.752 m); minimum daily, 7.5 ft³/s (0.21 m³/s) Sept. 14, 15, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 605 ft³/s (17.1 m³/s) May 21, gage height, 9.03 ft (2.752 m), only peak above base of 150 ft³/s (4.25 m³/s); minimum daily, 9.8 ft³/s (0.28 m³/s) Nov. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	17	26	19	20	20	93	57	340	130	69	37
2	15	19	26	18	21	21	99	69	350	120	68	37
3	14	21	25	18	22	21	99	80	320	120	67	36
4	16	22	25	19	23	21	97	80	319	120	66	36
5	17	22	25	21	25	22	98	78	320	120	66	34
6	17	25	22	21	26	22	90	77	319	120	64	31
7	20	25	19	22	26	22	88	84	301	120	62	29
8	20	25	17	20	26	25	80	104	275	110	61	28
9	22	25	16	22	26	35	73	113	230	110	59	28
10	23	24	17	22	26	55	68	116	220	110	57	28
11	22	28	19	23	26	55	63	136	220	110	54	28
12	24	23	22	24	26	45	60	130	210	111	51	32
13	25	26	26	24	26	40	58	130	210	111	48	39
14	26	23	26	24	25	35	55	130	200	109	46	48
15	25	25	26	23	23	34	53	135	200	106	45	68
16	27	23	26	23	22	34	51	140	200	99	45	90
17	26	25	26	23	21	50	52	150	190	94	47	93
18	27	18	26	24	22	80	54	165	180	90	48	87
19	28	9.8	26	24	23	110	57	300	180	90	50	80
20	28	10	25	23	23	105	61	400	170	89	48	76
21	17	10	25	22	23	95	63	560	160	87	46	76
22	13	11	25	22	22	90	64	540	160	87	45	81
23	15	12	25	23	22	85	62	520	150	88	43	83
24	16	13	23	23	21	90	57	490	150	89	41	79
25	16	14	19	24	19	95	57	470	150	87	40	75
26	17	15	20	23	21	95	54	450	140	85	38	71
27	17	17	20	22	19	97	51	430	140	82	36	67
28	17	18	22	21	17	100	49	420	130	76	36	62
29	18	20	20	20	---	100	46	400	130	72	36	59
30	20	24	21	20	---	98	48	370	130	69	35	57
31	19	---	19	19	---	92	---	350	---	69	36	---
TOTAL	622	589.8	705	676	642	1889	2000	7674	6374	3080	1553	1675
MEAN	20.1	19.7	22.7	21.8	22.9	60.9	66.7	248	212	99.4	50.1	55.8
MAX	28	28	26	24	26	110	99	560	340	130	69	93
MIN	13	9.8	16	18	17	20	46	57	130	69	35	28
AC-FT	1230	1170	1400	1340	1270	3750	3970	15220	12640	6110	3080	3320
CAL YR 1977	TOTAL	13216.8	MEAN	36.2	MAX	143	MIN	7.5	AC-FT	26220		
WTR YR 1978	TOTAL	27479.8	MEAN	75.3	MAX	560	MIN	9.8	AC-FT	54510		

YELLOWSTONE RIVER BASIN

06295250 ROSEBUD CREEK NEAR COLSTRIP, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (AMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
04...	1515	16	3	1230	8.2	9.0	11.5	20	9.4	96
DEC										
05...	1345	25	0	1290	8.0	-15.0	.0	20	13.0	99
FEB										
14...	1200	26	3	1270	7.9	5.0	.0	20	11.4	87
MAR										
08...	1010	22	1	1320	8.0	9.0	.0	20	11.2	86
22...	1310	122	3	1040	8.1	5.0	1.5	550	11.2	89
APR										
13...	0945	62	1	1140	8.4	8.0	7.0	240	10.2	94
MAY										
10...	0950	127	2	1150	8.3	14.0	10.5	340	9.6	96
JUN										
07...	1100	310	1	1420	7.9	20.0	16.0	85	7.2	81
SEP										
06...	1400	31	0	1220	8.1	26.0	21.0	35	7.9	99

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT									
04...	2.1	560	150	68	94	74	1.4	11	490
DEC									
05...	.5	620	160	84	100	72	1.3	10	560
FEB									
14...	1.2	610	170	91	94	74	1.3	9.3	540
MAR									
08...	1.3	610	160	89	95	77	1.4	11	550
22...	8.2	450	180	63	72	63	1.3	11	330
APR									
13...	1.8	580	190	82	90	60	1.1	8.4	450
MAY									
10...	2.5	550	160	86	81	58	1.1	8.8	470
JUN									
07...	1.9	660	370	100	100	56	.9	9.0	360
SEP									
06...	1.0	570	200	73	95	78	1.4	10	460

YELLOWSTONE RIVER BASIN

06295250 ROSEBUD CREEK NEAR COLSTRIP, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 04...	0	400	4.9	290	6.1	.7	13	799	1.09
DEC 05...	0	460	9.0	320	6.1	.7	19	868	1.21
FEB 14...	0	440	11	310	4.3	.7	21	871	1.18
MAR 08...	0	450	8.8	310	5.9	.5	18	878	1.19
22...	0	270	4.2	290	5.4	.4	11	679	.92
APR 13...	11	390	3.0	290	4.1	.5	14	782	1.06
MAY 10...	0	390	3.8	270	4.4	.6	13	754	1.03
JUN 07...	0	300	7.3	330	70	.5	12	855	1.16
SEP 06...	0	380	5.8	340	5.5	.6	14	843	1.15

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 04...	34.5	.01	.01	.26	.29	.30	.05	200	40
DEC 05...	59.9	.10	.02	.21	.23	.33	.03	240	260
FEB 14...	61.1	.27	.18	.06	.24	.51	.07	170	20
MAR 08...	52.2	.34	.26	.51	.77	1.1	.09	180	30
22...	224	.27	.74	1.3	2.0	2.3	1.3	150	50
APR 13...	131	.24	.00	1.2	1.2	1.4	.33	140	20
MAY 10...	259	.21	.02	1.8	1.8	2.0	.55	150	10
JUN 07...	716	.16	.05	.92	.97	1.1	.13	150	60
SEP 06...	70.6	.00	.01	.52	.53	.53	.05	180	20

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
OCT 04...	1515	--	10	--	1	--	10	--	4	--
FEB 14...	1200	--	0	--	1	--	10	--	2	--
MAR 22...	1310	3000	0	9	1	0	0	3	2	20
APR 13...	0945	--	0	--	3	--	0	--	0	--

YELLOWSTONE RIVER BASIN

06295250 ROSEBUD CREEK NEAR COLSTRIP, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHROMIUM, TOTAL DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 04...	0	--	1	--	--	14	--	60	--	0
FEB 14...	0	--	0	--	--	2	--	50	--	30
MAR 22...	0	310	4	11000	4	1	40	40	390	40
APR 13...	0	--	0	--	--	0	--	50	--	0

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 04...	--	.0	2	--	3	--	0	1.8	--	10
FEB 14...	--	.0	0	--	1	--	1	1.0	--	10
MAR 22...	.0	.0	3	65	4	2	0	2.0	130	20
APR 13...	--	.0	3	--	1	--	0	2.0	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 04...	1515	11.5	16	47	2.0	89
DEC 05...	1345	.0	25	118	8.0	85
FEB 14...	1200	.0	26	102	7.2	96
MAR 08...	1010	.0	22	50	3.0	93
MAR 22...	1310	1.5	122	866	285	98
APR 13...	0945	7.0	62	389	65	99
MAY 10...	0950	10.5	127	877	301	97
JUN 07...	1100	16.0	310	290	243	93
SEP 06...	1400	21.0	31	106	8.9	--

YELLOWSTONE RIVER BASIN

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06295420 SNIDER CREEK NEAR BRANDENBERG, MT

LOCATION.--Lat 45°55'39", long 106°23'02", in S₂NE₄ sec.16, T.2 N., R.43 E., Rosebud County, Hydrologic Unit 10090102, at county road crossing, 0.3 mi (0.5 km) upstream from mouth, and 7.8 mi (12.6 km) northwest of Brandenburg.

DRAINAGE AREA.--12.67 mi (32.82 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN, DIS- SOLVED (MG/L)
MAR										
19...	1645	10	3	65	7.7	10.0	1.0	120	10.6	84
20...	1730	52	0	75	7.4	7.0	3.0	150	10.7	88
		OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
MAR										
19...	4.8	25	2	6.7	1.9	3.2	.3	3.6	28	
20...	5.3	28	0	7.7	2.1	3.0	.2	4.4	42	
		CAR- BONATE (MG/L AS CO3)	ALKA- LINIT (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
MAR										
19...	0	23	.9	3.3	.9	.0	4.6	38	.05	
20...	0	34	2.7	5.1	.9	.0	4.7	49	.07	
		SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
MAR										
19...	1.03	.14	.25	.95	1.2	1.3	.30	60	200	
20...	6.88	.15	.31	.18	.49	.64	.36	50	40	
		ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
MAR										
19...	1645	1900	130	2	1	0	0	2	3	30

YELLOWSTONE RIVER BASIN

06295420 SNIDER CREEK NEAR BRANDENBERG, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHROMIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)
MAR 19...	20	9	3300	10	0	1	50	10	.0	.0

DATE	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 19...	6	1	23	4	0	0	2.0	40	20

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
MAR 19...	1645	1.0	10	128	3.5	98
20...	1730	3.0	52	147	21	97

06296003 ROSEBUD CREEK AT MOUTH, NEAR ROSEBUD, MT

LOCATION.--Lat 46°15'53", long 106°28'30", in SW¼NW¼NE¼ sec.21, T.6 N., R.42 E., Rosebud County, Hydrologic Unit 10100003, on left bank 0.4 mi (0.6 km) upstream from bridge on Interstate Highway I-94, 0.8 mi (1.3 km) upstream from mouth, and 1.6 mi (2.6 km) southwest of Rosebud.

DRAINAGE AREA.--1,302 mi² (3,372 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,480 ft (756 m), from topographic map.

REMARKS.--Water-discharge records fair except those for winter period, which are poor. Diversions for irrigation of about 2,000 acres (8.09 km²).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,620 ft³/s (74.2 m³/s) May 19, 1978, gage height, 6.78 ft (2.067 m), from rating curve extended above 1,500 ft³/s (42.5 m³/s); minimum discharge, 1.7 ft³/s (0.048 m³/s) Aug. 12, 1976, gage height, 0.85 ft (0.259 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 350 ft³/s (9.91 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 20	1630	874 24.8	4.40 1.341	May 24	1700	1,090 30.9	4.80 1.463
May 9	1300	603 17.1	3.82 1.164	Sept. 19	2000	461 13.1	3.41 1.039
May 19	1130	*2,620 74.2	*6.78 2.067				

Minimum daily discharge, 6.2 ft³/s (0.176 m³/s) Aug. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	21	15	21	14	15	22	104	55	823	133	64	29		
2	24	14	21	14	16	21	99	52	774	130	62	31		
3	17	14	20	14	17	22	93	52	599	126	64	30		
4	11	13	20	14	16	22	96	56	476	124	61	30		
5	9.8	13	20	14	18	23	101	67	402	121	60	31		
6	9.3	14	20	14	19	23	104	92	360	120	56	24		
7	24	14	20	14	19	23	101	93	331	116	56	26		
8	43	15	18	13	20	24	98	255	326	115	54	29		
9	19	15	17	13	20	30	93	515	318	107	50	26		
10	14	18	16	14	21	40	86	246	312	110	50	27		
11	12	16	18	14	21	52	80	138	307	111	48	29		
12	12	15	20	13	21	70	75	145	293	111	44	46		
13	13	14	22	13	22	92	70	136	268	107	44	223		
14	14	16	24	13	23	125	66	131	244	102	42	196		
15	14	17	26	13	23	170	64	136	231	98	39	49		
16	15	20	26	13	23	230	61	144	220	95	23	40		
17	16	19	25	13	24	380	59	153	204	90	10	43		
18	15	17	24	13	25	680	59	664	198	83	6.2	81		
19	15	15	23	13	25	677	58	1810	186	86	23	369		
20	15	10	22	13	26	746	49	1460	174	84	35	313		
21	14	11	21	13	27	833	39	900	170	76	33	86		
22	14	12	20	13	28	732	48	578	168	84	32	67		
23	14	13	19	13	29	429	41	443	162	83	32	64		
24	19	14	18	13	28	158	48	837	156	80	35	64		
25	15	15	17	13	27	145	46	1030	149	78	32	67		
26	14	16	16	13	26	131	44	916	149	72	29	66		
27	14	17	16	13	24	116	55	838	147	67	33	64		
28	14	19	15	13	23	105	62	770	149	66	32	60		
29	14	22	14	13	---	102	56	718	142	62	27	55		
30	15	21	14	14	---	104	56	690	135	67	30	53		
31	17	---	14	15	---	105	---	690	---	65	31	---		
TOTAL	497.1	464	607	415	628	6432	2111	14810	8573	2971	1237.2	2318		
MEAN	16.0	15.5	19.6	13.4	22.4	207	70.4	478	286	95.8	39.9	77.3		
MAX	43	22	26	15	29	833	104	1810	823	133	64	369		
MIN	9.3	10	14	13	15	21	39	52	135	62	6.2	24		
CFSM	.01	.01	.02	.01	.02	.16	.05	.37	.22	.07	.03	.06		
IN.	.01	.01	.02	.01	.02	.18	.06	.42	.24	.08	.04	.07		
AC-FT	986	920	1200	823	1250	12760	4190	29380	17000	5890	2450	4600		
CAL YR 1977	TOTAL	11876.3	MEAN	32.5	MAX	161	MIN	1.7	CFSM	.03	IN	.34	AC-FT	23560
WTR YR 1978	TOTAL	41063.3	MEAN	113	MAX	1810	MIN	6.2	CFSM	.09	IN	1.17	AC-FT	81450

YELLOWSTONE RIVER BASIN

06296003 ROSEBUD CREEK AT MOUTH, NEAR ROSEBUD, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 05...	0855	--	9.8	0	1080	8.3	4.5	8.0	400	10.4	96
NOV 02...	0745	99001	14	--	1395	--	--	4.5	--	--	--
02...	1300	99001	14	--	1320	8.5	5.5	9.0	--	10.4	--
DEC 06...	0945	--	20	83	1370	8.4	-18.0	.0	90	13.0	98
FEB 14...	1530	--	22	1	1420	8.1	-10.0	.0	40	12.4	93
MAR 08...	1400	--	24	3	1470	8.1	10.0	.0	65	10.0	75
18...	1620	--	681	3	257	8.2	6.0	3.0	2100	9.8	80
APR 13...	1320	--	72	1	1160	8.5	9.0	8.0	370	10.4	96
MAY 10...	1245	--	196	2	1070	8.0	16.0	12.0	1900	9.0	92
JUN 07...	1510	--	318	2	1530	8.2	22.0	20.5	65	7.6	93
AUG 24...	1130	99001	35	--	1460	8.5	21.5	18.5	--	--	--
SEP 07...	1110	--	27	1	1490	8.5	27.0	22.0	45	8.4	105

DATE	OXYGEN DEMAND, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT 05...	3.1	250	4	44	34	130	3.6	7.4	300	0
NOV 02...	--	580	--	69	100	110	2.0	11	--	--
02...	--	540	140	71	97	120	2.3	11	450	18
DEC 06...	1.9	660	190	84	110	100	1.7	11	560	10
FEB 14...	1.1	640	180	93	100	100	1.7	9.8	560	0
MAR 08...	1.8	640	180	91	100	110	1.9	10	560	0
18...	5.8	58	0	12	6.9	30	1.7	4.3	110	0
APR 13...	2.7	540	190	78	84	78	1.5	8.6	410	6
MAY 10...	3.0	340	82	62	46	120	2.8	9.2	320	0
JUN 07...	2.0	730	300	110	110	95	1.5	12	520	0
AUG 24...	--	630	280	72	110	110	1.9	11	426	5
SEP 07...	1.6	590	220	71	100	120	2.2	12	420	16

YELLOWSTONE RIVER BASIN

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06296003 ROSEBUD CREEK AT MOUTH, NEAR ROSEBUD, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 05...	250	2.4	300	5.1	.6	6.7	676	.92	17.9	1.1
NOV 02...	--	--	380	6.2	.7	13	--	1.29	37.0	.07
02...	397	2.5	370	6.4	.7	12	918	1.23	34.1	.05
DEC 06...	480	3.7	390	6.5	.5	17	1010	1.37	55.4	.05
FEB 14...	460	7.1	370	6.2	.7	21	977	1.33	58.8	.33
MAR 08...	460	7.1	380	6.6	.6	17	992	1.35	64.3	.43
18...	90	1.1	39	2.5	.2	.3	150	.20	276	.27
APR 13...	350	2.1	340	4.7	.5	13	815	1.11	158	.34
MAY 10...	260	5.1	320	5.2	.5	10	731	.99	387	.29
JUN 07...	430	5.2	410	7.6	.5	7.7	1010	1.37	867	.01
AUG 24...	360	2.2	480	6.8	.6	14	1020	1.60	112	.02
SEP 07...	370	2.3	490	7.2	.6	12	1040	1.41	75.8	.00

DATE	NITRO- GEN, AMMONIA (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT 05...	.03	1.1	1.1	2.2	.30	--	190	60	--	--
NOV 02...	.00	.46	.46	.53	.07	.01	220	50	--	--
02...	.01	.65	.66	.71	.12	.01	210	40	6.2	2.0
DEC 06...	.00	.21	.21	.26	.00	--	220	30	--	--
FEB 14...	.09	.13	.22	.55	.07	--	190	30	--	--
MAR 08...	.08	.58	.66	1.1	.11	--	190	110	--	--
18...	.38	6.1	6.5	6.8	2.1	--	110	420	--	--
APR 13...	.01	1.4	1.4	1.7	.43	--	150	30	--	--
MAY 10...	.03	3.2	3.2	3.5	1.5	--	150	20	--	--
JUN 07...	.03	.97	1.0	1.0	.09	--	210	40	--	--
AUG 24...	.01	.81	.82	.84	.08	.01	220	30	--	--
SEP 07...	.01	.79	.80	.80	.03	--	310	20	--	--

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
OCT 05...	0855	--	50	--	1	--	10	2	--
FEB 14...	1530	--	0	--	2	--	0	1	--
MAR 18...	1620	4800	210	2	3	10	10	2	100
APR 13...	1320	--	0	--	4	--	0	0	--

YELLOWSTONE RIVER BASIN

06296003 ROSEBUD CREEK AT MOUTH, NEAR ROSEBUD, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHROMIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
OCT 05...	10	4	--	12	--	30	--	10	--
FEB 14...	0	2	--	4	--	60	--	20	--
MAR 18...	30	9	71000	2	40	7	1400	20	.0
APR 13...	0	1	--	1	--	50	--	40	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 05...	.0	--	2	4	--	2	.6	--	10
FEB 14...	.0	--	4	2	--	0	1.0	--	10
MAR 18...	.0	4	1	10	3	--	1.0	290	40
APR 13...	.1	--	2	1	--	0	2.0	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM
OCT 05...	0855	8.0	9.8	680	18	--	--	--	100
DEC 06...	0945	.0	20	202	11	--	--	--	97
FEB 14...	1530	.0	22	86	5.2	--	--	--	99
MAR 08...	1400	.0	24	155	10	--	--	--	91
MAR 18...	1620	3.0	681	3700	6800	--	--	--	97
APR 13...	1320	8.0	72	572	111	--	--	--	99
MAY 10...	1245	12.0	196	3410	1810	88	98	100	--
JUN 07...	1510	20.5	318	238	204	--	--	--	97
SEP 07...	1110	22.0	27	119	8.7	--	--	--	--

06296120 YELLOWSTONE RIVER NEAR MILES CITY, MT

LOCATION.--Lat 46°23'51", long 105°53'36", in SE¼SW¼ sec.31, T.8 N., R.47 E., Custer County, Hydrologic Unit 10100001, at Keogh Bridge, 1.6 mi (2.6 km) upstream from Tongue River, 2.0 mi (3.2 km) west of Miles City, and at mile 183.1 (294.6 km).

DRAINAGE AREA.--42,847 mi² (110,974 km²).

PERIOD OF RECORD.--Water years 1969 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to current year.

WATER TEMPERATURES: October 1968 to current year.

REMARKS.--Water discharge computed by subtracting the discharge of Tongue River at Miles City (station 06308500) from that of Yellowstone River at Miles City (station 06309000). Flow affected by reservoirs and diversions for irrigation upstream from station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,040 micromhos Apr. 9, 1976; minimum daily, 226 micromhos May 30, 1969.

WATER TEMPERATURES: Maximum daily, 28.5°C Aug. 10, 1978; minimum daily, 0.0°C on many days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 991 micromhos May 1; minimum daily, 339 micromhos July 3.

WATER TEMPERATURES: Maximum daily, 28.5°C Aug. 10; minimum daily, 0.0°C Nov. 21-24.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO) CODE NUMBER	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)
OCT											
08...	1500	6140	1	638	8.6	16.5	12.0	40	10.2	103	14
20...	0800	5750	3	650	8.6	6.0	10.0	8	10.6	102	20
NOV											
05...	1345	4840	0	660	8.7	16.0	8.0	4	11.6	108	17
23...	0830	1400	2	780	8.4	-12.0	.0	3	13.8	103	34
DEC											
03...	0900	6130	3	725	8.3	-1.5	.0	15	12.8	96	11
22...	1415	6000	71	770	7.8	5.0	.0	6	13.0	97	41
JAN											
06...	0845	4840	1	920	8.0	-14.0	.0	2	12.2	91	27
17...	1220	4840	2	895	8.1	-10.0	1.0	2	12.2	93	0
FEB											
06...	0900	6450	3	980	8.1	-8.0	.0	3	11.2	84	12
13...	1400	6660	83	770	8.3	-12.0	.0	2	11.7	87	15
MAR											
16...	1000	16300	0	780	8.0	-1.0	.0	65	10.7	60	31
21...	1515	21000	0	700	7.8	7.0	1.0	55	11.0	84	69
APR											
07...	1020	11100	1	850	8.3	12.0	9.5	75	10.0	94	11
18...	1400	9240	60	840	8.3	10.0	9.5	20	11.0	104	13
MAY											
05...	0700	12600	3	770	8.2	8.5	12.0	130	9.3	94	38
16...	1130	13100	2	672	8.0	13.0	17.5	95	8.2	93	45
21...	1800	77300	1	715	8.4	27.0	15.0	1200	7.9	85	100
JUN											
07...	0900	30200	1	650	8.3	13.5	17.5	55	8.3	93	20
21...	1215	39300	0	402	8.3	26.0	17.0	60	9.1	102	40
JUL											
14...	0745	38100	0	430	8.2	17.0	20.0	40	7.8	93	12
20...	0820	32600	61	450	8.3	17.0	18.0	40	8.2	93	21
AUG											
08...	0800	16200	1	500	8.5	20.0	22.0	20	7.5	93	36
14...	1415	13300	2	502	8.1	21.5	22.0	15	8.0	99	19
SEP											
07...	0900	8630	0	571	8.7	21.5	22.0	6	8.4	105	17
16...	1400	11200	61	650	8.3	11.0	14.0	5	9.2	99	27

YELLOWSTONE RIVER BASIN

06296120 YELLOWSTONE RIVER NEAR MILES CITY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT											
08...	K30	K21	230	70	54	22	53	1.5	3.6	190	0
20...	1400	K7	230	71	54	22	53	1.5	3.7	180	4
NOV											
05...	K2	<1	230	74	54	23	54	1.6	3.6	180	5
23...	K17	K3	--	--	--	--	--	--	--	--	--
DEC											
03...	220	K11	240	89	60	23	58	1.6	3.6	190	0
22...	K20	<1	--	--	--	--	--	--	--	--	--
JAN											
06...	48	K5	330	150	83	30	75	1.8	4.5	220	0
17...	26	K6	--	--	--	--	--	--	--	--	--
FEB											
08...	220	K17	340	150	84	31	79	1.9	4.5	230	0
13...	28	K6	--	--	--	--	--	--	--	--	--
MAR											
16...	1500	47	260	110	63	24	65	1.8	4.8	180	0
21...	1600	155	--	--	--	--	--	--	--	--	--
APR											
07...	K100	K3	280	120	66	28	68	1.8	3.9	200	0
18...	K16	K1	--	--	--	--	--	--	--	--	--
MAY											
05...	2400	300	250	94	57	26	66	1.8	4.0	190	0
16...	K350	100	--	--	--	--	--	--	--	--	--
21...	--	--	210	100	51	20	68	2.0	6.5	130	1
JUN											
07...	4900	K200	--	--	--	--	--	--	--	--	--
21...	K630	73	--	--	--	--	--	--	--	--	--
JUL											
14...	1500	60	--	--	--	--	--	--	--	--	--
20...	600	120	150	48	37	13	37	1.3	2.4	120	0
AUG											
08...	K14000	K9	160	50	40	15	36	1.2	2.8	130	3
14...	K73	K4	--	--	--	--	--	--	--	--	--
SEP											
07...	K63	K27	--	--	--	--	--	--	--	--	--
18...	730	150	--	--	--	--	--	--	--	--	--
DATE	ALKA- LITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	SOLIDS, SUSP. TOTAL, RESIDUE AT 110 DEG. C (MG/L)
UCT											
08...	160	.6	160	9.1	.5	9.5	409	406	.56	6780	75
20...	150	.8	180	8.8	.5	6.4	395	421	.54	6130	27
NOV											
05...	160	.6	170	9.3	.5	7.9	422	416	.57	5520	7
23...	120	--	--	--	--	--	504	--	.69	1910	4
DEC											
03...	160	1.5	200	9.3	.5	13	440	461	.60	7280	39
22...	140	--	--	--	--	--	507	--	.69	8210	20
JAN											
06...	180	3.5	270	12	.6	14	596	598	.81	7790	21
17...	186	--	--	--	--	--	607	--	.83	7930	23
FEB											
08...	190	2.9	290	15	.6	13	635	631	.86	11100	42
13...	180	--	--	--	--	--	597	--	.81	10700	14
MAR											
16...	150	2.9	220	11	.5	9.5	495	487	.67	21800	143
21...	150	--	--	--	--	--	448	--	.61	25400	83
APR											
07...	160	1.6	260	11	.4	11	551	547	.75	16500	147
18...	170	--	--	--	--	--	558	--	.76	13900	46
MAY											
05...	160	1.9	230	9.7	.5	12	491	499	.67	17000	323
16...	160	--	--	--	--	--	440	--	.60	15600	218
21...	110	.8	240	5.8	.3	8.4	465	465	.63	97100	2420
JUN											
07...	134	--	--	--	--	--	415	--	.56	33800	--
21...	130	--	--	--	--	--	257	--	.35	27300	172
JUL											
14...	--	--	--	--	--	--	264	--	.36	27200	16
20...	98	1.0	120	5.2	.3	11	282	285	.38	25000	105
AUG											
08...	110	.7	130	6.1	.3	9.1	314	307	.43	13700	46
14...	120	--	--	--	--	--	323	--	.44	11600	41
SEP											
07...	--	--	--	--	--	--	384	--	.52	8950	29
18...	150	--	--	--	--	--	413	--	.56	12500	291

06296120 YELLOWSTONE RIVER NEAR MILES CITY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, NO2+NO3 (MG/L AS N)	NITRO- GEN, AMMONIA (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT											
08...	.09	.01	.26	.27	.36	.00	190	10	--	2.5	.9
20...	.02	.01	.27	.28	.30	.03	190	20	--	17	.8
NOV											
05...	.05	.01	.14	.15	.20	.02	200	30	--	2.3	--
23...	.26	.01	.47	.48	.74	.02	--	--	2.3	--	--
DEC											
03...	.59	.08	.10	.18	.77	.04	180	40	2.4	--	--
22...	.45	.08	.33	.41	.86	.03	--	--	2.2	--	--
JAN											
06...	.72	.14	.70	.84	1.6	.03	220	10	--	2.6	.3
17...	.58	.12	.04	.16	.74	.04	--	--	2.1	--	--
FEB											
08...	.54	.07	.09	.16	.70	.03	200	10	3.1	--	--
13...	.53	.04	.20	.24	.77	.03	--	--	5.0	--	--
MAR											
16...	.49	.17	.45	.62	1.1	.12	170	30	5.9	--	--
21...	.14	.11	.67	.78	.92	.26	--	--	--	--	--
APR											
07...	.40	.03	.65	.68	1.1	.13	170	30	--	3.6	2.0
16...	.32	.04	.16	.20	.52	.10	--	--	4.8	--	--
MAY											
05...	.39	.11	.99	1.1	1.5	.26	160	20	8.3	--	--
16...	.29	.05	.57	.62	.91	.22	--	--	9.2	--	--
21...	.67	.03	4.8	4.8	5.5	1.4	140	20	--	5.5	>10
JUN											
07...	.29	.01	.64	.65	.94	.24	--	--	5.8	--	--
21...	.19	.04	4.1	4.1	4.3	.32	--	--	6.7	--	--
JUL											
14...	.22	.03	.51	.54	.76	.18	--	--	4.8	--	--
20...	.26	.00	1.9	1.9	2.2	.11	60	20	--	4.5	1.3
AUG											
08...	.08	.00	.37	.37	.45	.08	100	<10	3.4	--	--
14...	.08	.00	.40	.40	.48	.04	--	--	4.2	--	--
SEP											
07...	.01	.02	.38	.40	.41	.06	--	--	3.7	--	--
18...	.38	.07	.71	.78	1.2	.18	--	--	5.2	--	--

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
NOV											
05...	1345	120	10	8	8	0	0	10	1	20	10
MAY											
21...	1800	40	8	5	3	0	0	1	1	60	0

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
NOV										
05...	<10	1	170	<100	3	50	60	40	4	.0
MAY										
21...	70	4	49000	58	3	80	40	1400	10	.3
DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, TOTAL RECOV- ERABLE (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV										
05...	.0	7	2	<50	3	0	2	1.3	10	10
MAY										
21...	.0	4	0	75	2	2	1	1.0	210	20

YELLOWSTONE RIVER BASIN

06296120 YELLOWSTONE RIVER NEAR MILES CITY, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	681	658	712	911	879	897	774	991	687	389	480	588
2	688	661	715	908	888	---	777	909	769	343	472	590
3	735	677	726	909	896	923	765	858	771	339	493	597
4	683	677	729	903	942	---	799	811	742	370	511	612
5	688	669	688	903	943	959	826	761	749	371	513	612
6	662	673	788	906	946	---	831	771	709	367	505	616
7	669	681	773	989	949	975	851	766	640	385	519	622
8	658	678	848	983	948	---	878	808	566	424	518	642
9	657	680	852	978	882	919	878	777	491	422	514	641
10	662	681	869	904	882	919	869	831	460	438	513	642
11	663	684	862	903	882	---	896	818	442	433	514	624
12	659	684	931	906	880	836	899	763	407	427	519	630
13	656	684	935	838	886	---	902	754	441	427	532	621
14	653	719	952	844	886	768	901	732	442	432	531	709
15	653	722	952	896	895	---	878	735	478	452	527	702
16	657	710	782	894	972	761	870	690	467	449	524	743
17	658	711	785	892	963	794	845	666	396	460	530	700
18	640	709	757	890	965	811	851	603	403	456	523	612
19	639	704	756	847	966	750	853	615	410	491	537	615
20	636	---	757	846	963	739	856	763	429	495	537	620
21	636	726	770	851	971	691	827	752	424	508	537	722
22	636	791	767	925	946	679	830	802	417	507	530	720
23	638	791	801	921	942	754	830	829	422	520	537	688
24	634	813	806	917	924	751	830	831	376	513	548	682
25	635	819	860	922	924	773	828	756	378	551	552	663
26	641	816	858	921	902	789	821	693	372	554	564	643
27	643	903	852	867	908	756	812	647	378	548	571	646
28	656	935	---	872	909	763	812	669	394	553	577	652
29	658	721	---	888	---	771	818	669	397	541	568	661
30	657	721	---	884	---	744	764	669	390	482	569	658
31	658	---	---	889	---	781	---	671	---	486	582	---
MEAN	658	726	810	900	923	803	840	755	495	456	531	649
WTR YR 1978	MEAN	708	MAX	991	MIN	339						

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.5	11.0	2.0	.5	.5	.5	12.0	13.5	13.0	23.0	22.5	24.5
2	12.5	10.0	1.5	.5	.5	.5	12.5	15.5	15.0	22.5	21.5	24.5
3	13.5	9.0	2.0	.5	.5	.5	11.5	14.5	16.5	22.0	21.5	27.0
4	12.0	8.5	1.0	.5	.5	.5	12.5	13.0	18.0	21.5	23.0	26.5
5	11.0	9.0	.5	.5	.5	.5	12.5	12.5	19.5	21.0	24.0	26.0
6	11.0	9.0	.5	.5	.5	1.0	11.5	13.0	21.0	19.0	25.0	26.5
7	11.0	7.5	.5	.5	.5	1.0	11.5	10.5	19.0	19.5	25.5	26.0
8	11.0	5.5	.5	.5	.5	1.5	12.0	10.5	20.0	20.0	26.0	25.5
9	11.0	5.0	.5	.5	.5	2.0	11.0	14.5	20.0	20.0	27.5	25.0
10	9.5	4.5	.5	.5	.5	2.0	11.5	14.5	19.0	20.5	28.5	23.5
11	7.0	6.0	1.0	.5	.5	1.5	10.5	13.5	17.0	21.0	28.0	18.0
12	8.5	7.0	1.0	.5	.5	1.0	9.0	14.0	16.5	22.5	27.0	14.5
13	9.0	5.0	1.5	.5	.5	1.0	11.5	16.0	19.5	22.5	26.0	13.0
14	9.5	5.5	1.0	.5	.5	1.0	11.5	18.5	22.5	23.0	22.0	15.5
15	9.5	5.5	1.0	.5	.5	---	9.5	20.0	23.5	23.5	23.0	16.0
16	10.0	4.5	1.5	.5	.5	2.0	11.5	17.0	24.5	24.0	22.5	15.5
17	11.0	4.0	1.5	.5	.5	2.0	11.0	15.5	18.0	22.0	21.5	16.5
18	11.0	3.5	1.0	.5	1.0	1.5	10.5	15.0	17.0	22.0	20.0	14.0
19	11.0	.5	1.0	.5	1.0	2.5	11.0	11.5	16.5	18.0	23.0	13.0
20	11.0	---	1.0	.5	1.0	2.5	11.0	13.5	18.5	19.5	24.0	12.0
21	10.0	.0	1.0	.5	1.0	2.5	11.0	14.0	19.0	19.5	24.0	13.5
22	10.0	.0	1.0	.5	1.5	2.0	10.5	19.0	20.0	20.0	22.5	16.0
23	10.5	.0	.5	.5	1.5	1.5	11.0	20.0	22.0	22.0	23.5	16.0
24	13.0	.0	.5	.5	1.0	2.0	13.0	20.0	20.0	23.0	25.0	16.5
25	14.5	1.0	1.0	.5	.5	4.0	14.5	18.0	20.0	23.5	25.5	18.0
26	13.0	2.0	1.0	.5	.5	8.5	13.5	17.0	19.0	24.0	24.5	18.0
27	11.5	2.0	1.0	.5	.5	9.5	14.5	18.0	19.5	24.0	20.5	18.0
28	11.0	1.5	---	.5	.5	10.5	14.0	18.5	22.0	24.0	21.5	18.0
29	11.0	1.5	---	.5	---	12.5	13.5	18.5	22.5	24.0	22.5	18.0
30	11.0	2.0	---	.5	---	14.0	13.5	14.0	24.0	24.0	24.5	18.0
31	9.5	---	---	.5	---	12.5	---	13.0	---	24.0	24.0	---
MEAN	11.0	4.5	1.0	.5	.5	3.5	12.0	15.5	19.5	22.0	24.0	19.0
WTR YR 1978	MEAN	11.5	MAX	28.5	MIN	.0						

06296120 YELLOWSTONE RIVER NEAR MILES CITY, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

		PERIPHYTON				
DATE	TIME	LENGTH	PERI-	PERI-	CHLOR-A	CHLOR-B
		OF	PHYTON	PHYTON	PERI-	PERI-
		EXPJ-	BIOMASS	PHYTON	PHYTON	PHYTON
		SURE	TOTAL	BIUMASS	CHROMO-	CHROMO-
	(DAYS)	DRY	ASH	GRAPHIC	GRAPHIC	
		WEIGHT	WEIGHT	FLUOROM	FLUORUM	
		G/SQ M	G/SQ M	(MG/M2)	(MG/M2)	
MAY						
05...	0700	28	.236	.157	.000	.000
SEP						
07...	0900	30	31.2	29.3	3.59	.000

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM
OCT 08...	1500	12.0	6140	83	1380	--	--	--	--	--	--	97
20...	0800	10.0	5750	26	404	--	--	--	--	--	--	94
NOV 05...	1345	8.0	4840	6	78	--	--	--	--	--	--	76
DEC 03...	0900	.0	6130	61	1010	--	--	--	--	--	--	69
JAN 06...	0845	.0	4840	30	392	--	--	--	--	--	--	--
FEB 08...	0900	.0	6450	6	104	--	--	--	--	--	--	--
MAR 16...	1000	.0	16300	159	7000	--	--	--	--	--	--	84
APR 07...	1020	9.5	11100	223	6680	--	--	--	--	--	--	74
MAY 05...	0700	12.0	12800	392	13500	--	--	--	--	--	--	83
21...	1800	15.0	77300	2830	591000	58	73	84	93	99	100	--
JUN 07...	0900	17.5	30200	291	23700	--	--	--	--	--	--	72
JUL 20...	0820	18.0	32800	167	14800	--	--	--	--	--	--	73
AUG 08...	0800	22.0	16200	88	3850	--	--	--	--	--	--	78
SEP 07...	0900	22.0	8630	55	1280	--	--	--	--	--	--	88

YELLOWSTONE RIVER BASIN

06306100 SQUIRREL CREEK NEAR DECKER, MT

LOCATION.--Lat 45°03'05", long 106°55'36", in NW¼NW¼ sec.14, T.9 S., R.39 E., Bighorn County, Hydrologic Unit 10090101, on left bank 0.4 mi (0.6 km) upstream from Powers Cormack ditch, 0.5 mi (0.8 km) northwest of C X Ranch, 4 mi (6 km) northwest of Decker, and 7 mi (11 km) upstream from mouth.

DRAINAGE AREA.--33.6 mi² (87.0 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1975 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Altitude of gage is 3,680 ft (1,122 m), from topographic map.

REMARKS.--Water-discharge records poor except flows over 10 ft³/s (0.28 m³/s), which are good. Two small diversions above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 584 ft³/s (16.5 m³/s) May 18, 1978, gage height, 7.27 ft (2.216 m); no flow Jan. 8, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 584 ft³/s (16.5 m³/s) May 18, gage height, 7.27 ft (2.216 m); minimum daily, 0.40 ft³/s (0.011 m³/s) Nov. 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.99	1.3	1.2	.70	.99	.94	25	15	35	7.0	3.0	1.3
2	.99	1.3	1.3	.60	.99	.80	26	13	28	6.8	2.9	1.3
3	.99	1.2	1.3	.60	.99	.80	24	11	25	6.8	3.0	1.2
4	.94	1.2	1.2	.60	.99	.80	20	12	23	9.6	3.1	1.1
5	.84	1.2	.80	.71	.99	.80	17	17	21	7.4	2.7	1.1
6	.84	1.2	.60	.75	.99	.80	19	28	19	5.8	2.2	1.1
7	.64	1.2	.60	.75	1.1	.94	15	28	18	5.2	2.2	.99
8	.94	1.2	.60	.75	1.1	1.1	15	71	18	4.7	2.1	.99
9	1.3	1.2	.60	.71	.99	1.1	14	85	17	4.4	2.1	1.1
10	1.3	1.1	1.0	.71	.99	1.2	14	39	16	4.2	2.0	1.2
11	1.1	1.2	1.2	.71	.99	1.3	12	31	15	3.9	1.9	1.3
12	1.1	1.3	1.4	.75	.94	1.3	11	27	14	3.7	1.8	4.8
13	1.1	1.3	1.4	.80	.94	1.4	10	22	14	3.5	1.7	6.2
14	1.1	1.4	1.5	.75	.94	1.4	9.4	20	14	3.5	2.2	4.1
15	.99	1.3	1.6	.71	.94	1.3	12	18	15	3.5	3.1	2.4
16	.99	1.3	1.4	.71	.94	1.2	14	16	14	3.5	2.6	2.0
17	.99	1.3	1.3	.75	.94	1.2	15	29	13	3.5	2.3	1.9
18	.94	1.0	1.3	.80	.99	1.4	16	299	12	3.5	2.2	2.3
19	.94	1.0	1.3	.80	.99	1.7	11	323	11	3.5	2.1	4.3
20	.89	.80	1.3	.80	.99	2.9	9.6	142	12	4.0	2.0	4.2
21	.84	.60	1.3	.84	.99	4.4	9.2	74	11	4.5	1.8	3.7
22	.84	.40	1.2	.80	1.1	5.3	9.9	53	9.8	4.7	1.7	2.9
23	.84	.40	1.3	.80	1.1	6.1	9.2	46	9.4	4.3	1.6	2.3
24	.84	.60	1.2	.80	1.1	7.2	8.0	38	9.2	3.5	1.6	2.2
25	.84	.60	1.2	.89	1.1	7.7	7.5	33	9.6	3.3	1.5	2.0
26	.84	.80	1.1	.84	1.1	8.4	7.4	29	12	3.0	1.4	1.9
27	.84	1.1	1.0	.84	1.1	15	17	28	10	2.8	1.3	1.9
28	.84	1.1	.90	.89	.99	26	24	29	8.4	2.8	1.6	1.9
29	.84	1.2	.80	.89	---	26	30	30	7.6	3.1	1.7	1.7
30	.89	1.2	.80	.94	---	26	19	32	7.2	3.3	1.5	1.7
31	1.1	---	.70	.94	---	29	---	35	---	3.0	1.4	---
TOTAL	29.66	32.00	34.40	23.93	28.30	187.48	450.2	1673	448.2	136.3	64.3	67.08
MEAN	.96	1.07	1.11	.77	1.01	6.05	15.0	54.0	14.9	4.40	2.07	2.24
MAX	1.3	1.4	1.6	.94	1.1	29	30	323	35	9.6	3.1	6.2
MIN	.84	.40	.60	.60	.94	.80	7.4	11	7.2	2.8	1.3	.99
AC-FT	59	63	68	47	56	372	893	3320	869	270	128	133
CAL YR 1977	TOTAL	1668.93	MEAN	4.57	MAX	55	MIN	.00	AC-FT	3310		
WTR YR 1978	TOTAL	3174.85	MEAN	8.70	MAX	323	MIN	.40	AC-FT	6300		

06306100 SQUIRREL CREEK NEAR DECKER, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
20...	1145	.89	3	1360	8.5	14.0	8.0	3	9.6	93
DEC										
19...	1310	1.3	1	1260	8.3	-4.0	.0	7	11.8	92
FEB										
22...	1315	1.5	0	1480	8.2	7.0	.0	9	10.0	78
MAR										
28...	1645	29	0	687	8.2	12.0	4.0	500	10.2	89
APR										
18...	1305	17	3	760	8.5	9.0	5.0	75	11.0	99
JUN										
20...	1540	11	0	1200	8.1	20.0	14.0	9	9.6	107
JUL										
18...	1325	3.7	0	1200	8.2	27.0	18.5	40	8.0	98
AUG										
10...	0810	1.9	1	1130	--	15.0	16.0	15	6.0	93
SEP										
26...	1400	1.9	1	1240	8.3	16.0	14.0	1	8.6	97

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT									
20...	1.2	740	290	98	120	54	.9	8.5	550
DEC									
19...	.2	690	240	94	110	49	.8	7.1	540
FEB									
22...	.5	720	270	91	120	63	1.0	7.7	550
MAR									
28...	5.8	350	140	58	50	18	.4	6.5	260
APR									
18...	1.1	420	130	74	56	18	.4	4.3	340
JUN									
20...	2.6	620	300	98	91	28	.5	5.6	390
JUL									
18...	1.1	580	240	82	90	36	.7	6.3	410
AUG									
10...	.9	580	230	71	98	41	.7	7.6	430
SEP									
26...	1.4	640	260	92	100	44	.8	7.5	460

YELLOWSTONE RIVER BASIN

06306100 SQUIRREL CREEK NEAR DECKER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SJM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT									
20...	1	450	2.8	350	3.7	.5	16	923	1.26
DEC									
19...	0	440	4.3	330	3.1	.5	14	874	1.19
FEB									
22...	0	450	5.6	370	3.4	.5	14	941	1.28
MAR									
28...	0	210	2.6	160	2.9	.3	7.7	432	.59
APR									
18...	5	290	1.8	170	2.0	.2	9.4	507	.69
JUN									
20...	0	320	5.0	290	3.1	.3	11	719	.98
JUL									
18...	0	340	4.1	290	3.3	.3	16	726	.99
AUG									
10...	--	350	--	310	2.7	.4	11	754	1.03
SEP									
26...	0	380	3.7	350	3.9	.4	11	836	1.14

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT									
20...	2.22	.00	.00	.33	.33	.33	.04	140	70
DEC									
19...	3.07	.06	.02	.15	.17	.23	.00	90	50
FEB									
22...	3.81	.14	.07	.11	.18	.32	.04	110	110
MAR									
28...	33.8	.49	.09	2.3	2.4	2.9	.63	80	60
APR									
18...	23.3	.11	.01	.71	.72	.83	.12	70	30
JUN									
20...	21.4	.16	.00	.29	.29	.45	.03	80	30
JUL									
18...	7.25	.33	.00	.55	.55	.86	.05	90	20
AUG									
10...	3.87	.08	.07	.43	.50	.58	.03	110	<10
SEP									
26...	4.29	.03	.01	.43	.44	.47	.02	130	40

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
UCT										
20...	1145	0	--	1	--	0	--	0	--	20
FEB										
22...	1315	10	--	2	--	0	--	2	--	10
MAR										
28...	1645	20	4	1	0	0	2	0	30	0
APR										
18...	1305	0	--	2	--	0	--	0	--	0
JUL										
18...	1325	10	--	4	--	0	--	2	--	0

YELLOWSTONE RIVER BASIN

06306100 SQUIRREL CREEK NEAR DECKER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS Pb)	LEAD, DIS- SOLVED (UG/L AS Pb)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
OCT 20...	--	2	--	--	1	--	70	--	20	--
FEB 22...	--	1	--	--	12	--	80	--	130	--
MAR 28...	23	13	18000	17	1	40	40	650	80	.0
APR 18...	--	0	--	--	8	--	40	--	20	--
JUL 18...	--	5	--	--	14	--	60	--	40	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MDLYB- DENUM, DIS- SOLVED (UG/L AS MU)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 20...	.0	2	--	1	--	0	.9	--	0
FEB 22...	.0	3	--	0	--	0	1.0	--	0
MAR 28...	.0	4	18	3	5	7	2.0	60	20
APR 18...	.0	0	--	0	--	0	1.0	--	0
JUL 18...	.0	5	--	3	--	0	1.0	--	20

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 20...	1145	8.0	.89	5	.01	76
DEC 19...	1310	.0	1.3	30	.11	--
FEB 22...	1315	.0	1.5	21	.09	94
MAR 28...	1645	4.0	29	970	76	97
APR 18...	1305	5.0	17	130	6.0	98
JUN 20...	1540	14.0	11	98	2.9	--
JUL 18...	1325	18.5	3.7	89	.89	96
AUG 10...	0810	16.0	1.9	73	.37	--
SEP 26...	1400	14.0	1.9	16	.08	--

YELLOWSTONE RIVER BASIN

06306250 PRAIRIE DOG CREEK NEAR ACME, WY

LOCATION.--Lat 44°59'02", long 106°50'21", in NE¼SW¼SW¼ sec.23, T.58 N., R.83 W., Sheridan County, Hydrologic Unit 10090101, on right bank, 600 ft (183 m) upstream from county bridge, 0.9 mi (1.5 km) upstream from mouth, 2.8 mi (4.5 km) downstream from Coutant Creek, and 7.6 mi (12.2 km) northeast of Acme.

DRAINAGE AREA.--358 mi² (927 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1970 to current year. Records for May 1965 to September 1970 in files of Office of Wyoming State Engineer.

GAGE.--Water-stage recorder. Altitude of gage is 3,450 ft (1,052 m), from topographic map.

REMARKS.--Records fair except those for periods of no gage-height record and the winter period, which are poor. No gage-height record May 19,20. Diversions for irrigation of about 13,600 acres (55.0 km²), above station, of which about 60 acres (243,000 m²) lies below station. Flow supplemented by three transbasin diversions from North Piney Creek and South Piney Creek via Prairie Dog Creek ditch, Piney and Cruse ditch and Mead-Coffeen ditch.

AVERAGE DISCHARGE.--8 years, 46.6 ft³/s (1.320 m³/s), 33,760 acre-ft/yr (41.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,940 ft³/s (112 m³/s) May 19, 1978, gage height, 12.60 ft (3.840 m), from floodmark, from rating curve extended above 670 ft³/s (19.0 m³/s) on basis of slope-area determination of peak flow; minimum daily, 6.3 ft³/s (0.18 m³/s) June 4, 5, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,940 ft³/s (112 m³/s) May 19, gage height, 12.60 ft (3.840 m) from floodmark, from rating curve extended above 670 ft³/s (19.0 m³/s) on basis of slope-area determination of peak flow; minimum daily, 9.0 ft³/s (0.26 m³/s) Dec. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	30	36	10	12	12	57	148	227	47	27	41
2	43	27	35	10	14	10	49	97	197	43	31	39
3	49	27	34	13	21	10	45	75	173	40	35	41
4	51	26	34	16	24	10	42	69	154	35	40	38
5	46	26	29	20	23	10	39	126	138	32	39	36
6	44	26	16	20	24	10	34	245	126	24	41	27
7	46	26	16	17	25	12	32	281	117	21	40	24
8	47	26	9.0	15	25	15	31	310	111	21	38	27
9	57	24	14	15	23	19	30	342	108	28	34	29
10	58	25	19	16	21	24	30	298	102	32	35	31
11	56	29	30	19	19	29	30	217	96	39	39	33
12	53	29	40	22	17	35	30	171	90	42	38	41
13	42	28	43	21	16	39	30	147	86	40	37	61
14	43	28	48	19	15	43	30	123	79	36	40	57
15	43	28	52	18	14	48	30	106	71	33	50	55
16	43	27	50	17	14	61	30	94	67	28	56	50
17	40	26	47	17	14	177	29	117	65	29	56	43
18	37	27	43	17	14	197	30	826	61	23	56	45
19	35	25	27	16	15	244	28	3090	55	20	58	47
20	35	19	16	16	17	328	28	1530	50	21	60	53
21	35	14	16	16	19	321	29	681	49	27	58	51
22	34	14	17	18	20	292	29	501	47	38	60	47
23	34	21	18	20	21	343	32	404	51	48	63	44
24	35	32	17	22	19	157	37	347	41	48	65	43
25	35	37	17	24	17	95	33	290	38	40	58	41
26	33	36	17	25	19	88	29	248	36	38	52	40
27	33	35	17	25	17	93	29	221	39	28	43	38
28	31	36	17	21	15	108	142	204	37	20	40	38
29	31	38	17	16	---	103	148	187	35	18	43	38
30	31	39	15	12	---	89	189	182	41	18	42	37
31	31	---	12	12	---	75	---	216	---	23	42	---
TOTAL	1274	833	818.0	545	514	3097	1381	11893	2587	980	1416	1235
MEAN	41.1	27.8	26.4	17.6	18.4	99.9	46.0	384	86.2	31.6	45.7	41.2
MAX	58	39	52	25	25	343	189	3090	227	48	65	61
MIN	31	14	9.0	10	12	10	28	69	35	18	27	24
AC-FT	2530	1650	1620	1080	1020	6140	2740	23590	5130	1940	2810	2450
CAL YR 1977 TOTAL	13491.3			MEAN 37.0	MAX 215	MIN 8.6	AC-FT 26760					
WTR YR 1978 TOTAL	26573.0			MEAN 72.8	MAX 3090	MIN 9.0	AC-FT 52710					

06306250 PRAIRIE DOG CREEK NEAR ACME, WY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLJW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)
AUG 29...	1200	42	1100	8.1	16.0	510	280	100	63	55	1.1	6.0

DATE	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SU4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
AUG 29...	280	0	230	3.6	370	2.8	.2	11	803	746	1.09

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
AUG 29...	91.1	.60	.03	.30	.93	.03	.11	110	60	4.7	1.4

YELLOWSTONE RIVER BASIN

06306300 TONGUE RIVER AT STATE LINE, NEAR DECKER, MT

LOCATION.--Lat 45°00'32", long 106°50'08", in NW¼NE¼ sec.33, T.9 S., R.40 E., Big Horn County, Hydrologic Unit 10090101, on left bank 1 mi (2 km) north of Wyoming-Montana State line, 1.4 mi (2.4 km) upstream from Badger Creek, and 1.4 mi (2.3 km) southeast of Decker.

DRAINAGE AREA.--1,477 mi² (3,825 km²).

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 (1,045.202 m) National Geodetic Vertical Datum of 1929 (levels by Army Corps of Engineers).

REMARKS.--Water-discharge records good except those for winter period, which are poor. Flow regulated by many small reservoirs in Wyoming, combined capacity, about 15,000 acre-ft (18.5 hm³). Diversions for irrigation of about 64,300 acres (260 km²) above station.

AVERAGE DISCHARGE.--18 years, 526 ft³/s (14.90 m³/s), 381,100 acre-ft/yr (470 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft³/s (496 m³/s) May 19, 1978, gage height, 14.25 ft (4.343 m); minimum, 3.0 ft³/s (0.11 m³/s) Aug. 23, 1961, gage height, 1.83 ft (0.558 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 8	1415	3,210 90.9	6.93 2.112	June 11	0130	5,370 152	8.52 2.597
May 19	1200	*17,500 496	*14.25 4.343				

Minimum daily discharge, 60 ft³/s (1.70 m³/s) Nov. 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	234	218	270	130	140	150	482	1100	3260	2470	355	282
2	253	203	270	130	140	150	438	932	2890	2280	425	281
3	250	212	270	140	150	150	416	851	2690	2090	534	273
4	240	221	280	140	160	150	387	900	2630	1880	492	255
5	247	218	220	150	170	160	343	1320	2800	1790	451	245
6	250	218	160	160	190	190	324	1760	3130	1640	420	236
7	247	215	170	150	190	220	309	1800	3620	1540	399	239
8	253	212	110	150	180	240	298	2790	4150	1420	383	244
9	253	209	70	150	160	320	298	2010	4210	1380	335	246
10	260	185	70	150	160	320	320	1460	4530	1410	339	262
11	257	194	140	170	160	310	298	1370	5170	1330	280	284
12	250	209	230	180	160	300	284	1350	4460	1200	245	415
13	243	212	230	180	160	300	270	1230	3840	1080	221	454
14	247	206	240	170	150	280	260	1240	3920	1020	232	399
15	247	206	230	170	140	280	260	1500	4500	944	376	399
16	243	200	230	160	140	300	263	2120	4730	838	395	390
17	243	197	230	160	150	360	257	2920	4460	785	352	373
18	242	194	210	160	160	360	263	7000	4230	722	379	419
19	243	180	200	150	130	360	250	15400	3910	640	377	480
20	243	108	200	150	190	380	240	8180	3890	609	352	462
21	240	60	200	150	200	400	234	4660	3410	640	332	447
22	237	60	190	160	190	400	263	3830	3170	875	318	450
23	240	70	190	160	180	370	263	3750	3190	814	314	443
24	237	120	190	160	180	400	240	3990	3140	667	302	443
25	234	120	180	160	170	469	221	4250	3210	558	291	425
26	230	200	180	150	160	515	221	4320	3160	487	274	406
27	230	200	180	150	160	578	247	4160	2850	425	274	392
28	227	260	180	150	150	588	957	3960	2680	391	284	385
29	227	280	180	140	---	529	1820	3820	2640	379	294	378
30	224	280	130	140	---	496	1400	3990	2630	391	278	387
31	227	---	130	140	---	492	---	3820	---	375	285	---
TOTAL	7498	5667	5960	4760	4620	10517	12126	101783	107100	33070	10590	10794
MEAN	242	189	192	154	165	339	404	3283	3570	1067	342	360
MAX	260	280	280	180	200	588	1820	15400	5170	2470	534	480
MIN	224	60	70	130	140	150	221	851	2630	375	221	236
AC-FT	14870	11240	11820	9440	9160	20860	24050	201900	212400	65590	21010	21410
CAL YR 1977	TOTAL	156099	MEAN 428	MAX 2860	MIN 60	AC-FT 309600						
WTR YR 1978	TOTAL	314485	MEAN 862	MAX 15400	MIN 60	AC-FT 623800						

06306300 TONGUE RIVER AT STATE LINE, NEAR DECKER, MT--Continued

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEDUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	CULI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD- NESS (MG/L AS CACU3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
UCT										
02...	1030	253	740	8.2	9.0	7	10.8	120	370	120
NOV										
12...	1015	212	740	8.2	2.0	2	11.9	352	380	120
DEC										
11...	0930	140	850	8.0	.0	10	12.4	66	440	150
JAN										
03...	0800	140	800	7.7	.0	2	11.2	160	420	140
FEB										
04...	0930	160	920	7.6	.0	2	10.1	150	420	150
MAR										
05...	0830	160	940	7.9	.0	10	13.3	130	420	150
APR										
01...	0845	492	720	8.2	8.0	70	10.2	4470	380	150
MAY										
13...	0915	1240	620	8.1	8.0	50	9.9	11700	260	88
JUN										
10...	1030	4320	280	7.9	12.0	50	9.4	320	110	38
JUL										
22...	0945	882	550	8.3	13.5	15	8.9	130	230	66
AUG										
19...	0830	387	650	8.2	14.0	15	8.7	280	290	85
29...	1455	305	700	--	20.5	--	--	--	--	--
SEP										
16...	0900	399	660	8.4	13.5	10	8.7	100	320	100

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITIY (MG/L AS CACU3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)
UCT									
02...	75	45	39	.9	3.9	310	0	250	3.1
NOV									
12...	76	47	40	.9	3.3	310	6	260	3.3
DEC									
11...	89	53	43	.9	3.7	360	0	300	5.8
JAN									
03...	92	46	41	.9	3.2	340	0	280	11
FEB									
04...	81	52	40	.9	2.9	330	0	270	13
MAR									
05...	84	51	46	1.0	3.9	330	0	270	6.6
APR									
01...	69	50	42	.9	4.6	280	0	230	2.8
MAY									
13...	50	33	27	.7	2.3	210	0	170	2.7
JUN									
10...	25	12	8.6	.4	1.9	88	0	72	1.8
JUL									
22...	50	25	22	.6	.2	200	0	160	1.6
AUG									
19...	63	32	28	.7	2.9	250	0	200	2.5
29...	--	--	--	--	--	--	--	--	--
SEP									
16...	66	37	34	.8	3.6	250	9	220	1.7

YELLOWSTONE RIVER BASIN

06306300 TONGUE RIVER AT STATE LINE, NEAR DECKER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUSP. TOTAL, RESIDUE AT 110 DEG. C (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)
OCT									
02...	180	5.6	.3	5.3	52	506	.69	346	.20
NOV									
12...	200	4.1	.4	6.6	7	535	.73	306	.00
DEC									
11...	230	4.6	.4	13	51	619	.84	234	.54
JAN									
03...	190	9.0	.5	14	7	569	.77	215	.47
FEB									
04...	200	5.3	.7	13	16	560	.76	242	.77
MAR									
05...	240	8.3	.4	12	19	610	.83	264	.41
APR									
01...	240	3.9	.4	9.4	188	561	.76	745	.18
MAY									
13...	150	2.1	.4	12	24	370	.50	1240	.52
JUN									
10...	41	6.8	.1	.0	143	190	.26	2220	.84
JUL									
22...	99	4.1	.3	6.4	29	305	.41	726	.18
AUG									
19...	130	3.3	.4	5.4	10	386	.52	403	.14
29...	--	--	--	--	--	--	--	--	--
SEP									
16...	180	3.7	.4	5.2	13	469	.64	505	.59

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, TOTAL RECOV- ERABLE (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C)
OCT									
02...	.76	.13	.39	1.3	.03	130	40	3.4	.6
NOV									
12...	.37	.03	.03	.43	.01	110	--	--	--
DEC									
11...	.25	.29	.71	1.3	.06	170	--	--	--
JAN									
03...	1.4	.34	.38	2.1	.08	160	--	--	--
FEB									
04...	.07	.34	.42	.83	.06	100	--	--	--
MAR									
05...	.76	.24	.48	1.5	.18	140	--	--	--
APR									
01...	.78	.04	.23	1.1	.26	140	--	--	--
MAY									
13...	.66	.14	.30	1.1	.21	90	20	5.9	1.2
JUN									
10...	.55	.05	.10	.70	.12	180	--	--	--
JUL									
22...	.49	.01	.19	.69	.06	110	--	--	--
AUG									
19...	.59	.07	.06	.72	.13	100	--	--	--
29...	--	--	--	--	--	--	--	--	--
SEP									
16...	.95	.05	.04	1.0	.12	130	--	--	--

06306300 TONGUE RIVER AT STATE LINE, NEAR DECKER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
OCT 02...	1030	430	10	0	0	0	10	10	2	3
MAY 13...	0915	850	0	1	1	10	0	3	3	10

DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	CUPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	CUPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 02...	0	10	2	930	<100	7	20	30	80	20
MAY 13...	20	6	2	1700	13	6	20	20	90	0

DATE	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MU)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 02...	1	0	<50	4	0	1	.3	40	10
MAY 13...	2	0	2	0	0	0	1.0	20	20

YELLOWSTONE RIVER BASIN

06306900 SPRING CREEK NEAR DECKER, MT

LOCATION.--Lat 45°05'09", long 106°50'12", in SW¼NW¼SE¼ sec.33, T.8 S., R.40 E., Bighorn County, Hydrologic Unit 10090101, on county road bridge, 0.2 mi (0.3 km) downstream from South Fork, 1.2 mi (1.9 km) upstream from Tongue River Reservoir, and 5.3 mi (8.5 km) northeast of Decker.

DRAINAGE AREA.--34.7 mi² (89.9 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAR 20...	1515	18	1	149	8.0	12.0	.0	500	11.0	84
MAY 11...	0755	1.0	3	1610	8.5	9.5	9.0	35	10.0	99

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
MAR 20...	13	82	0	24	5.3	4.4	.2	4.1	100
MAY 11...	1.7	770	410	110	120	96	1.5	8.5	420

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)
MAR 20...	0	82	1.6	18	2.4	.1	2.7	111	.15
MAY 11...	8	360	2.2	610	.3	.4	6.7	1170	1.59

DATE	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
MAR 20...	5.39	.29	.29	1.6	1.9	2.2	1.3	70	140
MAY 11...	3.16	.01	.01	.57	.58	.59	.05	100	20

06306900 SPRING CREEK NEAR DECKER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
MAR 20...	1515	60	5	2	0	0	1	2	50	10

DATE	TIME	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
MAR 20...	32	4	25000	5	8	10	7	660	20	4.0	

DATE	TIME	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MU)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, TOTAL RECOV- ERABLE (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 20...	.0	5	1	59	2	2	0	5.0	90	10	

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
MAR 20...	1515	.0	18	1220	59	89
MAY 11...	0755	9.0	1.0	92	.25	--

YELLOWSTONE RIVER BASIN

06307500 TONGUE RIVER AT TONGUE RIVER DAM, NEAR DECKER, MT

LOCATION.--Lat 45°08'29", long 106°46'15", in SW₄SE₄SE₄ sec.12, T.8 S., R.40 E., Big Horn County, Hydrologic Unit 10090101, on left bank 0.5 mi (0.8 km) downstream from Tongue River Dam, 4 mi (6 km) upstream from Post Creek, 8 mi (13 km) northeast of Decker, 16 mi (26 km) southeast of Kirby, and at mile 162.3 (261.1 km).

DRAINAGE AREA. --1,770 mi² (4,580 km²).

WATER-DISCHARGE RECORDS

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 (1,019.373 m) National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation).

REMARKS.--Water-discharge records good. Flow regulated by Tongue River Reservoir (see p.612) and many small reservoirs, combined capacity, about 15,000 acre-ft (18.5 hm³). Diversions for irrigation of about 64,800 acres (262 hm²) above station.

AVERAGE DISCHARGE.--39 years, 471 ft³/s (13.34 m³/s), 341,200 acre-ft/yr (421 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s (306 m³/s) May 20, 1978, gage height, 10.00 ft (3.048 m), from floodmark in gage well; no flow part of each day Nov. 12, 13, 1969, when gates at dam were closed.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,800 ft³/s (306 m³/s) May 20, gage height, 10.00 ft (3.048 m), from floodmark in gage well; minimum daily, 136 ft³/s (3.85 m³/s) Oct. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	175	180	150	150	147	145	497	526	3650	1760	1040	366
2	176	147	150	150	147	145	518	575	4180	1770	1040	365
3	176	147	150	150	147	145	550	606	4160	1430	1040	366
4	182	147	149	150	147	145	551	715	3650	1290	1000	365
5	215	147	150	150	147	145	440	803	3320	1290	905	363
6	180	147	149	150	147	145	530	840	3310	1450	905	361
7	192	150	148	148	147	145	528	868	3310	1560	910	284
8	194	150	148	149	147	145	527	1010	3480	1460	910	380
9	194	150	151	148	146	145	527	1240	3760	1500	910	374
10	194	150	150	147	146	145	527	1440	3400	1410	893	368
11	194	148	149	147	146	145	524	1500	4140	1350	862	364
12	165	147	148	149	146	145	523	1500	4170	1350	713	360
13	136	146	150	150	146	145	521	1500	4120	1310	715	360
14	194	145	148	150	146	145	518	1500	4080	1110	714	358
15	193	148	147	150	146	146	518	1500	4080	1060	698	355
16	194	147	147	149	146	145	516	1500	4090	1020	689	355
17	194	147	150	149	145	146	515	1650	4100	1020	683	355
18	197	147	150	149	145	147	520	2140	4100	991	673	355
19	197	147	150	149	145	147	520	4910	4100	977	664	358
20	199	147	150	149	145	148	518	9580	4100	970	666	356
21	197	147	150	149	145	148	518	6160	4100	970	665	355
22	196	145	150	149	145	149	518	4520	4070	964	617	356
23	197	147	150	149	145	151	517	3870	4050	958	588	357
24	197	149	150	148	146	152	514	4730	4030	958	592	358
25	194	147	150	148	145	152	514	4400	4020	958	563	362
26	197	148	150	148	146	153	514	4310	3910	946	525	362
27	197	147	150	148	146	198	514	4240	3550	950	487	362
28	195	147	150	148	145	280	514	4170	3300	952	414	364
29	197	147	150	148	---	384	517	3620	2470	1000	466	364
30	197	147	150	148	---	436	522	4080	1760	1040	466	364
31	197	---	150	148	---	438	---	4120	---	1040	406	---
TOTAL	5902	4455	4634	4614	4087	5550	15550	84123	112560	36814	22419	10772
MEAN	190	149	149	149	146	179	518	2714	3752	1188	723	359
MAX	215	180	151	150	147	458	551	9580	4180	1770	1040	380
MIN	136	145	147	147	145	145	440	526	1760	946	406	284
AC-FT	11710	8840	9190	9150	8110	11010	30840	166900	223500	73020	44470	21370
CAL YR 1977	TOTAL	157129.0	MEAN	430	MAX	2420	MIN	3.0	AC-FT	311700		
WTR YR 1978	TOTAL	311480.0	MEAN	853	MAX	9580	MIN	136	AC-FT	617800		

06307500 TONGUE RIVER AT TONGUE RIVER DAM, NEAR DECKER, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT											
18...	1000	--	196	0	787	8.8	7.0	11.0	4	11.2	115
NOV											
02...	1400	99001	156	--	760	8.0	16.5	10.0	--	10.6	106
DEC											
20...	0945	--	151	0	849	8.5	-1.0	2.0	3	12.2	99
FEB											
22...	1045	--	148	0	871	8.2	10.0	4.0	1	12.0	103
MAR											
28...	1000	--	248	0	851	8.2	10.0	2.0	2	11.0	89
APR											
18...	0955	--	538	3	746	8.6	4.0	6.5	8	12.0	110
JUN											
21...	1430	--	4140	0	278	8.0	23.0	15.5	30	9.0	101
JUL											
19...	1110	--	995	3	332	8.3	18.0	19.5	25	7.6	94
AUG											
10...	1300	--	848	0	452	8.0	28.0	21.0	8	8.0	101
SEP											
07...	1100	99001	365	--	640	8.2	27.5	21.0	--	--	--
27...	1230	--	368	1	648	8.2	18.5	14.5	1	9.6	106

DATE	OXYGEN DEMAND, DIJ- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT										
18...	1.8	350	140	60	48	38	.9	4.4	250	1
NOV										
02...	--	360	140	65	49	37	.8	4.4	268	--
DEC										
20...	1.8	400	150	75	52	39	.8	4.2	300	5
FEB										
22...	.1	420	140	79	53	40	.9	3.9	330	0
MAR										
28...	1.2	380	120	69	51	38	.8	3.8	320	0
APR										
18...	3.9	350	130	67	45	38	.9	4.5	270	0
JUN										
21...	.8	130	42	30	14	9.8	.4	1.5	110	0
JUL										
19...	.9	150	39	32	16	10	.4	1.6	130	0
AUG										
10...	.8	220	78	46	25	17	.5	2.3	170	0
SEP										
07...	--	280	110	58	33	29	.8	3.4	210	0
27...	1.5	410	220	62	63	33	.7	--	240	0

YELLOWSTONE RIVER BASIN

06307500 TONGUE RIVER AT TONGUE RIVER DAM, NEAR DECKER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ALKA- LITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 18...	210	.6	200	4.3	.3	6.0	486	.66	257	.04
NOV 02...	220	4.3	210	3.4	.3	5.9	507	.69	213	.01
DEC 20...	250	1.6	230	3.6	.4	6.6	564	.77	230	.22
FEB 22...	270	3.3	220	4.1	.3	9.0	572	.78	229	.41
MAR 28...	260	3.2	200	4.2	.3	9.0	533	.72	357	.42
APR 18...	220	1.1	210	4.1	.2	3.8	506	.69	735	.15
JUN 21...	90	1.8	54	1.4	.1	8.2	173	.24	1930	.07
JUL 19...	110	1.0	57	1.5	.1	7.5	190	.26	510	.10
AUG 10...	140	2.7	110	2.4	.2	5.6	292	.40	669	.08
SEP 07...	170	2.1	140	2.7	.2	6.1	376	.56	403	.02
SEP 27...	200	2.4	190	4.6	.2	6.1	477	.65	474	.01

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHURUS, DIS- SOLVED (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT 18...	.06	.57	.63	.67	.04	--	130	20	--	--
NOV 02...	.05	.71	.76	.77	.02	.01	120	30	6.9	.8
DEC 20...	.10	.35	.45	.67	.02	--	100	30	--	--
FEB 22...	.31	.14	.45	.86	.07	--	100	110	--	--
MAR 28...	.25	.12	.37	.79	.10	--	100	20	--	--
APR 18...	.08	.89	.97	1.1	.08	--	100	20	--	--
JUN 21...	.04	1.1	1.1	1.2	.03	--	40	70	--	--
JUL 19...	.01	.25	.26	.36	.03	--	60	20	--	--
AUG 10...	.02	.55	.57	.65	.03	--	60	30	--	--
SEP 07...	.06	.49	.55	.57	.04	.01	70	30	--	--
SEP 27...	.01	.45	.46	.47	.02	--	100	20	--	--

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
OCT 18...	1000	--	10	--	2	--	10	--	2	--	0
FEB 22...	1045	--	10	--	2	--	10	--	1	--	0
APR 18...	0955	--	0	--	2	--	10	--	1	--	0
JUN 21...	1430	600	20	1	5	0	0	3	2	5	10
JUL 19...	1110	--	10	--	3	--	0	--	5	--	0

06307500 TONGUE RIVER AT TONGUE RIVER DAM, NEAR DECKER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
OCT 18...	--	3	--	--	10	--	20	--	50	--
FEB 22...	--	6	--	--	3	--	30	--	80	--
APR 18...	--	0	--	--	4	--	20	--	0	--
JUN 21...	14	10	850	28	6	7	7	50	20	.1
JUL 19...	--	3	--	--	49	--	10	--	40	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 18...	.0	--	2	--	1	--	0	1.7	--	20
FEB 22...	.0	--	2	--	5	--	0	3.0	--	10
APR 18...	.1	--	0	--	2	--	0	1.0	--	10
JUN 21...	.0	10	0	3	0	0	1	.8	40	10
JUL 19...	.0	--	2	--	5	--	0	.0	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 18...	1000	11.0	196	8	4.2	90
DEC 20...	0945	2.0	151	14	5.7	81
FEB 22...	1045	4.0	148	4	1.6	56
MAR 28...	1000	2.0	248	8	5.4	77
APR 18...	0955	6.5	538	20	29	90
JUN 21...	1430	15.5	4140	35	391	89
JUL 19...	1110	19.5	995	38	102	94
AUG 10...	1300	21.0	848	19	44	93
SEP 27...	1230	14.5	368	15	15	86

YELLOWSTONE RIVER BASIN

06307525 PRAIRIE DOG CREEK ABOVE JACK CREEK, NEAR BIRNEY, MT

LOCATION.--Lat 45°20'08", long 106°46'25", in SE¼NW¼NE¼ sec. 12, T.6 S, R.40 E., Big Horn County, Hydrologic Unit 10090101, on left bank Prairie Dog Creek, about 4.1 mi (6.6 km) upstream from Jack Creek confluence, about 9 mi (14 km) above mouth to Tongue River, 23 road mi (37 km) from Birney, and 13 air mi (21 km) west of Birney.

DRAINAGE AREA.--6.57 mi² (17.02 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
APR 24...	1530	.96	1100	8.1	12.0	35	--	610	160	81	100
MAY 15...	1720	1.7	1120	8.3	19.5	70	--	610	190	81	100
SEP 13...	1300	.73	1260	8.1	8.5	30	3.2	690	290	95	110

DATE	TIME	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINEITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
APR 24...	41		.7	4.9	530	0	430	6.7	230	3.6	.4	9.1
MAY 15...	41		.7	5.4	520	0	430	4.2	245	4.8	.4	10
SEP 13...	45		.7	8.8	490	0	400	6.2	350	7.6	.3	12

DATE	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
APR 24...	731	.99	1.89	.08	--	.82	.83	.91	.06	80	10
MAY 15...	744	1.01	3.41	.05	.04	.68	.72	.77	.13	100	10
SEP 13...	871	1.18	1.72	.06	.01	.58	.59	.65	.04	100	30

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
APR 24...	1530	0	2	0	0	0	0	1
MAY 15...	1720	20	1	0	1	0	6	6
SEP 13...	1300	20	1	0	0	10	3	0

06307525 PRAIRIE DOG CREEK ABOVE JACK CREEK, NEAR BIRNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
APR 24...	80	0	.0	0	0	0	1.0	10
MAY 15...	70	10	.1	0	0	0	1.0	20
SEP 13...	70	10	.2	2	0	1	3.5	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLJN, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FIVER THAY .062 MM
APR 24...	1530	12.0	.96	128	.33	--
MAY 15...	1720	19.5	1.7	253	1.2	83
24...	1450	15.0	5.3	175	2.5	--
25...	1445	14.0	4.8	126	1.6	--
SEP 13...	1300	8.5	.73	174	.34	--

YELLOWSTONE RIVER BASIN

06307528 PRAIRIE DOG CREEK NEAR BIRNEY, MT

LOCATION.--Lat 45°17'28", long 106°40'56", in SE¼NW¼NW¼ sec.26, T.6 S., R.41 E., Rosebud County,
Hydrologic Unit 10090101, on right bank, about 3.3 mi (5.3 km) above confluence with Tongue River,
and 9 mi (15 km) west of Birney.

DRAINAGE AREA.--19.6 mi² (24.9 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
SEP 13...	1530	.53	1120	8.3	13.5	25	1.7	550	260	69	92

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
SEP 13...	59	1.1	10	360	0	300	2.9	370	6.4	.3	8.9

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
SEP 13...	793	1.08	1.13	.01	.01	.60	.61	.62	.04	90	30

YELLOWSTONE RIVER BASIN

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06307528 PRAIRIE DOG CREEK NEAR BIRNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRU- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CJ)	LEAD, DIS- SOLVED (UG/L AS PH)
SEP 13...	1530	10	1	0	0	0	3	0

DATE	TIME	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
SEP 13...	70	20	.2	2	0	1	.4	10	

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT CHARGE, SUS- PENDE (T/DAY)	SEJ. SJSP. SIEVE DIAM. % FINER THAN .062 MM
MAY						
18...	1700	10.0	15	1420	58	100
24...	1205	17.5	4.1	93	1.0	--
25...	1200	--	3.4	72	.66	--
SEP						
13...	1530	13.5	.53	115	.16	--

YELLOWSTONE RIVER BASIN

06307560 EAST TRAIL CREEK NEAR OTTER, MT

LOCATION.--Lat 45°04'25", long 106°24'11", in NW¼SE¼NE¼ sec.12, T.9 S., R.43 E., Bighorn County, Hydrologic Unit 10090101, 1.1 mi (1.8 km) upstream from mouth, and 14 mi (23 km) southwest of Otter.

DRAINAGE AREA.--31.3 mi² (81.1 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water stage recorder, crest-stage gages, and Parshall flume. Altitude of gage is 3,570 ft (1,088 m), from topographic map.

REMARKS.--Water-discharge records poor. No known regulation or diversions above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 216 ft³/s (6.12 m³/s) May 18, 1978, gage height, 4.54 ft (1.384 m), from rating curve extended above 35 ft³/s (0.99 m³/s); no flow on many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 216 ft³/s (6.12 m³/s) May 18, gage height, 4.54 ft (1.384 m); no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.49	.39	1.3	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.43	.33	.99	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.39	.28	.78	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.35	.49	.64	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.31	.88	.55	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.28	.51	.49	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.25	.88	.45	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.23	1.8	.45	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.23	.88	.39	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.21	.57	.31	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.21	.49	.30	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.18	.51	.30	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.17	.43	.28	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.16	.37	.23	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.20	.35	.20	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.25	.26	.18	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.26	7.7	.23	.00	.00	.00
18	.00	.00	.00	.00	.00	.19	.20	108	.30	.00	.00	.00
19	.00	.00	.00	.00	.00	.75	.17	40	.25	.00	.00	.00
20	.00	.00	.00	.00	.00	.50	.17	7.4	.18	.00	.00	.00
21	.00	.00	.00	.00	.00	3.8	.17	4.0	.14	.00	.00	.00
22	.00	.00	.00	.00	.00	5.6	.39	2.7	.12	.00	.00	.00
23	.00	.00	.00	.00	.00	4.0	.28	1.9	.10	.00	.00	.00
24	.00	.00	.00	.00	.00	2.8	.14	1.6	.17	.00	.00	.00
25	.00	.00	.00	.00	.00	2.4	.13	1.3	1.5	.00	.00	.00
26	.00	.00	.00	.00	.00	13	.12	.99	.31	.00	.00	.00
27	.00	.00	.00	.00	.00	11	.12	.99	.23	.00	.00	.00
28	.00	.00	.00	.00	.00	5.0	.43	.88	.16	.00	.00	.00
29	.00	.00	.00	.00	---	1.0	.53	.76	.10	.00	.00	.00
30	.00	.00	.00	.00	---	.69	.41	1.1	.05	.00	.00	.00
31	.00	---	.00	.00	---	.55	---	1.3	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	51.28	7.86	190.04	11.68	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	1.65	.26	6.13	.39	.000	.000	.000
MAX	.00	.00	.00	.00	.00	13	.53	108	1.5	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.12	.26	.05	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	102	16	377	23	.00	.00	.00
CAL YR 1977	TOTAL	50.73	MEAN .14	MAX	9.3	MIN .00	AC-FT	101				
WTR YR 1978	TOTAL	260.86	MEAN .71	MAX	108	MIN .00	AC-FT	517				

06307560 EAST TRAIL CREEK NEAR OTTER, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1977 to current year.

REMARKS.--Scheduled samplings were not possible during periods of no flow.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN, DIS- SOLVED (MG/L)
MAR										
21...	1500	9.0	0	1219	8.5	13.5	.0	50	10.2	79
22...	1300	8.3	--	2840	8.0	7.5	.5	--	6.6	53
MAY										
16...	1430	.25	2	7120	8.2	17.5	17.5	5	3.4	40
19...	1200	36	60	1440	8.3	9.5	9.0	510	--	--

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
MAR									
21...	6.3	360	240	50	57	120	2.8	7.5	140
22...	--	--	--	--	--	--	--	--	--
MAY									
16...	2.4	2200	1600	130	450	990	9.2	16	660
19...	2.8	540	390	84	60	140	2.6	8.0	180

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLOR- IDE, DIS- SOLVED (MG/L AS CL)	FLUOR- IDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
MAR									
21...	1	120	.7	480	3.9	.1	3.7	793	1.08
22...	--	--	--	--	--	--	--	--	--
MAY									
16...	0	540	6.7	3400	21	.2	.8	5330	7.25
19...	0	150	1.4	640	6.0	.2	8.4	1060	1.44

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
MAR									
21...	19.3	.48	.05	.64	.69	1.2	.14	90	90
22...	--	--	--	--	--	--	--	--	--
MAY									
16...	3.60	.01	.09	1.1	1.2	1.2	.06	220	240
19...	103	4.0	.12	1.4	1.5	5.5	.28	220	40

YELLOWSTONE RIVER BASIN

06307560 EAST TRAIL CREEK NEAR OTTER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
MAR 21...	1500	1700	20	2	1	0	0	1	0	10	0

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
MAR 21...	3	0	790	6	0	40	40	130	100	.0

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, TOTAL RECOV- ERABLE (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 21...	.0	6	3	3	0	11	2	.0	20	20

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90)	RADIUM 226, DIS- SOLVED, METHOD (PCI/L)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)
MAR 21...	1500	<13	2.9	13	5.9	11	5.6	.20	8.5

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)
MAR 21...	1500	.0	9.0	62	1.5
22...	1300	.5	6.3	87	1.5
24...	1235	.5	.71	50	.10
MAY 16...	1430	17.5	.25	41	.03
19...	1200	9.0	36	454	44

YELLOWSTONE RIVER BASIN

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06307570 HANGING WOMAN CREEK BELOW HORSE CREEK, NEAR BIRNEY, MT

LOCATION.--Lat 45°08'02", long 106°29'00", on section line 17-20, T.8 S., R.43 E., Bighorn County, Hydrologic Unit 10090101, at county road bridge, 0.6 mi (1.0 km) downstream from Horse Creek, 0.8 mi (1.3 km) upstream from Cicle Bar Draw and 13.2 mi (21.2 km) southeast of Birney.

DRAINAGE AREA.--321 mi² (832 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
20...	0845	.06	3	3600	8.3	4.0	7.0	7	9.6	91
DEC										
20...	1310	.34	0	4220	7.9	-1.0	2.0	5	9.6	79
FEB										
23...	1520	.16	1	3730	7.8	5.0	2.0	3	9.6	79
MAR										
27...	1400	.94	1	1830	7.7	14.0	1.0	220	11.8	94
APR										
19...	1445	1.2	3	4800	8.4	10.0	9.0	5	11.8	117
MAY										
10...	1230	30	1	2310	8.2	20.5	14.0	50	7.8	86
JUN										
21...	0915	2.4	0	6200	8.2	21.0	18.0	30	7.0	84
JUL										
20...	1540	.98	3	6600	8.1	16.0	18.0	25	7.2	87
SEP										
27...	0840	.35	0	4320	8.1	15.0	12.0	3	9.0	94

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT									
20...	1.6	1100	670	140	190	450	5.8	14	560
DEC									
20...	1.1	1500	1000	190	250	630	7.1	15	610
FEB									
23...	1.3	1200	670	150	200	500	6.3	13	640
MAR									
27...	6.4	500	360	76	76	250	4.9	9.9	180
APR									
19...	2.6	1600	1200	220	260	740	8.0	14	570
MAY									
10...	2.8	700	470	120	96	290	4.8	12	270
JUN									
21...	1.4	1600	1200	170	290	790	8.5	13	520
JUL									
20...	3.0	1700	1300	160	320	900	9.5	16	450
SEP									
27...	1.6	1200	810	130	220	610	7.6	13	510

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT									
20...	0	460	4.5	1500	12	.8	9.0	2590	3.52
DEC									
20...	0	500	12	2200	18	.8	12	3620	4.92
FEB									
23...	0	530	16	1700	14	.8	16	2910	3.96
MAR									
27...	0	150	5.7	850	5.7	.1	5.1	1360	1.85
APR									
19...	0	470	3.6	2500	27	.5	6.6	4050	5.51
MAY									
10...	0	220	2.7	1000	5.5	.2	8.3	1670	2.27
JUN									
21...	0	430	5.2	2800	21	.6	7.6	4350	5.92
JUL									
20...	0	370	5.7	3100	16	.7	13	4750	6.46
SEP									
27...	0	420	6.5	2000	21	.8	7.3	3250	4.42

YELLOWSTONE RIVER BASIN

06307570 HANGING WOMAN CREEK BELOW HORSE CREEK, NEAR BIRNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 20...	.42	.00	.03	.43	.46	.46	.04	290	20
DEC 20...	3.32	.07	.08	.30	.38	.45	.02	330	40
FEB 23...	1.26	.21	.30	.21	.51	.72	.02	300	100
MAR 27...	345	.33	.27	1.5	1.8	2.1	.60	80	120
APR 19...	13.1	.03	.03	.65	.68	.71	.05	230	30
MAY 10...	138	.02	.06	1.0	1.1	1.1	.12	130	10
JUN 21...	28.2	.02	.01	.99	1.0	1.0	.06	290	40
JUL 20...	12.6	.02	.01	.99	1.0	1.0	.07	350	70
SEP 27...	3.07	.01	.01	.59	.60	.61	.02	400	20

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
OCT 20...	0845	--	0	--	1	--	10	--	2	--
FEB 23...	1520	--	10	--	2	--	0	--	1	--
MAR 27...	1400	2000	50	9	3	0	0	2	2	10
APR 19...	1445	--	0	--	1	--	0	--	1	--
JUL 20...	1540	--	10	--	4	--	0	--	5	--

DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT 20...	10	--	1	--	--	13	--	150	--	50
FEB 23...	0	--	1	--	--	2	--	170	--	320
MAR 27...	0	16	4	13000	26	10	50	50	600	220
APR 19...	10	--	0	--	--	3	--	130	--	280
JUL 20...	0	--	3	--	--	38	--	190	--	130

06307570 HANGING WOMAN CREEK BELOW HORSE CREEK, NEAR BIRNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 20...	--	.0	3	--	1	--	2	.5	--	0
FEB 23...	--	.0	3	--	6	--	1	.0	--	0
MAR 27...	.0	.0	4	32	5	4	0	.0	70	30
APR 19...	--	.0	2	--	4	--	0	.0	--	20
JUL 20...	--	.0	6	--	5	--	1	.0	--	30

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER #62 MM
OCT 20...	0845	7.0	.06	14	.00	92
DEC 20...	1310	2.0	.34	42	.04	--
FEB 23...	1520	2.0	.16	5	.00	--
MAR 27...	1400	1.0	94	609	155	96
APR 19...	1445	9.0	1.2	36	.12	--
MAY 10...	1230	14.0	30	76	6.2	--
JUN 21...	0915	18.0	2.4	157	1.0	92
SEP 27...	0840	12.0	.35	31	.03	--

YELLOWSTONE RIVER BASIN

06307600 HANGING WOMAN CREEK NEAR BIRNEY, MT

LOCATION.--Lat 45°17'57", long 106°30'28", in N½NW¼SE¼ sec.19, T.6 S., R.43 E., Rosebud County, Hydrologic Unit 10090101, on right bank 0.5 mi (0.8 km) downstream from bridge on Birney-Otter road, 1.6 mi (2.6 km) downstream from East Fork, 1.6 mi (2.6 km) south of Birney, and 3.3 mi (5.3 km) upstream from mouth.

DRAINAGE AREA.--470 mi² (1,217 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 3,150 ft (960 m), from topographic map.

REMARKS.--Water-discharge records fair except those for winter period and Aug. 22 to Sept. 30, which are poor. Diversions for irrigation of about 1,240 acres (5.02 km²) above station.

AVERAGE DISCHARGE.--5 years, 7.17 ft³/s (0.203 m³/s), 5,190 acre-ft/yr (6.40 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,060 ft³/s (58.3 m³/s) May 19, 1978, gage height, 11.56 ft (3.523 m), from rating curve extended above 360 ft³/s (10.2 m³/s) on basis of slope-area measurement of peak flow; minimum, 0.08 ft³/s (0.002 m³/s) May 27, 28, 1976, gage height, 2.36 ft (0.719 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,060 ft³/s (58.3 m³/s) May 19, gage height, 11.56 ft (3.523 m), from rating curve extended above 360 ft³/s (10.2 m³/s) on basis of slope-area measurement of peak flow, only peak above base of 100 ft³/s (2.83 m³/s); minimum, 0.11 ft³/s (0.003 m³/s) Apr. 27, gage height, 2.32 ft (0.707 m), owing to irrigation upstream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.65	.88	.87	1.0	1.0	1.1	2.7	7.1	24	6.5	3.1	1.1
2	.66	.84	1.3	1.0	1.0	1.2	1.9	5.7	24	6.2	2.9	1.1
3	.64	.87	1.2	1.0	1.0	1.2	1.7	1.3	22	6.0	2.8	1.1
4	.61	.89	1.0	1.0	1.2	1.2	1.6	3.0	21	6.0	2.6	1.1
5	.58	.87	.96	1.0	1.2	1.4	1.5	8.7	20	6.0	2.5	1.1
6	.61	.86	1.0	1.0	1.2	1.4	1.6	7.4	18	5.3	2.5	1.1
7	.65	.85	.90	1.0	1.0	1.6	2.0	7.3	17	6.2	2.5	1.1
8	.70	.87	.90	1.0	1.0	1.6	2.6	17	17	6.0	2.3	1.1
9	.73	.84	.90	1.0	1.0	1.7	3.7	52	15	5.5	2.2	1.1
10	.72	.84	.90	1.0	1.0	2.2	3.3	41	15	5.3	2.2	1.2
11	.77	.84	.90	1.1	1.0	2.4	3.4	28	14	5.0	2.1	1.2
12	.76	.90	.90	1.0	1.0	2.3	10	20	13	5.0	2.1	1.2
13	.81	.92	.90	1.0	1.0	2.1	9.9	18	13	4.8	2.1	1.1
14	.80	.92	.90	1.0	1.0	2.1	9.3	18	12	2.8	2.0	1.1
15	.74	.92	.90	1.0	1.0	1.8	9.2	13	11	2.5	2.0	1.1
16	.72	.96	.90	1.0	1.0	1.6	8.9	4.8	11	1.8	2.0	1.1
17	.71	.92	.90	1.0	1.0	2.0	8.0	9.1	12	1.8	2.0	1.1
18	.75	.97	.90	1.0	1.4	4.0	7.4	210	12	1.8	2.0	2.0
19	.74	1.0	.90	1.0	1.8	4.8	7.0	1730	11	2.1	2.0	1.4
20	.72	1.0	.90	1.0	1.8	6.4	6.7	281	9.2	2.9	1.8	1.2
21	.71	.99	.90	1.0	1.6	6.5	6.3	181	8.9	3.1	1.8	1.2
22	.74	.99	.90	1.0	1.4	5.8	5.6	101	8.9	2.2	1.5	1.2
23	.82	1.0	.90	1.0	1.2	4.6	2.2	58	7.6	1.7	1.3	1.2
24	.83	.99	.90	1.0	1.1	24	2.3	43	7.3	1.6	1.1	1.2
25	.83	.95	.90	1.0	1.1	14	1.5	35	7.3	2.5	1.1	1.2
26	.80	.97	1.0	1.0	1.1	11	.15	29	7.0	3.1	1.1	1.2
27	.84	.92	1.0	1.0	1.1	18	.17	26	7.3	2.9	1.1	1.2
28	.84	.86	1.0	1.0	1.1	27	1.7	26	7.9	3.1	1.1	1.2
29	.90	.82	1.0	1.0	---	14	2.8	24	7.3	3.2	1.1	.93
30	.92	.84	1.0	1.0	---	6.4	3.8	25	6.8	3.1	1.1	.93
31	.92	---	1.0	1.0	---	3.8	---	24	---	2.8	1.1	---
TOTAL	23.22	27.29	29.43	31.1	32.3	179.2	128.92	3054.4	387.5	118.8	59.1	35.06
MEAN	.75	.91	.95	1.00	1.15	5.78	4.30	98.5	12.9	3.83	1.91	1.17
MAX	.92	1.0	1.3	1.1	1.8	27	10	1730	24	6.5	3.1	2.0
MIN	.58	.82	.87	1.0	1.0	1.1	.15	1.3	6.8	1.6	1.1	.93
AC-FT	46	54	58	62	64	355	256	6060	769	236	117	70
CAL YR 1977 TOTAL	829.78			MEAN 2.27	MAX 78	MIN .11	AC-FT 1650					
WTR YR 1978 TOTAL	4106.32			MEAN 11.3	MAX 1730	MIN .15	AC-FT 8140					

YELLOWSTONE RIVER BASIN

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06307600 HANGING WOMAN CREEK NEAR BIRNEY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 19...	1320	.73	0	2350	8.3	19.0	11.0	10	8.6	87
DEC 21...	1315	.91	0	2650	8.0	-2.0	.0	3	12.0	92
FEB 23...	1305	1.3	1	2700	8.0	5.0	.0	4	11.4	88
MAR 20...	1210	4.0	1	1500	8.0	12.0	3.0	100	10.8	90
APR 19...	1230	7.1	1	3200	8.3	12.0	8.0	6	12.6	120
MAY 17...	1215	8.2	60	2700	8.2	13.5	14.0	30	8.0	87
20...	1535	359	1	1430	8.2	23.0	14.0	320	5.6	60
JUN 22...	1330	8.8	0	4220	8.2	25.0	21.5	35	7.0	88
SEP 28...	1030	1.1	1	3140	8.3	12.0	14.5	2	8.0	88

DATE	OXYGEN DEMAND, BIOL- OGICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT 19...	1.8	740	200	98	120	300	4.8	7.5	660
DEC 21...	.8	520	170	120	54	350	6.7	15	430
FEB 23...	1.5	810	280	110	130	340	5.2	16	650
MAR 20...	4.9	460	180	66	71	180	3.7	12	340
APR 19...	1.6	1000	520	140	160	440	6.0	17	590
MAY 17...	2.9	840	430	120	130	370	5.6	15	490
20...	--	520	380	94	69	130	2.5	10	170
JUN 22...	2.2	1200	740	140	210	580	7.2	17	580
SEP 28...	1.5	930	450	110	160	430	6.1	19	590

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 19...	0	540	5.3	800	3.1	1.3	23	1680	2.28
DEC 21...	0	350	6.9	880	13	1.1	20	1670	2.27
FEB 23...	0	530	10	970	14	1.0	19	1920	2.61
MAR 20...	0	280	5.4	520	8.1	.6	10	1040	1.41
APR 19...	0	480	4.7	1400	13	.8	11	2470	3.36
MAY 17...	0	400	4.9	1100	9.7	.7	10	2000	2.72
20...	0	140	1.7	630	5.5	.3	7.0	1030	1.40
JUN 22...	0	480	5.9	1900	19	.6	7.7	3160	4.30
SEP 28...	0	480	4.7	1300	17	1.0	13	2340	3.18

YELLOWSTONE RIVER BASIN

06307600 HANGING WOMAN CREEK NEAR BIRNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 19...	3.31	.03	.03	.30	.33	.36	.03	300	30
DEC 21...	4.10	.04	.00	.14	.14	.18	.01	310	30
FEB 23...	6.74	.18	.09	.23	.32	.50	.02	270	90
MAR 20...	11.2	.15	.49	2.4	2.9	3.1	.24	170	160
APR 19...	47.4	.30	.03	.21	.24	.54	.04	280	20
MAY 17...	44.3	.00	.04	1.2	1.2	1.2	.09	220	20
20...	998	.74	.06	1.4	1.5	2.2	.44	110	50
JUN 22...	75.1	.12	.03	.72	.75	.87	.05	310	40
SEP 28...	6.95	.00	.00	.55	.55	.55	.03	460	50

		ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)	
DATE	TIME								
OCT 19...	1320	0	1	0	2	10	1	10	
FEB 23...	1305	0	2	0	1	20	1	2	
APR 19...	1230	0	1	0	1	0	0	3	
		LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 19...	100	30	.0	5	0	0	1.1	10	
FEB 23...	110	100	.0	4	6	0	.0	10	
APR 19...	100	160	.0	5	0	0	.0	10	

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 19...	1320	11.0	.73	72	.14	87
DEC 21...	1315	.0	.91	29	.07	--
FEB 23...	1305	.0	1.3	9	.03	--
MAR 20...	1210	3.0	4.0	112	1.2	98
APR 19...	1230	8.0	7.1	34	.65	--
MAY 17...	1215	14.0	8.2	74	1.6	--
20...	1635	14.0	359	566	549	96
JUN 22...	1330	21.5	8.8	205	4.9	79
SEP 28...	1030	14.5	1.1	30	.09	--

06307610 TONGUE RIVER BELOW HANGING WOMAN CREEK, NEAR BIRNEY, MT

LOCATION.--Lat 45°20'19", long 106°31'28", in SWSEKSEK sec.1, T.6 S., R.42 E., Rosebud County, Hydrologic Unit 10090102, at bridge on county road, 1.2 mi (1.9 km) northwest of Birney, 2.5 mi (4.0 km) downstream from Hanging Woman Creek, and at mile 148.8 (239.4 km).

DRAINAGE AREA.--2,533 mi² (6,560 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Flow regulated by Tongue River Reservoir, diversions for irrigation, and many small reservoirs in Wyoming.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
19...	0900	197	0	840	8.5	10.0	8.5	2	10.0	95
NOV										
01...	1030	180	0	818	8.5	7.0	7.0	2	11.4	106
DEC										
21...	1030	152	0	915	8.3	-2.0	.0	2	12.2	93
JAN										
11...	1210	143	0	928	8.1	-20.0	.0	2	9.0	69
FEB										
23...	1020	149	3	950	8.2	4.0	.0	2	12.2	93
MAR										
20...	0945	154	1	731	8.3	12.0	1.0	70	11.8	93
APR										
19...	1000	545	3	796	8.7	10.0	6.5	4	11.6	106
MAY										
17...	1015	1660	60	680	8.1	12.0	11.0	60	9.0	91
JUN										
22...	1030	4150	0	348	8.3	24.0	16.0	85	8.2	92
JUL										
20...	1030	998	60	398	8.2	17.0	18.0	25	8.0	94
AUG										
09...	1100	912	0	491	8.4	24.0	21.0	7	7.6	98
SEP										
28...	1200	371	2	760	8.1	18.5	15.5	1	8.8	98

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)
OCT										
19...	350	130	59	49	41	1.0	4.5	250	10	220
NOV										
01...	360	140	63	50	43	1.0	4.4	270	3	230
DEC										
21...	420	150	78	54	48	1.0	4.6	320	0	260
JAN										
11...	460	190	86	59	48	1.0	4.4	330	0	270
FEB										
23...	420	160	78	55	48	1.0	4.2	320	0	260
MAR										
20...	320	120	58	42	42	1.0	4.5	240	0	200
APR										
19...	360	130	65	47	43	1.0	4.7	270	4	230
MAY										
17...	280	110	54	36	35	.9	5.0	210	0	170
JUN										
22...	140	45	31	16	13	.5	1.6	120	0	98
JUL										
20...	170	51	35	19	16	.5	1.9	140	0	110
AUG										
09...	220	69	45	25	22	.7	2.7	170	4	150
SEP										
28...	340	140	62	44	41	1.0	4.0	240	0	200

YELLOWSTONE RIVER BASIN

06307610 TONGUE RIVER BELOW HANGING WOMAN CREEK, NEAR BIRNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 19...	1.4	230	3.7	.3	4.6	525	.71	279	.00
NOV 01...	1.4	220	4.0	.3	4.3	525	.71	255	.01
DEC 21...	2.0	260	4.2	.3	5.0	612	.83	251	.06
JAN 11...	4.2	260	4.4	.5	7.6	633	.86	244	.25
FEB 23...	3.2	240	4.7	.3	6.8	595	.81	239	.34
MAR 20...	1.9	190	3.8	.3	4.0	463	.63	193	.07
APR 19...	.9	200	4.0	.3	--	502	.68	739	.03
MAY 17...	2.7	180	3.4	.2	7.9	425	.58	1910	.18
JUN 22...	1.0	64	1.9	.1	7.9	195	.27	2190	.06
JUL 20...	1.4	75	2.0	.1	7.2	225	.31	606	.13
AUG 09...	1.1	110	2.0	.2	5.5	300	.41	739	.06
SEP 28...	3.1	210	4.0	.3	6.1	490	.67	491	.01

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT 19...	.01	.25	.26	.26	.02	120	20	4.2	.4
NOV 01...	.04	.32	.36	.37	.02	110	120	4.8	.5
DEC 21...	.00	.17	.17	.23	.00	110	0	--	--
JAN 11...	.26	.36	.62	.87	.02	120	20	3.7	.3
FEB 23...	.03	.16	.19	.53	.01	100	100	--	--
MAR 20...	.03	.32	.35	.42	.14	100	120	--	--
APR 19...	.04	.45	.49	.52	.07	110	20	5.9	--
MAY 17...	.04	.55	.59	.77	.13	80	10	--	--
JUN 22...	.01	1.1	1.1	1.2	.10	40	40	7.7	--
JUL 20...	.01	.26	.27	.40	.03	50	30	4.7	.6
AUG 09...	.07	.29	.36	.42	.01	70	<10	--	--
SEP 28...	.00	.82	.82	.83	.03	140	30	--	--

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
NOV 01...	1030	80	30	1	2	0	0	<10	0	5	10
JUN 22...	1030	190	20	2	2	5	5	4	2	0	0

06307610 TONGUE RIVER BELOW HANGING WOMAN CREEK, NEAR BIRNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
NOV 01...	20	4	100	<100	0	20	30	20	20	.0
JUN 22...	12	3	3900	30	20	9	7	110	40	.0
DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, TOTAL RECOV- ERABLE (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 01...	.0	6	1	<50	1	0	0	1.5	40	40
JUN 22...	.0	5	0	6	0	0	2	.5	30	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 19...	0900	8.5	197	7	3.7	85
NOV 01...	1030	7.0	180	7	3.4	84
DEC 21...	1030	.0	152	11	4.5	87
JAN 11...	1210	.0	143	11	4.2	64
FEB 23...	1020	.0	149	4	1.6	84
MAR 20...	0945	1.0	154	171	71	85
APR 19...	1000	6.5	545	34	50	87
MAY 17...	1015	11.0	1660	134	601	95
JUN 22...	1030	16.0	4150	180	2020	92
JUL 20...	1030	18.0	998	42	113	94
AUG 09...	1100	21.0	912	22	54	89
SEP 28...	1200	15.5	371	13	13	80

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPO- SURE (DAYS)	PERI- PHYTON BIOMASS TOTAL WEIGHT G/SQ M	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	BIOMASS CHLORO- PHYLL RATIO PERI- PHYTON (UNITS)
OCT 19...	0900	41	.394	.079	.071	.011	4439
AUG 09...	1100	20	7.09	6.46	10.8	.210	--
SEP 28...	1200	50	3.46	2.76	1.14	.120	--

YELLOWSTONE RIVER BASIN

06307665 OTTER CREEK NEAR OTTER, MT

LOCATION.--Lat 45°08'15", long 106°07'22", in NE&NE&SE& sec.18, T.8 S., R.46 E., Powder River County, Hydrologic Unit 10090102, 0.2 mi (0.3 km) downstream from Pasture Creek, 5.5 mi (8.8 km) upstream from Bradshaw Creek and 6.2 mi (10.0 km) southeast of Decker.

DRAINAGE AREA.--40.9 mi² (105.9 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
17...	1515	.02	0	6150	8.6	14.5	15.5	1	17.0	193
DEC										
19...	1315	.02	0	5980	7.8	-1.0	.0	5	8.6	67
MAR										
02...	0930	.01	0	4620	7.8	-12.0	.0	1	6.6	51
19...	1445	.02	1	2070	7.9	8.0	7.5	220	10.4	99
APR										
17...	1340	.16	60	6000	8.2	10.0	9.0	2	10.6	105
MAY										
11...	1120	.78	2	5600	8.1	18.5	14.0	1	10.1	111
JUN										
19...	1240	1.6	2	6650	8.2	17.5	20.0	2	9.5	120
JUL										
17...	1630	.37	0	6200	8.1	25.0	26.5	2	9.2	130
SEP										
21...	0945	.29	0	6620	8.1	13.5	8.5	1	9.9	96

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT									
17...	1.0	2200	1800	150	450	810	7.5	25	510
DEC									
19...	.7	2300	1600	230	410	810	7.4	23	760
MAR									
02...	1.0	1800	1300	190	330	500	5.1	16	650
19...	3.4	690	470	79	120	250	4.1	10	270
APR									
17...	.9	2300	1700	230	420	770	7.0	12	680
MAY									
11...	1.0	2100	1600	230	380	780	7.3	23	640
JUN									
19...	1.5	1700	1200	170	310	700	7.4	19	620
JUL									
17...	.9	2100	1500	150	410	850	8.1	23	630
SEP									
21...	2.1	2300	1800	160	470	990	8.9	22	680

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINIT (MG/L AS CaCO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT									
17...	18	450	2.2	3400	27	.5	8.9	5140	6.99
DEC									
19...	0	620	19	3200	24	.6	17	5090	6.92
MAR									
02...	0	530	16	2200	19	.6	15	3590	4.88
19...	0	220	5.4	920	5.8	.3	7.0	1530	2.08
APR									
17...	0	560	6.9	3200	26	.4	10	5000	6.80
MAY									
11...	0	530	8.1	3000	22	.6	4.2	4760	6.47
JUN									
19...	0	510	6.3	2900	24	.5	6.0	4440	6.04
JUL									
17...	0	520	8.0	3100	22	.6	9.7	4880	6.64
SEP									
21...	0	560	8.6	3800	15	.6	9.3	5800	7.89

YELLOWSTONE RIVER BASIN

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06307665 OTTER CREEK NEAR OTTER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 (MG/L AS N)	NITRO- GEN, AMMONIA (MG/L AS N)	NITRO- GEN, ORGANIC (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 17...	.28	.00	.00	.67	.67	.67	.02	710	30
DEC 19...	.27	.04	.00	.55	.55	.59	.00	600	60
MAR 02...	.10	.04	.07	.06	.13	.17	.03	610	80
19...	.08	.05	.01	.97	.98	1.0	.25	270	30
APR 17...	2.16	.02	.00	.50	.50	.52	.01	550	30
MAY 11...	10.0	.00	.00	.70	.70	.70	.15	570	20
JUN 19...	19.2	.08	.04	1.4	1.4	1.5	.02	610	80
JUL 17...	4.88	.01	.01	.94	.95	.96	.03	780	80
SEP 21...	4.54	.02	.01	.71	.72	.74	.01	710	40

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 17...	1515	0	1	0	2	20	1	11
MAR 02...	0930	0	1	0	3	0	0	8
JUL 17...	1630	10	2	10	2	10	2	3

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 17...	340	8	.0	2	0	0	.4	10
MAR 02...	260	20	.0	2	3	0	.0	20
JUL 17...	320	40	.0	3	3	3	.0	30

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 17...	1515	15.5	.02	14	.00	60
DEC 19...	1315	.0	.02	73	.00	--
MAR 02...	0930	.0	.01	20	.00	--
19...	1445	7.5	.02	201	.01	97
APR 17...	1340	9.0	.16	20	.01	--
MAY 11...	1120	14.0	.78	23	.05	--
JUN 19...	1240	20.0	1.6	37	.16	--
JUL 17...	1630	26.5	.37	28	.03	--
SEP 21...	0945	8.5	.29	16	.01	--

YELLOWSTONE RIVER BASIN

06307717 OTTER CREEK BELOW FIFTEENMILE CREEK NEAR OTTER, MT

LOCATION.--Lat 45°23'29", long 106°08'37", in N½ sec.23, T.5 S., R.45 E., Powder River County, Hydrologic Unit 10090102, on county road bridge, 1.0 mi (1.6 km) downstream from Fifteenmile Creek and 13.1 mi (21.1 km) northeast of Otter.

DRAINAGE AREA.--451 mi² (1,167 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 18...	0920	.05	0	4200	8.3	6.0	7.0	2	5.3	49
DEC 20...	0840	2.2	0	3200	7.9	-5.5	.0	2	8.2	63
FEB 27...	1530	2.2	2	2960	7.9	-3.5	.0	2	8.0	62
MAR 20...	0930	76	0	680	7.9	7.0	.5	80	10.0	78
APR 17...	1540	1.0	2	4100	8.3	7.5	11.0	15	10.0	102
MAY 11...	1320	16	60	2910	8.3	14.0	13.5	8	7.9	85
JUN 19...	1450	17	2	3200	8.4	19.5	21.5	4	9.2	116
JUL 17...	1340	5.4	1	3160	8.3	26.0	24.5	7	5.8	79
SEP 21...	1145	3.2	0	2520	8.5	16.0	11.5	2	11.2	114

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT 18...	2.4	1200	700	64	260	580	7.2	26	650
DEC 20...	.8	1100	470	77	210	380	5.1	19	720
FEB 27...	.6	1100	530	120	190	350	4.6	17	670
MAR 20...	6.6	220	100	32	33	60	1.8	9.0	140
APR 17...	3.8	1500	940	150	280	520	5.8	11	720
MAY 11...	1.8	1100	600	120	190	350	4.6	21	590
JUN 19...	1.0	1100	630	110	190	380	5.1	19	510
JUL 17...	1.9	1100	660	110	210	390	5.0	21	590
SEP 21...	1.4	840	440	89	150	290	4.4	17	460

06307717 OTTER CREEK BELOW FIFTEENMILE CREEK, NEAR OTTER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 18...	0	530	5.2	1900	27	.6	2.5	3180	4.32
DEC 20...	0	590	15	1300	16	.7	18	2380	3.24
FEB 27...	0	550	13	1200	22	.7	19	2250	3.06
MAR 20...	0	110	2.8	230	3.9	.2	6.3	444	.60
APR 17...	0	590	5.8	1800	19	.2	9.5	3150	4.28
MAY 11...	0	480	4.7	1200	13	.6	7.6	2190	2.98
JUN 19...	8	430	3.4	1300	17	.7	5.6	2280	3.10
JUL 17...	0	480	4.7	1400	11	.7	4.2	2440	3.32
SEP 21...	15	400	2.5	1100	3.1	.6	3.6	1900	2.58

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BODEN, DIS- SOLVED (UG/L AS O)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 18...	.43	.01	.04	.91	.95	.96	.04	640	50
DEC 20...	14.1	.13	.00	.49	.49	.62	.00	300	30
FEB 27...	13.4	.61	.11	.46	.57	1.2	.02	350	40
MAR 20...	91.1	.18	.63	1.4	2.0	2.2	.32	120	100
APR 17...	8.51	.02	.00	.97	.97	.99	.10	430	30
MAY 11...	94.6	.02	.04	.71	.75	.77	.05	340	10
JUN 19...	105	.01	.00	.91	.91	.92	.02	390	40
JUL 17...	55.6	.01	.03	.79	.82	.83	.05	410	20
SEP 21...	16.4	.01	.01	.01	.62	.63	.02	310	20

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CU)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
OCT 18...	0920	--	10	--	2	--	20	--	4	--	10
FEB 27...	1530	--	0	--	2	--	0	--	4	--	10
MAR 20...	0930	--	20	--	1	--	10	--	1	--	0
JUN 19...	1450	200	10	3	3	5	0	1	1	0	0
JUL 17...	1340	--	10	--	2	--	10	--	1	--	10

YELLOWSTONE RIVER BASIN

06307717 OTTER CREEK BELOW FIFTEENMILE CREEK, NEAR OTTER, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
OCT 18...	--	1	--	--	28	--	160	--	100	--
FEB 27...	--	3	--	--	14	--	130	--	30	--
MAR 20...	--	3	--	--	2	--	30	--	90	--
JUN 19...	19	3	310	5	3	150	140	30	30	.0
JUL 17...	--	2	--	--	7	--	140	--	60	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 18...	.0	--	2	--	1	--	0	.0	--	0
FEB 27...	.0	--	3	--	0	--	0	1.0	--	10
MAR 20...	.0	--	2	--	0	--	0	2.0	--	10
JUN 19...	.1	8	10	5	1	0	1	.0	30	10
JUL 17...	.0	--	3	--	2	--	0	.0	--	30

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 18...	0920	7.0	.05	5	.00	81
DEC 20...	0840	.0	2.2	6	.04	--
FEB 27...	1530	.0	2.2	8	.05	--
MAR 20...	0930	.5	76	117	24	96
APR 17...	1540	11.0	1.0	39	.11	--
MAY 11...	1320	13.5	16	61	2.6	--
JUN 19...	1450	21.5	17	42	1.9	--
JUL 17...	1340	24.5	5.4	61	.89	--
SEP 21...	1145	11.5	3.2	34	.29	--

06307735 HOME CREEK NEAR ASHLAND, MT

LOCATION.--Lat 45°32'35", long 106°11'39", in SE¼NE¼SE¼ sec.29, T.3 S., R.45 E., Powder River County, Hydrologic Unit 10090102, 150 ft. (45.7 m) west of Otter Creek road culvert, 1.0 mi (1.6 km) upstream from mouth, approximately 2.0 mi (3.2 km) south of Highway 212, and 5.1 mi (8.2 km) southeast of Ashland.

DRAINAGE AREA.--58.7 mi² (152.0 km²).

PERIOD OF RECORD.--Water year 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
18...	1110	.05	0	3820	8.1	13.5	6.5	3	9.2	84
DEC										
20...	1030	.13	0	3780	7.8	6.5	.0	10	6.1	47
FEB										
24...	0945	.04	70	3570	7.9	-2.0	.0	7	8.6	66
MAR										
20...	1200	.53	0	1800	7.8	7.0	5.0	8	6.6	58
APR										
18...	0715	.09	2	3800	8.3	5.0	4.0	2	8.6	74
MAY										
11...	1500	.20	1	4100	8.2	12.0	16.0	3	10.4	117
19...	1530	.23	1	1060	7.9	14.5	12.0	300	7.7	79
JUN										
20...	0750	.11	0	4200	7.9	9.5	12.0	4	5.9	61
SEP										
21...	1315	.06	0	3850	8.2	17.0	14.0	2	10.0	107

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT									
18...	.7	1200	520	120	230	530	6.5	21	890
DEC									
20...	.6	1200	460	120	210	530	6.8	21	860
FEB									
24...	1.9	1100	430	110	210	500	6.4	20	870
MAR									
20...	>6.6	500	170	54	89	230	4.5	16	400
APR									
18...	1.4	1100	390	100	210	540	7.0	20	880
MAY									
11...	1.4	1200	480	110	230	550	6.8	26	900
19...	2.4	280	120	46	41	130	3.4	11	200
JUN									
20...	1.6	1300	520	110	240	610	7.5	21	900
SEP									
21...	>6.8	1100	370	110	200	520	6.8	23	890

YELLOWSTONE RIVER BASIN

06307735 HOME CREEK NEAR ASHLAND, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 18...	0	730	11	1500	16	1.2	20	2880	3.92
DEC 20...	0	710	22	1500	13	1.1	16	2840	3.86
FEB 24...	0	710	18	1400	18	1.1	18	2710	3.69
MAR 20...	0	330	10	640	7.6	.5	8.7	1240	1.69
APR 18...	0	720	7.1	1400	10	1.2	8.8	2730	3.71
MAY 11...	0	740	9.1	1700	16	1.1	6.7	3080	4.19
19...	0	160	4.0	380	2.9	.2	8.7	719	.98
JUN 20...	0	740	18	1700	18	1.2	13	3160	4.30
SEP 21...	0	730	9.0	1500	4.6	1.1	15	2810	3.82

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 18...	.39	.29	.05	.58	.63	.92	.05	680	80
DEC 20...	1.00	.33	.12	.42	.54	.87	.06	610	170
FEB 24...	.29	.46	.32	.17	.49	.95	.08	560	70
MAR 20...	1.77	.20	.47	1.2	1.7	1.9	.26	340	710
APR 18...	.66	.19	.03	.36	.39	.58	.03	650	90
MAY 11...	1.66	.12	.04	1.5	1.5	1.6	.11	800	30
19...	44.6	.08	.06	1.0	1.1	1.2	.30	160	60
JUN 20...	.94	.23	.03	.86	.89	1.1	.05	800	100
SEP 21...	.46	.24	.02	.98	1.0	1.2	.04	730	70

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
OCT 18...	1110	0	--	1	--	10	--	4	--	10
FEB 24...	0945	0	--	2	--	0	--	1	--	0
APR 18...	0715	0	--	2	--	0	--	3	--	10
MAY 19...	1530	10	3	1	5	5	2	1	40	5

06307735 HOME CREEK NEAR ASHLAND, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
OCT 18...	--	1	--	--	18	--	160	--	400	--
FEB 24...	--	3	--	--	1	--	170	--	1000	--
APR 18...	--	0	--	--	25	--	140	--	220	--
MAY 19...	24	5	15000	16	3	40	40	260	50	.1

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 18...	.0	--	4	--	1	--	0	.2	--	30
FEB 24...	.0	--	3	--	0	--	1	.0	--	20
APR 18...	.0	--	4	--	2	--	0	.0	--	40
MAY 19...	.1	3	0	15	0	1	0	1.0	50	70

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SJSF. SIEVE DIAM. % FINER THAN .062 MM
OCT 18...	1110	6.5	.05	17	.00	83
DEC 20...	1030	.0	.13	40	.01	--
FEB 24...	0945	.0	.04	6	.00	--
MAR 20...	1200	5.0	.53	17	.02	--
APR 18...	0715	4.0	.09	24	.01	--
MAY 11...	1500	16.0	.20	22	.01	--
MAY 19...	1530	12.0	23	356	22	99
JUN 20...	0750	12.0	.11	24	.01	--
SEP 21...	1315	14.0	.06	32	.01	--

YELLOWSTONE RIVER BASIN

06307740 OTTER CREEK AT ASHLAND, MT

LOCATION.--Lat 45°35'18", long 106°15'17", in NE¼NE¼SE¼ sec.11, T.3 S., R.44 E., Rosebud County, Hydrologic Unit 10090102, on left bank 200 ft (60 m) downstream from bridge on U.S. Highway 212, 2.5 mi (4.0 km) upstream from mouth and 0.3 mi (0.5 km) southeast of Ashland.

DRAINAGE AREA.--707 mi² (1,831 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1972 to current year.

GAGE.-- Water-stage recorder. Altitude of gage is 2,920 ft (890 m), from topographic map.

REMARKS.--Water-discharge records poor. Stage-discharge relationship affected by backwater from beaver dam most of year. No gage-height record Aug. 4 to Sept. 5. Diversions for irrigation of about 4,200 acres (17.0 km²) above station.

AVERAGE DISCHARGE.--6 years, 8.58 ft³/s (0.243 m³/s), 6,220 acre-ft/yr (7.67 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 425 ft³/s (12.0 m³/s) Mar. 21, 1978, gage height, 8.65-ft (2.637 m), backwater from beaver dam; no flow on many days in 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50 ft³/s (1.42 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 21	0100	*425 12.0	*a8.65 2.637	May 21	1030	392 11.1	7.33 2.234
Mar. 24	0245	76 2.15	a5.33 1.625				

a--backwater from beaver dam.

Minimum discharge, 0.54 ft³/s (0.015 m³/s) Oct. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	1.3	2.8	2.7	2.7	3.2	4.9	7.4	28	13	4.9	2.0
2	2.9	1.5	2.8	2.7	2.8	3.2	3.5	7.4	29	16	6.2	2.0
3	2.5	1.6	2.8	2.7	2.7	3.2	2.7	7.0	27	12	6.6	2.0
4	2.0	1.8	2.7	2.7	2.7	3.2	2.0	7.4	24	8.8	6.0	2.0
5	1.6	1.9	2.5	2.8	2.5	3.2	.90	12	21	9.0	5.0	2.0
6	1.4	2.0	2.5	2.7	2.5	3.2	1.9	13	20	8.8	4.0	1.6
7	1.2	2.0	2.5	2.6	2.5	3.2	3.7	16	19	9.9	3.5	1.4
8	1.0	2.2	2.2	2.6	2.5	3.2	3.5	24	18	11	3.2	1.6
9	.90	2.1	2.1	2.7	2.5	3.1	3.2	25	16	9.2	3.0	2.2
10	.80	2.3	2.1	2.5	2.5	3.1	2.3	19	15	9.0	2.8	1.9
11	.70	2.4	2.3	2.6	2.4	3.1	2.8	19	14	9.0	2.7	2.4
12	.70	2.5	2.5	2.6	2.4	3.1	4.3	22	13	11	2.7	6.3
13	.70	2.7	2.5	2.6	2.5	2.9	4.9	16	12	24	4.0	20
14	.70	2.8	2.5	2.5	2.5	2.9	4.8	11	11	10	12	7.6
15	.62	2.8	2.7	2.5	2.7	3.5	5.4	9.9	11	8.0	5.4	8.4
16	.62	2.8	2.8	2.5	2.7	6.8	5.4	7.8	11	7.6	5.4	8.0
17	.54	2.8	2.9	2.5	2.7	8.4	5.1	19	11	9.0	5.6	6.3
18	.62	2.7	2.8	2.5	2.7	10	4.8	69	11	9.2	2.7	5.8
19	.70	2.6	2.8	2.7	2.8	30	5.3	197	11	8.1	2.5	5.7
20	1.0	2.5	2.9	2.7	2.8	267	5.4	265	17	7.9	2.4	4.7
21	.90	2.3	2.9	2.7	2.8	253	5.1	338	20	7.4	2.3	3.1
22	.90	2.3	2.9	2.5	3.1	74	4.9	139	18	7.1	2.2	2.3
23	.62	2.3	2.9	2.5	3.4	41	5.1	89	16	3.9	2.1	2.0
24	.90	2.3	2.9	2.5	3.2	65	5.9	66	13	6.4	2.1	2.1
25	.80	2.4	2.9	2.7	3.2	28	5.1	49	12	6.5	2.0	2.0
26	.90	2.5	2.9	2.7	3.2	15	5.3	43	12	5.5	2.0	2.1
27	1.1	2.5	2.8	2.7	3.2	9.5	5.9	35	11	5.8	2.1	2.7
28	1.4	2.5	2.8	2.7	3.2	8.6	6.6	31	11	6.4	2.1	2.0
29	1.5	2.7	2.8	2.7	---	6.1	7.8	27	10	6.3	2.0	6.4
30	1.6	2.8	2.8	2.8	---	8.0	7.4	28	10	5.4	2.0	3.6
31	1.4	---	2.8	2.7	---	5.9	---	28	---	5.7	2.0	---
TOTAL	36.72	69.9	83.1	81.6	77.4	883.6	135.90	1646.9	472	276.9	113.5	122.4
MEAN	1.18	2.33	2.68	2.63	2.76	28.5	4.53	53.1	15.7	8.93	3.66	4.08
MAX	3.5	2.8	2.9	2.8	3.4	267	7.8	338	29	24	12	20
MIN	.54	1.3	2.1	2.5	2.4	2.9	.40	7.0	10	3.9	2.0	1.4
AC-FT	73	139	165	162	154	1750	270	3270	936	549	225	243
CAL YR 1977 TOTAL	1199.18			MEAN 3.29	MAX 16	MIN .00	AC-FT 2380					
WTR YR 1978 TOTAL	3999.92			MEAN 11.0	MAX 338	MIN .54	AC-FT 7930					

06307740 OTTER CREEK AT ASHLAND, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
18...	1305	.63	0	2320	8.3	20.0	10.0	10	8.8	87
DEC										
20...	1120	3.0	0	3420	8.2	-4.5	.0	6	12.2	93
FEB										
21...	1200	2.8	0	2930	7.9	1.0	.0	8	12.7	97
MAR										
20...	1345	225	0	525	7.9	8.0	.0	270	9.6	73
APR										
18...	0900	4.8	60	2930	8.6	5.0	7.5	20	8.8	82
MAY										
12...	1030	22	10	2330	8.3	13.5	13.0	40	8.6	91
21...	1330	390	1	1330	7.9	29.0	15.5	170	6.2	69
JUN										
20...	1015	13	0	3480	8.4	20.5	18.5	40	7.4	88
SEP										
19...	1045	5.8	1	2290	8.3	9.5	11.5	8	9.0	91

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
UCT									
18...	2.0	650	96	64	120	310	5.3	37	680
DEC									
20...	1.1	1100	450	95	200	470	6.3	23	740
FEB									
21...	.6	950	340	100	170	400	5.7	20	740
MAR									
20...	10	160	44	24	24	47	1.6	9.2	140
APR									
18...	3.2	930	420	110	160	400	5.7	19	620
MAY									
12...	2.9	690	330	80	120	290	4.6	15	440
21...	4.9	450	250	69	68	130	2.7	15	250
JUN									
20...	1.4	1100	620	95	210	440	5.8	16	540
SEP									
19...	1.0	660	330	67	120	290	4.9	17	400

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CaCO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT									
18...	0	560	5.5	740	--	.9	13	--	2.20
DEC									
20...	0	610	7.5	1400	18	.9	16	2590	3.52
FEB									
21...	0	610	15	1100	18	.9	19	2190	2.98
MAR									
20...	0	110	2.8	130	4.1	.1	7.3	315	.43
APR									
18...	0	510	2.5	1200	10	.8	8.2	2210	3.01
MAY									
12...	0	360	3.5	910	8.3	.6	7.3	1650	2.24
21...	0	210	5.0	500	5.6	.3	12	923	1.26
JUN									
20...	25	480	3.8	1500	19	.7	3.1	2580	3.51
SEP									
19...	0	330	3.2	970	14	.6	5.0	1680	2.28

YELLOWSTONE RIVER BASIN

06307740 OTTER CREEK AT ASHLAND, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 18...	2.76	.01	.03	.51	.54	.55	.05	550	50
DEC 20...	21.0	.45	.12	.49	.61	1.1	.04	540	50
FEB 21...	16.6	.80	.21	.19	.40	1.2	.03	450	20
MAR 20...	191	.42	.74	2.0	2.7	3.1	.53	100	130
APR 18...	28.6	.03	.03	.50	.53	.56	.07	430	20
MAY 12...	98.5	.05	.01	.79	.80	.85	.23	310	90
21...	972	.18	.20	1.3	1.5	1.7	.34	200	60
JUN 20...	91.3	.02	.00	2.0	2.0	2.0	.07	500	30
SEP 19...	26.3	.03	.01	.63	.64	.67	.03	340	20

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 18...	1305	0	2	20	3	20	1	14
FEB 21...	1200	0	2	0	4	20	3	16
APR 18...	0900	0	2	0	1	0	0	4

	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 18...	120	4	.0	4	2	0	1.8	0
FEB 21...	140	90	.0	4	0	1	1.0	10
APR 18...	100	140	.0	6	2	0	.0	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 18...	1305	10.0	.63	14	.02	92
DEC 20...	1120	.0	3.0	30	.24	--
FEB 21...	1200	.0	2.8	22	.17	--
MAR 20...	1345	.0	225	536	326	94
APR 18...	0900	7.5	4.8	78	1.0	--
MAY 12...	1030	13.0	22	121	7.2	--
21...	1330	15.5	390	397	418	95
JUN 20...	1015	18.5	13	170	6.0	--
SEP 19...	1045	11.5	5.8	36	.56	--

06307830 TONGUE RIVER BELOW BRANDENBERG BRIDGE, NEAR ASHLAND, MT

LOCATION.--Lat 45°52'18", long 106°11'17", in NE¼SW¼NW¼ sec.6, T.1 N., R.45 E., Custer County, Hydrologic Unit 10090102, on left bank 3.1 mi (5.0 km) downstream from Goodale Creek, 6.5 mi (10.5 km) downstream from Brandenburg Bridge, and 21 mi (34 km) north of Ashland.

DRAINAGE AREA.--4,062 mi² (10,521 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 2,710 ft (826 m), from topographic map.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Flow regulated by Tongue River Reservoir (see p. 612), and many small reservoirs in Wyoming (combined capacity, about 15,000 acre-ft or 18.5 hm³). Diversions for irrigation of about 73,000 acres (295 km²) above station.

AVERAGE DISCHARGE.--5 years, 608 ft³/s (17.22 m³/s), 440,500 acre-ft/yr (543 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,340 ft³/s (236 m³/s) May 22, 1978, gage height, 9.96 ft (3.036 m); minimum daily discharge, 45 ft³/s (1.27 m³/s) Nov. 30, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,340 ft³/s (236 m³/s) May 22, gage height, 9.96 ft (3.036 m); minimum daily, 90 ft³/s (2.55 m³/s) Dec. 8, 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	198	227	195	160	120	200	492	546	3920	1970	1030	456
2	222	229	195	160	125	195	496	549	3810	1810	1030	423
3	207	226	195	155	140	190	549	551	3410	1760	1010	395
4	202	208	180	155	150	185	559	608	3790	1630	1010	384
5	200	190	140	155	150	180	590	660	3760	1410	991	384
6	200	187	120	150	145	180	590	758	3210	1350	1010	380
7	225	186	120	150	140	185	501	821	3120	1350	893	376
8	238	184	90	150	135	195	564	995	3070	1500	804	376
9	220	184	90	145	130	205	569	989	3080	1420	842	354
10	217	183	100	145	125	215	564	1140	3250	1450	804	373
11	217	184	125	140	125	225	564	1290	3100	1430	768	388
12	220	183	145	140	120	230	559	1370	3330	1330	756	431
13	217	183	170	140	120	230	564	1360	3590	1300	710	459
14	217	183	190	135	115	230	564	1330	3650	1280	627	419
15	189	185	200	135	115	230	586	1320	3570	1180	627	403
16	189	185	200	135	115	250	585	1280	3580	1120	616	403
17	215	183	200	130	115	190	574	1490	3610	1050	611	395
18	217	160	195	130	120	418	567	2030	3600	1030	600	415
19	220	135	190	130	135	1200	564	3300	3520	1040	595	431
20	223	115	185	130	160	1390	554	4020	3470	1020	595	415
21	225	100	180	135	180	1320	551	5150	3470	1030	584	399
22	225	100	175	145	200	900	549	7600	3620	1030	579	395
23	226	100	165	155	220	581	550	6620	3680	1010	579	399
24	226	100	150	165	230	464	540	4300	3560	1000	539	399
25	225	115	140	165	230	419	539	3990	3520	987	515	399
26	226	135	140	160	225	365	538	4190	3550	976	505	399
27	226	150	140	150	215	327	536	3950	3490	972	491	399
28	226	170	155	140	210	304	544	3890	3350	967	473	399
29	227	185	165	130	---	310	558	3960	3080	972	443	399
30	232	195	165	125	---	365	548	3840	2800	1040	407	399
31	230	---	160	120	---	447	---	3680	---	1050	460	---
TOTAL	6747	5050	4960	4460	4310	12325	16608	77577	103560	38464	21504	12026
MEAN	218	168	160	144	154	398	554	2502	3452	1241	694	401
MAX	238	229	200	165	230	1390	590	7600	3920	1970	1030	456
MIN	189	100	90	120	115	180	492	546	2800	967	407	354
AC-FT	13380	10020	9840	8850	8550	24450	32940	153900	205400	76290	42650	23850
CAL YR 1977	TOTAL	149559	MEAN 410	MAX 2060	MIN 90	AC-FT 296700						
WTR YR 1978	TOTAL	307591	MEAN 843	MAX 7600	MIN 90	AC-FT 610100						

YELLOWSTONE RIVER BASIN

06307830 TONGUE RIVER BELOW BRANDENBERG BRIDGE, NEAR ASHLAND, MT--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected from Brandenburg Bridge on county road, 1.7 mi (2.7 km) north of Brandenburg and 6.5 mi (10.5 km) upstream from gaging station.

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORDS.--

WATER TEMPERATURES: October 1974 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1974 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily, 3,050 mg/L May 19, 1978; minimum daily, 1 mg/L Oct. 18, 24, 1976.

SEDIMENT LOADS: Maximum daily, 27,200 tons (24,700 tonnes) May 19, 1978; minimum daily, 0.47 ton (0.43 tonne) Nov. 15-17, 1975.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily, 3,050 mg/L May 19; minimum daily, 3 mg/L Nov. 6.

SEDIMENT LOADS: Maximum daily, 27,200 tons (24,700 tonnes) May 19; minimum daily, 1.5 tons (1.4 tonnes) Nov. 6.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (AMD CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTJ)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 19...	1200	220	0	863	8.4	24.0	10.0	3	10.7	105
DEC 22...	0915	176	2	969	8.1	.0	.0	3	13.1	99
MAR 01...	1030	184	83	970	8.1	-10.0	.0	2	10.5	80
22...	1430	790	2	600	7.9	5.0	2.5	150	11.9	97
APR 20...	1045	549	0	840	8.7	8.0	9.0	10	11.3	108
MAY 17...	1000	1550	2	710	8.1	13.0	14.5	120	8.6	95
JUN 22...	0830	3960	0	358	8.3	17.5	18.5	150	7.8	92
JUL 20...	0745	1090	50	450	8.0	15.0	19.5	50	8.2	99
SEP 20...	0800	421	0	840	8.3	8.5	10.5	4	10.0	100

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT 19...	1.0	370	140	64	52	53	1.2	5.2	280
DEC 22...	1.9	430	160	75	60	64	1.3	5.3	330
MAR 01...	.7	430	150	80	56	60	1.3	4.5	340
22...	5.6	230	160	42	30	41	1.2	6.5	---
APR 20...	3.9	360	140	67	46	50	1.2	5.2	270
MAY 17...	2.4	300	120	55	39	41	1.0	5.0	220
JUN 22...	2.0	160	57	34	19	17	.6	2.1	130
JUL 20...	.7	200	67	43	22	23	.7	2.4	160
SEP 20...	2.2	350	150	65	46	52	1.2	4.6	250

YELLOWSTONE RIVER BASIN

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06307830 TONGUE RIVER BELOW BRANDENBERG BRIDGE, NEAR ASHLAND, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 19...	4	240	1.8	230	4.2	.3	5.4	556	.76
DEC 22...	0	270	4.2	280	4.5	.4	5.8	658	.89
MAR 01...	0	280	4.3	250	4.5	.3	6.4	630	.86
22...	--	---	1.7	170	3.3	.2	5.4	---	--
APR 20...	0	220	.9	220	4.5	.3	.3	527	.72
MAY 17...	0	180	2.8	200	3.6	.2	6.0	458	.62
JUN 22...	0	110	1.0	80	1.9	.1	6.4	225	.31
JUL 20...	0	130	2.6	110	2.6	.2	8.8	291	.40
SEP 20...	0	210	2.0	240	4.5	.3	7.0	543	.74

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 19...	330	.01	.01	.58	.59	.60	.03	140	30
DEC 22...	313	.01	.02	.30	.32	.33	.02	130	20
MAR 01...	313	.22	.00	.06	.06	.28	.06	130	10
22...	---	.08	.14	.96	1.1	1.2	.27	120	50
APR 20...	781	.10	.03	.55	.58	.68	.06	100	10
MAY 17...	1920	.08	.04	1.8	1.8	1.9	.25	90	50
JUN 22...	2410	.07	.01	.88	.89	.96	.20	60	30
JUL 20...	856	.12	.01	.50	.51	.63	.07	70	30
SEP 20...	617	.01	.03	.58	.61	.62	.03	120	10

DATE	TIME	ALUMINUM, DIS- SOLVED (UG/L AS AL)	ARSENIC, DIS- SOLVED (UG/L AS AS)	BERYLLIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM, DIS- SOLVED (UG/L AS CD)	CHROMIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 19...	1200	0	2	0	3	10	2	18
MAR 01...	1030	0	1	0	6	10	3	21
APR 20...	1045	0	1	10	1	0	1	12
JUL 20...	0745	20	3	0	2	0	3	4

DATE	LITHIUM, DIS- SOLVED (UG/L AS LI)	MANGANESE, DIS- SOLVED (UG/L AS MN)	MERCURY, DIS- SOLVED (UG/L AS HG)	MOLYBDENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELENIUM, DIS- SOLVED (UG/L AS SE)	VANADIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 19...	30	10	.0	2	2	0	.8	0
MAR 01...	40	20	.0	2	5	1	1.0	20
APR 20...	20	10	.0	3	1	0	1.0	10
JUL 20...	20	0	.0	3	3	0	1.0	10

YELLOWSTONE RIVER BASIN

06307830 TONGUE RIVER BELOW BRANDENBERG BRIDGE, NEAR ASHLAND, MT--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	.0	.0	.0	12.5	---	---	24.0	25.0	---
2	16.0	---	2.0	.0	.0	.0	---	18.0	17.0	23.0	20.5	---
3	15.0	8.5	1.0	.0	1.0	.0	13.5	---	18.5	23.0	---	---
4	13.5	---	.0	.0	---	.0	14.0	---	---	---	22.5	25.0
5	---	8.0	.0	.0	---	---	12.5	12.5	17.5	---	24.5	---
6	13.0	8.0	.0	1.0	---	---	12.0	11.5	17.0	21.5	---	25.0
7	---	7.0	.0	.0	.0	2.0	---	---	18.5	23.5	---	26.0
8	14.0	---	.0	.0	---	1.5	14.0	11.0	---	21.0	25.5	22.5
9	---	---	.0	.0	---	1.5	12.0	16.0	20.0	22.0	25.5	---
10	7.0	4.0	.0	.0	.5	---	---	16.0	18.5	24.0	---	---
11	---	6.0	.0	.0	---	3.0	---	15.0	17.0	24.0	25.0	---
12	11.5	---	1.5	.0	---	2.0	10.5	13.0	18.5	24.5	26.5	---
13	12.5	---	2.0	.0	---	2.0	12.0	14.0	20.5	26.0	---	12.0
14	14.5	6.0	2.0	.0	.0	2.0	14.0	16.0	22.0	---	21.0	16.0
15	13.0	5.5	1.5	.0	.0	---	11.5	16.0	20.0	25.5	23.0	18.5
16	13.5	4.5	2.5	.0	.0	3.0	15.0	17.0	---	25.5	---	---
17	14.0	---	---	.0	.0	3.0	---	---	18.5	24.0	20.0	---
18	14.5	1.0	1.0	.0	.0	2.5	---	12.0	20.0	---	---	---
19	---	---	---	.0	.0	2.5	11.0	11.0	18.0	21.0	---	---
20	---	.0	1.0	.0	---	3.5	13.0	14.5	19.0	20.0	23.0	10.5
21	14.0	.0	---	.0	1.5	3.5	11.5	15.0	20.5	19.5	---	---
22	13.0	.0	2.0	---	---	3.0	11.5	17.0	21.5	22.0	23.0	---
23	13.0	.0	---	1.0	2.5	---	13.0	17.5	22.0	24.0	---	---
24	---	.0	.0	1.5	1.0	4.5	15.0	16.0	22.0	---	---	---
25	14.5	.0	.0	.0	---	9.5	---	17.0	---	26.0	24.5	---
26	13.0	.0	.0	.5	---	12.0	18.5	17.0	20.0	27.0	---	---
27	13.0	---	1.5	.5	---	14.0	20.0	10.0	---	26.5	---	---
28	14.5	.0	1.0	.0	---	14.0	14.5	18.5	23.5	---	21.0	---
29	13.0	---	1.0	.0	---	17.5	14.0	17.5	24.0	23.5	21.0	---
30	---	---	---	.0	---	18.0	---	13.5	23.0	24.5	23.0	---
31	11.0	---	.0	---	---	13.5	---	---	---	26.0	22.5	---
MEAN	13.0	3.5	1.0	.0	.5	5.5	13.5	15.0	20.0	23.5	23.0	19.5
WTR YR 1978	MEAN	11.0	MAX	27.0	MIN	.0						

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM
OCT									
19...	1200	10.0	220	10	5.9	--	--	--	--
DEC									
22...	0915	.0	176	22	10	--	--	--	--
FEB									
06...	1500	.0	169	19	8.7	--	--	--	--
MAR									
01...	1030	.0	184	15	7.5	--	--	--	--
22...	1430	2.5	790	652	1390	38	58	--	--
APR									
20...	1045	9.0	549	54	80	--	--	--	--
MAY									
17...	1000	14.5	1550	510	2130	--	--	--	--
21...	1500	--	5440	1440	21200	46	68	--	--
22...	1730	--	8260	1120	25000	41	61	--	--
23...	1350	--	6060	730	11900	42	62	81	88
JUN									
22...	0830	18.5	3960	474	5070	23	37	--	--
JUL									
20...	0745	19.5	1090	176	518	--	--	--	--
31...	1700	25.5	1070	121	350	--	--	--	--
SEP									
20...	0800	10.5	421	58	66	--	--	--	--

06307830 TONGUE RIVER BELOW BRANDENBERG BRIDGE, NEAR ASHLAND, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM	SED. SUSP. FALL DIAM. % FINER THAN 2.00 MM
OCT								
19...	--	--	81	--	--	--	--	--
DEC								
22...	--	--	87	--	--	--	--	--
FEB								
06...	--	--	58	--	--	--	--	--
MAR								
01...	--	--	94	--	--	--	--	--
22...	--	--	66	68	71	85	96	100
APR								
20...	--	--	84	--	--	--	--	--
MAY								
17...	--	--	69	--	--	--	--	--
21...	--	--	81	87	93	97	99	100
22...	--	--	75	80	87	95	99	100
23...	98	100	--	--	--	--	--	--
JUN								
22...	--	--	55	64	78	90	95	97
JUL								
20...	--	--	60	--	--	--	--	--
31...	--	--	67	--	--	--	--	--
SEP								
20...	--	--	90	--	--	--	--	--

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

TOTAL LOAD FOR YEAR: 361701.6 TONS.

YELLOWSTONE RIVER BASIN

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06308160 PUMPKIN CREEK NEAR LOESCH, MT

LOCATION.--Lat 45°42'40", long 105°43'50", in NW¼ sec.31, T.1 S., R.49 E., Powder River County, Hydrologic Unit 10090102, at bridge on county road, 0.9 mi (1.4 km) northeast of Loesch, and 9.0 mi (14.5 km) upstream from Little Pumpkin Creek.

DRAINAGE AREA.--173.1 mi² (448.3 km²), revised.

PERIOD OF RECORD.--Water year 1976 to current year.

REMARKS.--Scheduled samplings were not possible during periods of no flow.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLDN, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAR 19...	1020	4.0	1	819	7.8	8.0	1.0	40	9.4	75
APR 14...	0655	2.9	1	3180	8.1	7.0	5.5	5	8.8	79
MAY 15...	1120	.04	0	5800	8.0	29.5	24.5	8	12.6	173
20...	1400	146	1	2690	8.1	19.0	14.0	70	8.2	89
JUN 20...	1245	.33	0	4580	8.2	18.0	19.5	2	14.4	178
JUL 18...	1005	.03	0	5660	8.1	22.0	19.5	1	6.2	77
AUG 02...	0945	.02	2	6000	8.0	13.5	15.0	4	4.8	53
SEP 19...	0815	.02	1	7000	8.0	8.0	6.0	3	8.8	79

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACU3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACU3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
MAR 19...	5.5	240	150	43	32	76	2.1	8.2	110
APR 14...	1.4	1000	680	160	150	390	5.3	18	410
MAY 15...	3.5	2000	1500	260	330	820	8.0	26	680
20...	2.5	810	550	110	130	380	5.8	16	320
JUN 20...	.8	1400	980	160	250	650	7.5	17	550
JUL 18...	.6	1700	1200	150	330	870	9.1	24	640
AUG 02...	1.5	1700	1100	140	320	870	9.3	25	720
SEP 19...	1.1	2000	1400	180	380	1000	9.7	30	760

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACU3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SOL OF CONSTI- TENTS, DIS- SOLVED (MG/L AS SOLVED PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)
MAR 19...	0	90	2.8	300	3.0	.1	5.7	523	.71
APR 14...	0	340	5.2	1300	13	.3	12	2250	3.06
MAY 15...	0	560	11	3100	21	.8	7.7	4900	6.66
20...	0	260	4.1	1300	6.7	.2	9.4	2110	2.87
JUN 20...	0	450	5.6	2300	17	.4	7.7	3670	4.99
JUL 18...	0	530	8.1	2900	10	.6	13	4620	6.28
AUG 02...	0	590	12	2600	15	.6	11	4340	5.90
SEP 19...	0	620	12	3800	24	.6	13	5800	7.89

YELLOWSTONE RIVER BASIN

06308160 PUMPKIN CREEK NEAR LOESCH, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
MAR 19...	5.65	.26	.27	.73	1.0	1.3	.23	200	180
APR 14...	17.6	.02	.00	.83	.83	.85	.04	590	80
MAY 15...	.53	.00	.01	.96	.97	.97	.09	1300	0
20...	832	.10	.08	1.2	1.3	1.4	.12	490	40
JUN 20...	3.27	.02	.00	1.1	1.1	1.1	.02	1100	40
JUL 18...	.37	.01	.00	.96	.96	.97	.03	1600	30
AUG 02...	.23	.04	.00	1.1	1.1	1.1	.05	1600	40
SEP 19...	.31	.02	.02	.93	.95	.97	.02	1700	40

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	CUPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
MAR 19...	1020	30	1	10	1	0	6	4
JUL 18...	1005	10	1	10	1	10	2	3

	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 19...	20	250	.0	2	0	0	2.0	20
JUL 18...	160	50	.0	5	2	0	.0	30

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
MAR 19...	1020	1.0	4.0	51	.55	95
APR 14...	0655	5.5	2.9	101	.79	--
MAY 15...	1120	24.5	.04	121	.01	--
20...	1400	14.0	146	136	54	99
JUN 20...	1245	19.5	.33	40	.04	--
JUL 18...	1005	19.5	.03	18	.00	--
AUG 02...	0945	15.0	.02	146	.01	--
SEP 19...	0815	6.0	.02	126	.01	--

YELLOWSTONE RIVER BASIN

495

06308400 PUMPKIN CREEK NEAR MILES CITY, MT

LOCATION.--Lat 46°13'42", long 105°41'24", in SE¼NW¼SW¼ sec.35, T.6 N., R.48 E., Custer County, Hydrologic Unit 10090102, on right bank 30 ft (9 m) upstream from bridge on U.S. Highway 312, 7.5 mi (12.1 km) upstream from mouth, and 16 mi (26 km) southeast of Miles City.

DRAINAGE AREA.--697 mi² 1,805 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,490 ft (760 m), from topographic map.

REMARKS.--Water-discharge records fair except those below 1.0 ft³/s and winter period, which are poor.
No gage-height record Oct. 1-19, Dec. 9 to Jan. 5, and Feb. 16 to Mar. 18. Diversions for irrigation of about 3,600 acres (14.5 km²) above station.

AVERAGE DISCHARGE.--6 years, 20.0 ft³/s (0.566 m³/s), 14,490 acre-ft/yr (17.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,890 ft³/s (81.8 m³/s) May 6, 1975, gage height, 12.27 ft (3.740 m); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.83 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 14	----	unknown	unknown	July 19	0230	127	3.60
Mar. 21	2015	1,890 53.5	10.14 3.091	July 15	1345	493	14.0
May 9	0314	164 4.64	4.16 1.268	July 22	1615	221	6.26
May 9	1115	*2,390 67.7	*11.13 3.392	Sept. 14	0530	123	3.48
June 1	0400	413 11.7	5.58 1.701	Sept. 20	0015	159	4.50

No flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	.20	.70	.10	.00	.00	47	2.6	332	8.1	4.9	.04
2	.40	.01	1.2	.10	.00	.00	38	1.9	179	42	2.8	.03
3	.20	.00	.80	.10	.00	.00	34	2.1	82	7.4	3.1	.03
4	.20	.00	.40	.10	.00	.00	27	3.1	55	10	3.9	.03
5	.40	.00	.00	.10	.00	.00	29	2.3	44	46	1.7	.03
6	.60	.00	.00	.10	.00	.00	24	2.1	40	34	.90	.03
7	.80	.00	.00	.10	.00	.00	21	6.6	34	10	.50	.02
8	1.0	.00	.00	.10	.00	1.5	17	76	29	7.4	.30	.02
9	.80	.00	.00	.10	.00	3.0	16	126	26	5.6	.20	.02
10	.60	.00	.00	.10	.00	5.0	14	54	22	2.6	.20	.02
11	.40	.00	.00	.10	.00	10	11	37	19	1.5	.10	.02
12	.20	.00	.00	.10	.00	30	11	39	17	1.1	.10	1.2
13	.20	.00	.10	.10	.00	80	11	32	15	.90	.08	61
14	.10	.00	.20	.10	.00	250	7.7	22	14	.90	.08	92
15	.10	.00	.20	.10	.00	160	5.6	17	12	.80	.08	30
16	.10	.00	.10	.10	.00	140	8.1	14	11	.80	.08	14
17	.10	.00	.10	.02	.00	130	6.6	117	10	.60	.08	7.4
18	.10	.00	.00	.00	.00	120	9.3	1390	19	1.7	.08	4.5
19	.10	.00	.00	.00	.00	391	13	1980	11	203	.06	52
20	.00	.00	.00	.00	.00	1030	8.1	1020	8.9	50	.06	94
21	.00	.00	.60	.00	.00	1690	7.7	384	7.4	19	.06	35
22	.00	.00	.00	.00	.00	1540	7.4	182	7.4	66	.06	9.8
23	.00	.00	.00	.00	.00	694	6.3	114	6.3	22	.05	4.2
24	.00	.00	.00	.00	.00	522	6.3	88	5.2	10	.05	2.1
25	.00	.00	.00	.00	.00	499	5.6	83	5.6	4.5	.05	1.3
26	.00	.00	.00	.00	.00	650	5.2	80	5.2	1.9	.05	.80
27	.00	.00	.00	.00	.00	625	3.6	69	4.5	.90	.05	.60
28	.00	.00	.00	.00	.00	338	3.9	61	4.5	.60	.04	.40
29	.00	.20	.00	.00	---	184	3.1	55	2.8	.40	.04	.20
30	.00	.40	.10	.00	---	117	2.6	67	8.1	.40	.04	.10
31	.20	---	.10	.00	---	68	---	215	---	.60	.04	---
TOTAL	8.60	.81	4.00	1.62	.00	9277.50	410.1	6342.7	1056.9	560.70	19.81	410.89
MEAN	.28	.027	.13	.052	.000	299	13.7	205	34.6	18.1	.64	13.7
MAX	2.0	.40	1.2	.10	.00	1690	47	1980	332	203	4.9	94
MIN	.00	.00	.00	.00	.00	.00	2.6	1.9	2.8	.40	.04	.02
AC-FT	17	1.6	7.9	3.2	.00	18400	813	12580	2060	1110	39	815

CAL YR 1977 TOTAL 1081.88 MEAN 2.96 MAX 103 MIN .00 AC-FT 2150
WTR YR 1978 TOTAL 18073.63 MEAN 49.5 MAX 1980 MIN .00 AC-FT 35850

YELLOWSTONE RIVER BASIN

06308400 PUMPKIN CREEK NEAR MILES CITY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)
OCT										
19...	1540	--	.07	0	590	8.2	24.0	13.0	130	9.0
MAR										
16...	1100	--	133	0	298	7.7	2.0	.5	700	12.3
21...	1030	--	1730	1	221	8.2	10.5	.5	1600	10.8
APR										
19...	0830	--	14	1	3130	8.4	4.5	6.5	25	11.0
MAY										
15...	1600	--	16	0	1870	8.6	32.0	24.5	70	9.0
JUN										
20...	1540	--	8.3	0	2600	8.5	20.5	24.0	20	8.2
JUL										
19...	1530	--	468	2	890	7.9	20.5	18.5	6000	4.8
AUG										
02...	0745	--	3.3	1	2400	8.3	14.0	19.5	55	7.2
SEP										
06...	0900	99001	.03	--	2590	8.6	21.0	20.0	--	--
13...	1645	--	83	61	962	8.2	11.0	11.0	11000	9.4

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT										
19...	94	3.7	58	0	16	4.4	110	6.3	4.9	170
MAR										
16...	94	6.1	64	0	16	5.9	67	3.6	6.6	92
21...	82	8.0	31	0	7.5	3.0	34	2.7	4.3	88
APR										
19...	97	2.3	820	440	130	120	460	7.0	17	460
MAY										
15...	118	1.2	380	140	63	54	310	6.9	10	280
JUN										
20...	108	1.6	510	150	83	74	440	8.5	9.8	420
JUL										
19...	56	6.4	120	0	29	12	160	6.3	7.2	190
AUG										
02...	86	2.0	380	22	71	50	420	9.3	12	440
SEP										
06...	--	--	340	0	61	46	470	11	18	448
13...	94	4.9	--	--	--	--	--	--	--	290

YELLOWSTONE RIVER BASIN

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06308400 PUMPKIN CREEK NEAR MILES CITY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)
OCT 19...	0	140	1.7	170	2.3	.4	8.9	401	.55	.08
MAR 16...	0	75	2.9	120	5.1	.2	6.0	273	.37	98.0
21...	0	72	.9	34	3.2	.2	3.9	134	.18	626
APR 19...	0	380	2.9	1300	10	.3	10	2270	3.09	85.8
MAY 15...	8	240	1.2	740	5.8	.4	8.0	1340	1.82	57.9
JUN 20...	9	360	2.2	1000	7.8	.1	6.6	1840	2.50	41.2
JUL 19...	0	160	3.8	300	4.3	.4	8.7	616	.84	776
AUG 02...	0	360	3.5	890	7.6	.5	9.4	1680	2.28	15.0
SEP 06...	7	390	1.9	970	9.8	.5	4.1	1810	2.57	.15
13...	--	240	2.9	--	--	--	--	--	--	--

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 19...	.35	.13	.63	.76	1.1	.22	--	150	110
MAR 16...	.80	1.3	2.2	3.5	4.3	.56	--	140	120
21...	.31	.54	.00	.54	.85	2.0	--	120	120
APR 19...	.02	.05	.67	.72	.74	.07	--	390	30
MAY 15...	.00	.03	.79	.82	.82	.12	--	280	20
JUN 20...	.23	.01	1.2	1.2	1.4	.03	--	470	40
JUL 19...	.70	.01	11	11	12	3.2	--	230	90
AUG 02...	.00	.01	.78	.79	.79	.07	--	390	20
SEP 06...	.02	.16	1.5	1.7	1.7	.07	.01	440	130
13...	1.5	.12	16	16	18	5.8	--	--	--

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
OCT 19...	1540	--	20	--	2	--	0	--	3	--	10
MAR 16...	1100	--	50	--	2	--	10	--	2	--	0
JUL 19...	1530	160	10	35	4	10	0	5	1	180	0

YELLOWSTONE RIVER BASIN

06308400 PUMPKIN CREEK NEAR MILES CITY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
OCT 19...	--	8	--	--	17	--	8	--	20	--
MAR 16...	--	16	--	--	15	--	2	--	10	--
JUL 19...	320	10	160000	190	6	130	20	2800	0	.5

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 19...	.0	--	2	--	6	--	1	8.8	--	20
MAR 16...	.0	--	0	--	12	--	0	1.0	--	10
JUL 19...	.0	20	2	19	14	6	2	.0	930	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLUW, INSTAN- TANEOUS (CFS)	SED1- MENT, SUS- PENDED (MG/L)	SED1- MENT CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 19...	1540	13.0	.07	118	.02	--	--	97
MAR 16...	1100	.5	133	1020	366	--	--	99
MAR 21...	1030	.5	1730	3220	15000	--	--	93
APR 19...	0830	6.5	14	40	1.5	--	--	--
MAY 15...	1600	24.5	16	146	6.3	--	--	99
JUN 20...	1540	24.0	8.3	107	2.4	--	--	94
JUL 19...	1530	18.5	468	11600	14700	94	100	--
AUG 02...	0745	19.5	3.3	160	1.4	--	--	--
SEP 13...	1645	11.0	83	23400	5240	--	--	100

06308500 TONGUE RIVER AT MILES CITY, MT

LOCATION(REVISED).--Lat 46°20'44", long 105°48'10", in SE¼ sec.23, T.7 N., R.47 E., Custer County, Hydrologic Unit 10090102, on right bank 4 mi (6 km) south of Miles City and 8 mi (13 km) upstream from mouth.

DRAINAGE AREA.--5,379 mi² (13,932 km²).

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. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage Area.

GAGE.--Water-stage recorder. Altitude of gage is 2,375.76 ft (724.132 m) National Geodetic Vertical Datum of 1929 (levels by Army Corps of Engineers). April 1938 to April 1942, nonrecording gage at site 8 mi (13 km) upstream at different datum. April 1946 to Sept. 30, 1963, at datum 1.00 ft (0.305 m) higher.

REMARKS.--Water-discharge records good except those for winter periods, which are poor. Flow regulation by Tongue River Reservoir (see p. 612), and many small reservoirs in Wyoming (combined capacity about 15,000 acre-ft, 18.5 hm³). Diversions for irrigation of about 90,000 acres (364 km²) above station.

AVERAGE DISCHARGE.--35 years (1938-41, 1946-78), 455 ft³/s (12.89 m³/s), 329,600 acre-ft/yr (406 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,300 ft³/s (377 m³/s) June 15, 1962, gage height, 12.33 ft (3.758 m), present datum, from rating curve extended above 8,220 ft³/s (233 m³/s) on basis of float measurement; maximum gage height, 13.27 ft (4.045 m), present datum, Mar. 19, 1960, Feb. 15, 1971 (ice jam); no flow July 9-19, Aug. 13, 14, Sept. 28, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,650 ft³/s (245 m³/s) May 23, gage height, 10.18 ft (3.103 m); minimum daily, 100 ft³/s (2.83 m³/s) Dec. 9, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JCI	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	415	243	200	180	140	215	600	552	4940	2780	919	355
2	439	231	200	180	150	200	632	582	4440	2120	898	345
3	280	234	200	180	160	190	630	584	4040	1900	884	324
4	200	234	200	180	170	185	646	583	3990	1820	861	271
5	178	231	170	175	180	180	667	637	4090	1850	847	258
6	171	194	140	175	180	180	684	704	3950	1590	838	255
7	249	186	120	175	170	195	683	820	3510	1490	846	243
8	451	173	120	170	165	220	616	1150	3440	1460	763	228
9	324	169	100	170	155	270	652	1440	3400	1590	692	211
10	249	180	100	170	150	320	658	1140	3330	1450	672	217
11	222	202	110	170	145	400	660	1220	3540	1450	677	203
12	205	193	130	165	140	450	658	1390	3340	1410	667	324
13	192	189	150	165	140	500	648	1480	3760	1310	643	556
14	197	188	170	165	135	550	645	1480	3910	1290	615	587
15	240	190	200	165	135	600	646	1480	3930	1270	565	459
16	231	191	220	160	135	650	651	1460	3900	1170	552	404
17	192	183	230	160	135	750	659	1850	3910	1090	547	396
18	208	170	235	160	140	1000	666	5300	3950	1040	534	436
19	228	150	230	160	155	2000	673	6980	3940	1320	526	697
20	231	130	220	160	175	4000	659	5570	3920	1240	504	597
21	237	110	210	160	195	4800	649	4580	3920	1110	500	471
22	237	110	195	165	215	4640	651	5430	3930	1120	500	411
23	243	110	180	175	230	2080	644	7700	3930	1070	517	392
24	243	110	160	180	250	1510	646	7260	3900	1010	526	380
25	243	110	150	180	260	1310	638	4480	3640	981	492	370
26	240	130	145	180	260	1440	634	4610	3620	937	463	360
27	240	150	145	170	250	1440	629	4530	3630	910	459	350
28	240	170	155	160	230	1020	629	4300	3710	905	459	340
29	237	190	165	150	---	767	638	4190	3460	871	423	330
30	243	200	175	140	---	639	646	4320	3170	866	407	325
31	240	---	180	130	---	598	---	4680	---	914	352	---
TOTAL	7745	5251	5305	5175	4945	33299	19437	92482	114740	41334	19146	11095
MEAN	250	175	171	167	177	1074	648	2983	3825	1333	618	370
MAX	451	243	235	180	260	4800	684	7700	4940	2780	919	697
MIN	171	110	100	130	135	180	600	552	3170	866	352	203
AC-FT	15360	10420	10520	10260	9810	66050	38550	183400	227600	81990	37980	22010
CAL YR 1977	TOTAL	139445	MEAN	382	MAX	1890	MIN	100	AC-FT	276600		
WTR YR 1978	TOTAL	359956	MEAN	986	MAX	7700	MIN	100	AC-FT	714000		

YELLOWSTONE RIVER BASIN

06308500 TONGUE RIVER AT MILES CITY, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1951 to current year.

WATER TEMPERATURES: April 1949 to current year.

SUSPENDED-SEDIMENT: October 1977 to September 1978.

INSTRUMENTATION.--Temperature recorder April to July 1974, July 1977 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,390 micromhos Sept. 11, 1958; minimum daily, 215 micromhos Feb. 16, 1971.

WATER TEMPERATURES: Maximum, 30.0°C July 20, 1954; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,160 micromhos Nov. 25; minimum daily, 365 micromhos June 28.

WATER TEMPERATURES: Maximum recorded, 26.0°C July 16, 17; minimum, 0.0°C on many days during November to March.

SEDIMENT CONCENTRATIONS: Maximum daily, 5,900 mg/L May 18; minimum daily, 8 mg/L Nov. 12, 13.

SEDIMENT LOAD: Maximum daily, 84,400 tons (76,600 tonnes) May 18; minimum daily, 4.1 tons (3.7 tonnes) Nov. 13, Dec. 10.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (AMD CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN, DIS- SOLVED (MG/L)
OCT											
20...	1200	230	3	930	8.5	17.5	10.0	6	--	11.3	110
NOV											
22...	1330	110	72	1180	8.3	-7.0	.0	4	--	13.4	100
DEC											
21...	1315	216	2	1120	8.1	2.0	.0	60	--	12.6	94
JAN											
18...	1215	161	2	1040	8.0	-18.0	.0	3	--	11.6	87
FEB											
15...	0900	137	2	1050	8.1	-24.0	.0	5	--	11.9	89
MAR											
22...	1030	5020	2	368	8.0	6.0	1.5	1100	--	12.0	93
APR											
19...	1030	652	1	905	8.5	6.0	8.0	120	--	11.4	105
MAY											
16...	0800	1460	2	820	8.1	13.0	17.5	150	--	8.4	95
21...	1800	4490	0	895	7.8	27.0	17.5	--	600	8.2	92
JUN											
21...	1430	3920	0	390	8.3	27.0	18.5	--	220	8.4	97
JUL											
19...	1215	1250	2	640	8.2	20.5	22.5	--	200	8.0	100
AUG											
15...	1400	565	0	630	8.4	26.5	21.5	--	28	8.3	102
SEP											
20...	1415	574	0	727	8.3	14.0	11.0	--	140	9.8	96

06308500 TONGUE RIVER AT MILES CITY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOC FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT											
20...	K12	71	380	130	66	52	66	1.5	5.4	290	6
NOV											
22...	K9	61	470	150	84	63	100	2.0	6.4	390	0
DEC											
21...	26	3200	390	120	69	54	100	2.2	5.6	340	0
JAN											
18...	36	25	440	140	81	58	73	1.5	4.9	370	0
FEB											
15...	K2	--	450	140	81	59	69	1.4	4.8	370	0
MAR											
22...	120	98000	140	38	28	16	42	1.6	5.6	120	0
APR											
19...	K8	520	380	160	67	51	67	1.5	5.2	270	0
MAY											
16...	93	220	330	130	62	43	56	1.3	5.4	250	0
21...	--	--	330	170	59	44	82	2.0	7.3	--	--
JUN											
21...	70	270	160	55	33	20	20	.7	2.3	--	--
JUL											
19...	200	1600	210	59	44	24	40	1.2	2.9	--	--
AUG											
15...	K15	27	250	71	51	30	37	1.0	3.7	--	--
SEP											
20...	4000	K140000	150	8	33	16	83	3.0	4.6	--	--

DATE	ALKA- LINEITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLOR- IDE, DIS- SOLVED (MG/L AS CL)	FLOU- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT											
20...	250	1.5	240	4.4	.4	6.4	617	590	.84	383	.01
NOV											
22...	320	3.1	330	5.6	.4	8.2	755	790	1.03	224	.13
DEC											
21...	280	4.3	320	4.7	.4	7.0	746	728	1.01	435	.14
JAN											
18...	300	5.9	280	5.5	.4	8.7	684	694	.93	297	.21
FEB											
15...	300	4.7	280	5.0	.4	8.3	691	690	.94	256	.30
MAR											
22...	98	1.9	110	2.8	.2	4.2	272	269	.37	3690	.25
APR											
19...	220	1.4	280	4.6	.3	.4	609	609	.83	1070	.02
MAY											
16...	210	3.2	240	4.1	.3	5.5	539	540	.73	2130	.08
21...	160	--	320	3.8	.3	7.6	630	780	.86	7640	.45
JUN											
21...	110	--	90	2.3	.1	6.9	250	241	.34	2650	.10
JUL											
19...	150	--	150	2.6	.2	9.0	364	363	.50	1230	.01
AUG											
15...	180	--	140	3.4	.2	6.6	404	380	.55	616	.01
SEP											
20...	140	--	190	3.2	.3	6.5	439	421	.60	680	.22

YELLOWSTONE RIVER BASIN

06308500 TONGUE RIVER AT MILES CITY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC DIS- TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C)
OCT 20...	--	.01	--	.00	--	.02	.03	--	6.7	.7
NOV 22...	--	.00	--	.42	--	.01	.02	3.9	--	--
DEC 21...	--	.00	--	3.1	--	.04	.01	4.9	--	--
JAN 18...	--	.01	--	.20	--	.02	.03	--	5.5	.7
FEB 15...	.18	.03	.21	.22	.51	.02	.01	3.7	--	--
MAR 22...	1.3	.25	1.5	.11	1.8	1.9	.15	--	11	18
APR 19...	.36	.03	.39	.42	.41	.12	.01	10	--	--
MAY 16...	2.5	.04	2.5	.37	2.6	.33	.03	12	--	--
21...	--	.03	--	.48	--	.82	.01	--	6.6	>5.0
JUN 21...	4.2	.03	4.2	3.7	4.3	.01	.01	9.8	--	--
JUL 19...	.80	.00	.80	.40	.81	.19	.00	--	26	4.8
AUG 15...	2.3	.02	2.3	.39	2.3	.03	.00	4.8	--	--
SEP 20...	1.9	.03	1.9	.58	2.1	.73	.01	37	--	--

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
OCT 20...	1200	3	2	500	100	10	5	20	20
JAN 18...	1215	1	1	100	100	2	2	0	10
MAR 22...	1030	6	1	600	400	0	1	50	0
MAY 21...	1800	3	1	400	100	0	0	25	10
JUL 19...	1215	4	3	400	200	2	1	10	0

DATE	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)
OCT 20...	<50	0	<10	1	190	20	<100	41	20
JAN 18...	0	0	12	8	210	20	5	10	20
MAR 22...	15	0	80	8	42000	80	4	0	930
MAY 21...	13	0	50	3	25000	30	47	3	1000
JUL 19...	7	2	54	5	16000	30	84	3	470

YELLOWSTONE RIVER BASIN

06308500 TONGUE RIVER AT MILES CITY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	MANGANESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 20...	8	.0	.0	0	0	<10	0	30	0
JAN 18...	20	.0	.0	0	1	0	0	40	20
MAR 22...	20	.0	.0	2	0	1	0	210	70
MAY 21...	10	.3	.1	2	0	0	0	120	10
JUL 19...	10	.0	.0	1	0	0	0	60	10

DATE	TIME	SPECIFIC CONDUCT- ANCE (MICHO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
15...	0600	620	8.4	14.5	18.5	8.1	93
15...	0700	612	8.3	15.0	19.0	8.3	97
15...	0800	611	8.4	16.0	19.0	8.4	98
15...	0900	612	8.4	19.5	19.0	8.6	100
15...	1000	619	8.4	22.0	19.0	8.6	100
15...	1100	621	8.5	24.0	20.0	8.6	102
15...	1200	626	8.4	24.5	20.0	8.6	102
15...	1300	628	8.5	25.5	20.5	8.4	101
15...	1400	630	8.4	26.5	21.5	8.3	102
15...	1500	628	8.5	26.0	21.5	8.1	100
15...	1600	620	8.5	29.5	22.5	8.2	103
15...	1700	625	8.5	27.5	23.0	8.1	103
15...	1800	618	8.3	29.0	24.0	8.2	106
15...	1900	625	8.2	26.0	24.0	8.3	108
15...	2000	631	8.3	21.5	24.0	8.1	105
15...	2100	628	8.3	18.0	24.0	7.7	100
15...	2200	625	8.2	19.0	23.0	7.7	97
15...	2300	630	8.2	17.0	22.5	7.5	94
15...	2400	620	8.1	16.5	22.0	7.6	94
16...	0100	623	8.1	14.5	21.5	7.6	93
16...	0200	622	8.0	12.5	22.0	7.7	95
16...	0300	634	8.2	12.5	21.0	7.7	94
16...	0400	638	8.3	11.0	21.0	7.7	94
16...	0500	628	8.2	11.0	20.5	7.8	94

YELLOWSTONE RIVER BASIN

06308500 TONGUE RIVER AT MILES CITY, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHDS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	753	921	995	1090	1050	1040	1070	871	664	370	535	824
2	756	929	971	1060	1050	1030	1090	871	810	443	532	823
3	855	931	939	1070	1040	1050	1010	891	779	482	530	821
4	869	921	922	1060	1040	1030	985	889	776	446	533	832
5	881	932	923	1080	1030	1060	945	870	716	511	543	849
6	882	929	930	1080	1030	1060	945	874	674	470	538	876
7	839	951	938	1080	1030	1060	940	869	668	489	541	874
8	838	958	1020	1070	1030	1060	927	862	689	488	546	885
9	844	971	990	1070	1040	1050	932	848	660	445	570	880
10	838	977	1030	1060	1030	1050	908	891	624	432	607	882
11	868	973	1040	1060	1040	950	870	969	644	441	632	869
12	895	960	1090	1060	1030	949	840	1040	623	428	621	894
13	896	962	1100	1060	1030	922	841	928	600	449	618	859
14	908	968	1100	1060	1040	950	845	864	555	449	628	791
15	917	965	1110	1050	1070	928	835	839	539	465	642	839
16	915	972	1060	1040	1050	373	855	810	463	456	657	862
17	929	968	987	1050	1030	450	851	766	451	488	662	860
18	945	994	982	1050	1030	612	852	658	423	489	663	852
19	943	985	954	1040	1060	442	863	590	428	511	658	809
20	940	983	953	1050	1060	451	867	818	418	495	657	850
21	944	1090	1080	1010	1040	496	869	1020	402	499	704	854
22	931	1100	1080	1060	1040	395	867	853	397	503	703	909
23	934	1150	1080	1060	1040	547	869	799	403	496	700	922
24	931	1140	1040	1050	1040	504	856	809	383	515	697	902
25	935	1160	1030	1060	1030	715	867	817	390	517	721	901
26	926	1150	1040	1050	1030	628	864	796	368	498	755	900
27	929	1110	1050	1050	1020	817	864	820	372	510	788	891
28	933	1120	1060	1050	1020	1100	851	817	365	549	762	900
29	926	1080	1060	1050	---	876	849	838	382	549	783	902
30	928	1080	1090	1060	---	1060	848	844	375	558	782	903
31	936	---	1090	1060	---	1080	---	834	---	542	810	---
MEAN	896	1010	1020	1060	1040	792	896	847	535	483	650	868
WTH YR 1978	MEAN	840	MAX	1160	MIN	365						

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	11.0	9.0	10.0	7.5	5.0	6.5	.0	.0	.0	.0	.0	.0
2	12.5	8.0	10.0	8.0	5.0	6.5	.0	.0	.0	.0	.0	.0
3	14.0	9.0	11.5	6.5	4.0	5.5	.0	.0	.0	.0	.0	.0
4	13.5	10.0	11.5	6.5	3.5	5.0	.0	.0	.0	.0	.0	.0
5	12.5	6.5	10.5	7.0	3.5	5.5	.0	.0	.0	.0	.0	.0
6	12.0	8.5	10.5	7.0	4.5	6.0	.0	.0	.0	.0	.0	.0
7	11.0	9.0	9.5	6.0	3.5	5.0	.0	.0	.0	.0	.0	.0
8	11.5	8.5	10.0	5.0	2.5	3.5	.0	.0	.0	.0	.0	.0
9	10.0	7.5	9.0	2.0	.0	1.0	.0	.0	.0	.0	.0	.0
10	7.5	4.0	5.5	1.5	.0	.5	.0	.0	.0	.0	.0	.0
11	7.0	2.0	4.5	3.0	.0	1.5	.0	.0	.0	.0	.0	.0
12	10.0	4.0	7.0	4.5	1.5	3.0	.0	.0	.0	.0	.0	.0
13	11.0	6.5	9.0	3.5	1.5	2.5	.0	.0	.0	.0	.0	.0
14	12.0	9.0	10.5	4.0	1.0	2.5	.0	.0	.0	.0	.0	.0
15	11.5	7.0	9.5	4.0	2.5	3.0	.0	.0	.0	.0	.0	.0
16	12.5	7.5	10.0	3.0	1.5	2.0	.0	.0	.0	.0	.0	.0
17	12.0	7.5	10.0	1.0	.0	.5	.0	.0	.0	.0	.0	.0
18	12.0	7.5	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	12.5	8.0	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	11.5	8.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	11.0	8.0	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	12.0	8.0	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	12.0	7.5	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	12.0	8.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	13.0	8.5	11.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	12.0	9.0	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	12.0	8.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	12.0	8.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	11.5	8.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	12.0	9.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	9.5	7.5	8.5	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	14.0	2.0	9.5	8.0	.0	2.0	.0	.0	.0	.0	.0	.0

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TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	.0	.0	.0	.0	.0	.0	10.5	9.0	9.5	13.5	12.0	13.0
2	.0	.0	.0	.0	.0	.0	12.0	7.5	10.0	16.0	11.5	13.5
3	.0	.0	.0	.0	.0	.0	12.5	10.5	11.5	15.5	14.5	15.0
4	.0	.0	.0	.0	.0	.0	12.5	9.0	11.0	14.5	13.0	13.5
5	.0	.0	.0	.0	.0	.0	12.0	10.5	11.0	13.0	12.5	12.5
6	.0	.0	.0	.0	.0	.0	11.5	9.5	10.5	13.0	12.0	12.5
7	.0	.0	.0	.0	.0	.0	11.0	9.0	10.0	12.5	10.5	11.5
8	.0	.0	.0	---	---	---	12.5	9.0	10.5	10.5	10.0	10.5
9	.0	.0	.0	---	---	---	11.5	9.5	10.5	13.0	10.0	11.0
10	.0	.0	.0	---	---	---	10.5	8.0	9.0	14.0	12.5	13.5
11	.0	.0	.0	---	---	---	10.0	8.0	9.0	14.0	13.5	14.0
12	.0	.0	.0	---	---	---	8.0	6.0	7.0	14.0	13.5	13.5
13	.0	.0	.0	---	---	---	9.5	6.0	7.5	15.5	13.5	14.5
14	.0	.0	.0	---	---	---	11.0	8.0	9.5	17.0	15.0	16.0
15	.0	.0	.0	---	---	---	11.0	9.0	10.0	19.0	16.5	17.5
16	.0	.0	.0	---	---	---	10.5	8.0	9.0	19.0	17.0	17.5
17	.0	.0	.0	---	---	---	10.0	9.5	9.5	17.0	14.5	15.5
18	.0	.0	.0	---	---	---	9.0	7.5	8.0	14.0	13.0	13.0
19	.0	.0	.0	---	---	---	11.0	6.5	8.5	13.0	11.0	12.0
20	.0	.0	.0	---	---	---	11.5	8.5	10.0	14.0	10.5	12.0
21	.0	.0	.0	.5	.0	.0	10.5	9.0	10.0	16.0	13.0	14.5
22	.0	.0	.0	2.5	.0	1.0	10.0	9.0	9.5	18.0	15.5	16.5
23	.0	.0	.0	4.0	2.0	3.0	11.0	8.5	10.0	18.0	16.5	17.5
24	.0	.0	.0	4.5	2.0	3.5	13.5	9.5	11.5	18.0	16.5	17.5
25	.0	.0	.0	7.0	3.0	5.0	15.5	11.5	13.5	18.5	16.5	17.5
26	.0	.0	.0	8.5	5.0	6.5	16.5	13.5	15.0	17.5	16.0	17.0
27	.0	.0	.0	10.5	6.5	8.5	17.0	15.0	16.0	17.5	16.0	16.5
28	.0	.0	.0	11.5	8.5	10.0	16.5	14.5	15.5	17.5	16.5	17.0
29	---	---	---	14.5	9.5	12.0	14.5	13.5	14.0	17.5	17.0	17.0
30	---	---	---	15.5	11.0	13.5	13.5	12.5	13.0	17.0	15.0	16.0
31	---	---	---	14.5	11.0	12.5	---	---	---	15.0	13.0	13.5
MONTH	.0	.0	.0	15.5	.0	4.0	17.0	6.0	10.5	19.0	10.0	14.5
JUNE			JULY			AUGUST			SEPTEMBER			
1	13.5	12.0	12.5	23.5	22.5	23.0	---	---	---	---	---	---
2	14.5	13.0	13.5	24.0	23.0	23.5	---	---	---	---	---	---
3	16.5	14.0	15.0	24.0	23.0	23.5	---	---	---	---	---	---
4	17.0	15.5	16.5	24.0	23.0	23.5	---	---	---	---	---	---
5	17.5	16.5	17.0	23.0	22.0	22.5	---	---	---	---	---	---
6	17.5	16.5	17.0	23.0	22.5	22.5	---	---	---	---	---	---
7	17.5	16.5	17.0	23.0	22.0	22.5	---	---	---	---	---	---
8	16.0	16.5	17.0	23.0	22.5	22.5	---	---	---	---	---	---
9	18.5	17.5	18.0	22.5	21.5	22.0	---	---	---	---	---	---
10	18.5	16.0	18.0	23.0	21.5	22.0	---	---	---	---	---	---
11	18.0	17.5	17.5	24.0	22.5	23.5	---	---	---	---	---	---
12	17.5	16.5	17.0	24.0	23.0	23.5	---	---	---	---	---	---
13	18.5	17.0	17.5	24.0	22.0	23.0	---	---	---	---	---	---
14	19.5	18.0	18.5	24.5	23.0	23.5	---	---	---	---	---	---
15	20.0	19.0	19.5	25.0	23.5	24.5	---	---	---	---	---	---
16	20.0	19.0	19.0	26.0	24.5	25.5	---	---	---	---	---	---
17	18.5	17.5	18.0	26.0	24.5	25.0	---	---	---	---	---	---
18	18.5	17.0	17.5	24.5	23.0	24.0	---	---	---	---	---	---
19	18.5	18.0	18.0	---	23.0	---	---	---	---	---	---	---
20	16.0	17.0	17.5	---	---	---	---	---	---	12.0	---	---
21	19.5	17.5	18.5	---	---	---	---	---	---	12.5	10.5	11.5
22	20.5	19.0	19.5	---	---	---	---	---	---	14.5	12.5	13.0
23	21.0	20.0	20.5	---	---	---	---	---	---	16.0	14.0	14.5
24	21.5	20.5	21.0	---	---	---	---	---	---	17.0	15.0	16.0
25	21.5	20.5	21.0	---	---	---	---	---	---	18.0	16.0	17.0
26	20.5	19.5	20.0	---	---	---	---	---	---	18.0	16.5	17.5
27	20.5	19.5	20.0	---	---	---	---	---	---	18.0	16.0	17.0
28	22.0	20.0	21.0	---	---	---	---	---	---	18.5	17.0	17.5
29	22.5	21.5	22.0	---	---	---	---	---	---	17.5	15.5	16.5
30	23.5	22.5	22.5	---	---	---	---	---	---	17.0	14.5	16.0
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	23.5	12.0	18.5	26.0	21.5	23.5	---	---	---	18.5	10.5	15.5
YEAR	26.0	.0	8.0									

YELLOWSTONE RIVER BASIN

06308500 TONGUE RIVER AT MILES CITY, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM
AUG , 1977									
31...	1515	17.0	240	59	38	--	--	--	--
SEP									
20...	0850	14.5	100	13	3.5	--	--	--	--
OCT									
20...	1200	10.0	230	24	15	--	--	--	--
NOV									
22...	1330	.0	110	33	9.8	--	--	--	--
FEB , 1978									
15...	0900	.0	137	35	13	--	--	--	--
MAR									
22...	1030	1.5	5020	2920	39600	53	69	93	96
APR									
19...	1030	8.0	652	231	407	--	--	--	--
MAY									
16...	0800	17.5	1460	604	2380	--	--	--	--
19...	0940	11.5	6980	5090	95900	75	86	90	95
21...	1600	17.5	4490	1710	20700	44	61	78	89
23...	1645	18.0	7700	2070	43000	30	42	--	--
JUN									
21...	1430	18.5	3920	667	7060	23	37	--	--
AUG									
15...	1400	21.5	565	68	104	--	--	--	--
SEP									
20...	1415	11.0	574	2290	3550	--	--	--	--
22...	1450	--	411	250	277	--	--	--	--

DATE	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 1.00 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 2.00 MM
AUG , 1977								
31...	--	--	97	--	--	--	--	--
SEP								
20...	--	--	93	--	--	--	--	--
OCT								
20...	--	--	89	--	--	--	--	--
NOV								
22...	--	--	86	--	--	--	--	--
FEB , 1978								
15...	--	--	95	--	--	--	--	--
MAR								
22...	99	100	--	--	--	--	--	--
APR								
19...	--	--	86	--	--	--	--	--
MAY								
16...	--	--	72	--	--	--	--	--
19...	98	100	--	--	--	--	--	--
21...	99	100	--	--	--	--	--	--
23...	--	--	54	61	68	82	99	100
JUN								
21...	--	--	53	60	70	77	84	94
AUG								
15...	--	--	95	--	--	--	--	--
SEP								
20...	--	--	100	--	--	--	--	--
22...	--	--	99	--	--	--	--	--

06308500 TONGUE RIVER AT MILES CITY, MT--Continued

DAY	MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)	
	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	LOADS (T/DAY)	
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	5290	5936	23	15	119	64	19	9.2	19	7.2	36	22
2	4750	5630	16	10	74	40	13	6.3	16	6.5	34	18
3	2590	1960	12	7.6	80	43	11	5.3	15	6.5	33	17
4	410	491	10	6.3	74	40	9	4.4	15	6.9	47	23
5	1440	692	12	7.5	46	21	26	12	15	7.3	39	19
6	980	452	9	4.7	30	11	28	13	11	5.3	26	13
7	1280	861	10	5.0	34	11	18	8.5	13	6.0	30	16
8	1270	1550	17	7.9	35	11	28	13	9	4.0	34	20
9	1210	1060	14	6.4	34	9.2	29	13	13	5.4	50	36
10	1180	793	24	12	15	4.1	28	13	21	8.5	100	86
11	700	420	23	13	25	7.4	21	9.6	17	6.7	594	642
12	190	105	8	4.2	23	8.1	17	7.6	12	4.5	710	863
13	140	73	6	4.1	25	10	25	11	13	4.9	2390	3230
14	80	43	22	11	21	9.6	26	12	17	6.2	1936	2870
15	34	22	25	13	45	24	20	8.9	19	6.9	451	731
16	18	11	15	7.7	219	130	20	8.6	22	8.0	1090	1910
17	24	12	32	16	296	184	27	12	26	9.5	821	1660
18	26	15	45	21	309	196	30	13	23	8.7	884	2390
19	20	12	66	27	309	192	24	10	29	12	1350	12100
20	19	12	84	29	55	33	18	7.8	24	11	2940	31600
21	84	54	96	29	102	58	33	14	21	11	2710	35100
22	73	47	35	10	61	32	23	10	27	16	1880	23600
23	55	37	93	28	51	25	29	14	25	16	1070	6010
24	41	27	37	11	27	12	31	15	18	12	979	3990
25	42	28	84	25	17	8.9	28	14	30	21	749	2650
26	48	31	30	11	22	8.6	28	14	32	22	1120	4430
27	38	25	97	39	23	9.0	31	14	42	28	755	3020
28	36	23	34	16	26	11	22	9.5	40	25	385	1060
29	57	36	86	44	23	10	19	7.7	---	---	828	1710
30	40	26	37	20	20	9.5	23	8.7	---	---	325	561
31	22	14	---	---	25	14	23	8.1	---	---	220	355
TOTAL	---	20492	---	461.4	---	1244.4	---	327.2	---	293.0	---	140952

[illegible]

TOTAL LOAD FOR YEAR: 933156.0 TONS.

06308500 TONGUE RIVER AT MILES CITY, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JCT 20,77 1200	NOV 22,77 1330	MAR 22,78 1030	MAY 16,78 0800	MAY 21,78 1800					
TOTAL CELLS/ML	340	190	1400	4000	1400					
DIVERSITY: DIVISION	1.1	1.2	0.0	1.7	1.2					
..CLASS	1.1	1.2	0.0	1.7	1.2					
..ORDER	1.3	1.2	0.0	2.4	1.4					
...FAMILY	2.6	2.8	1.9	3.3	2.6					
....GENUS	3.0	3.1	2.2	0.0	2.9					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCELES										
...DUCYSTACEAE										
....ANKISTRODESMUS	38	11	7	4	--	--	330	8	43	3
....DICTYOSPHAERIUM	--	--	--	--	--	--	270	7	--	--
....DUCYSTIS	63#	24	--	--	--	--	--	--	--	--
...SCENEDESMACEAE										
....ACTINASTRUM	--	--	--	--	--	--	240	6	--	--
...SCENEDESMUS	15	4	13	7	--	--	120	3	--	--
...TETRASTRUM	--	--	--	--	--	--	82	2	--	--
...VOLVUCALES										
...CHLAMYDOMONADACEAF										
...CHLAMYDOMONAS	--	--	--	--	--	--	120	3	14	1
...PHACOTACEAE										
...PHACOTUS	--	--	--	--	--	--	--	--	14	1
CHRYSDOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINOIDISCEAE										
...CYCLOTELLA	15	4	--	--	--	--	840#	21	14	1
...STEPHANODISCUS	--	--	--	--	--	--	--	--	14	1
...PENNALES										
...ACHNANTHACEAE										
...ACHNANTHES	23	7	7	4	--	--	20	1	--	--
...COCONEIS	30	9	13	7	--	--	140	4	71	5
...RHODICOSPHEINIA	--	--	--	--	--	--	20	1	43	3
...CYMBELLACEAE										
...AMPHURA	--	--	--	--	--	--	--	--	24	2
...CYMBELLA	--	--	--	--	--	--	200	5	86	6
...EPITHEMIA	--	--	--	--	140	10	20	1	--	--
...DIATOMACEAE										
...DIATOMA	--	--	--	--	--	--	--	--	14	1
...EUNOTIACEAE										
...EUNOTIA	--	--	--	--	--	--	20	1	--	--
...FRAGILARIACEAE										
...ASTERIONELLA	--	--	--	--	--	--	20	1	--	--
...SYNEDRA	8	2	7	4	610#	43	100	3	160	11
...GOMPHONEMACEAE										
...GOMPHONEMA	8	2	40#	21	68	5	--	--	--	--
...NAVICULACEAE										
...AMPHIPLEURA	--	--	13	7	--	--	--	--	--	--
...GYROSIGMA	--	--	--	--	68	5	--	--	--	--
...NAVICULA	60#	18	47#	25	68	5	310	8	160	11
...PINNULARIA	--	--	--	--	--	--	--	--	14	1
...NITZSCHACEAE										
...DENTICULA	--	--	--	--	--	--	--	--	29	2
...NANTZSCHIA	--	--	--	--	--	--	20	1	--	--
...NITZSCHIA	53#	16	13	7	--	--	180	5	57	4
...SURIRELLACEAE										
...CYMATOPLEURA	--	--	--	--	68	5	--	--	--	--
...SURIRELLA	--	--	--	--	410#	29	--	--	29	2
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
...RHODOMONAS	8	2	--	--	--	--	--	--	--	--
...CRYPTOMONADACEAE										
...CRYPTOMONAS	--	--	13	7	--	--	--	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...HORMOGONALES										
...OSCILLATORIACEAE										
...OSCILLATORIA	--	--	--	--	--	--	730#	18	640#	45
...CHROOCOCCALES										
...JUNKOWNY 218010101021000	--	--	--	--	--	--	120	3	--	--
EUGLENOPHYTA (EUGLENIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
...TRACHELOMONAS	--	--	--	--	--	--	120	3	--	--
PYRRHOPHYTA (FIRE ALGAE)										
..DIOPHYCEAE										
...PERIDINIALES										
...PERIDINIACEAE										
...PERIDINIUM	--	--	13	7	--	--	--	--	--	--

06308500 TONGUE RIVER AT MILES CITY, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUN 21,78 1430	JUL 19,78 1215	AUG 15,78 1400	SEP 20,78 1415
TOTAL CELLS/ML	320	9300	5900	37
DIVERSITY: DIVISION	0.7	1.2	1.1	0.0
..CLASS	0.7	1.2	1.7	0.0
...ORDER	1.3	1.9	2.2	0.0
...FAMILY	2.5	3.2	2.6	0.0
....GENUS	2.5	0.0	0.0	0.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCUCCALES								
....CHARACIACEAE								
....SCHRUEDERIA	--	-	680	7	--	-	--	-
...COELASTRACEAE								
....COELASTRUM	--	-	810	9	--	-	--	-
...HYDRODICTYACEAE								
....PEDIASTRUM	--	-	1300	14	620	11	--	-
...MICRACITINACEAE								
....GOLENKINIA	--	-	*	0	--	-	--	-
...ODCYSTACEAE								
....ANKISTRODESMUS	69#	21	130	1	--	-	--	-
....CHODATELLA	--	-	85	1	--	-	--	-
...DICTYOSPHAERIUM	--	-	300	3	--	-	--	-
...ODCYSTIS	--	-	340	4	220	4	--	-
....SELENASTRUM	--	-	--	-	89	2	--	-
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	340	4	--	-	--	-
...SCENEDESMUS	--	-	--	-	180	3	--	-
..TETRASPORALES								
...PALMELLACEAE								
...SPHAEROCYSTIS	--	-	--	-	310	5	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	260	3	130	2	--	-
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	46	14	1200	13	490	8	--	-
....MELOSIRA	--	-	940	10	--	-	--	-
...SKELETONEMA	--	-	--	-	89	2	--	-
..PENNALES								
...ACHNANTHACEAE								
...RHOICUSPHENIA	23	7	--	-	--	-	--	-
...CYMBELLACEAE								
....CYMBELLA	--	-	--	-	220	4	--	-
...DIATOMACEAE								
....DIATOMA	69#	21	--	-	--	-	--	-
...FRAGILARIACEAE								
....FRAGILARIA	--	-	1500#	16	--	-	--	-
...SYNEDRA	--	-	--	-	130	2	--	-
...GOMPHONEMACEAE								
....GOMPHONEMA	--	-	--	-	89	2	--	-
...NAVICULACEAE								
....NAVICULA	69#	21	85	1	44	1	37#	100
...NITZSCHACEAE								
....NITZSCHIA	46	14	900	10	89	2	--	-
..CHRYSTOPHYCEAE								
...CHRYSONOMADALES								
...UNKNOWN 216020106005000	--	-	--	-	2900#	49	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...HORMOGONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	--	-	270	5	--	-
...CHROCOCCALES								
...UNKNOWN 218010101021000	--	-	210	2	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
....TRACHELOMONAS	--	-	130	1	--	-	--	-

06308500 TONGUE RIVER AT MILES CITY, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPJ- SURE (DAYS)	PERI- PHYTON	PERI- PHYTON	CHLOR-A PERI- PHYTON	CHLOR-B PERI- PHYTON
			BIOMASS TOTAL DRY WEIGHT G/SQ M	BIOMASS PHYTON BIOMASS ASH WEIGHT G/SQ M	CHROMO- GRAPHIC FLUORUM (MG/M2)	CHROMO- GRAPHIC FLUORUM (MG/M2)
JUL 19...	1215	28	.236	.157	.000	.000

YELLOWSTONE RIVER BASIN

06309000 YELLOWSTONE RIVER AT MILES CITY, MT

LOCATION.--Lat 46°25'16", long 105°51'51", in SW¼NW¼ sec.28, T.8 N., R.47 E., Custer County, Hydrologic Unit 10100001, on left bank 350 ft (107 m) upstream from bridge on State Highway 22 at Miles City, 0.8 mi (1.3 km) downstream from Tongue River, and at mile 180.8 (290.9 km).

DRAINAGE AREA.--48,253 mi² (124,975 km²).

WATER-DISCHARGE RECORDS

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 (711.19 m) National Geodetic Vertical Datum of 1929 (levels by Army Corps of Engineers), revised. Prior to May 6, 1929, nonrecording gages at pumping plant 1.2 mi (1.9 km) downstream at different datums. May 6, 1929, to Sept. 30, 1931, nonrecording gage, and Oct. 1, 1931, to Nov. 10, 1937, water-stage recorder at present site and datum. Nov. 11, 1937, to Sept. 30, 1946, water-stage recorder at pumping plant 1.2 mi (1.9 km) downstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Some regulation by reservoirs on tributary streams. Diversions for irrigation of about 1,100,000 acres (4,450 km²) above station (does not include flood irrigation).

AVERAGE DISCHARGE.--51 years (1922-23, 1928-78), 11,599 ft³/s (328.5 m³/s), 8,403,000 acre-ft/yr (10.4 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 102,000 ft³/s (2,889 m³/s) May 22, 1978, gage height, 16.50 ft (5.029 m); maximum gage height, 21.7 ft (6.61 m) Mar. 20, 1944 (ice jam); minimum discharge, 996 ft³/s (28.2 m³/s) Dec. 14, 1932.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 102,000 ft³/s (2,889 m³/s) May 22, gage height, 16.50 ft (5.029 m); minimum daily, 1,300 ft³/s (36.8 m³/s) Dec. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6440	5240	6880	5200	6400	7200	16200	17800	38600	42100	23100	9900
2	6670	5150	6810	5200	6400	7000	16100	15100	37300	44500	21900	9820
3	6990	5140	6360	5200	6400	6800	16400	13500	33900	44100	21200	9760
4	6700	5140	6260	5200	6600	6600	14800	13000	30900	43700	20400	9200
5	6520	5050	6390	5200	6600	6600	13400	13400	30200	43800	19400	8990
6	6380	4980	3840	5100	7000	6500	12600	15200	31600	44000	17000	8990
7	6390	5020	2360	5000	7200	6800	11800	16700	33700	41900	17100	8900
8	6590	5020	2190	4900	7400	7200	11300	16300	38500	38700	17000	8730
9	6490	5070	1970	4700	7400	7600	11100	17300	42600	38400	16200	8770
10	6300	5040	3000	4600	7200	8000	11000	17300	44600	39700	15200	9080
11	6320	4980	3900	4600	7100	8600	10800	16200	47400	40900	14700	8860
12	6320	4820	4500	4700	7000	9600	10700	14700	53400	39700	14500	9600
13	6310	4820	4800	4700	6900	9800	10700	15600	53600	39300	14100	12500
14	6260	4750	5600	4700	6600	10000	10600	16400	44100	39400	13900	14800
15	6080	4870	6500	4600	6600	9900	10700	15500	39900	37600	13900	14900
16	6080	4850	7400	4600	6800	9600	9960	14500	45300	35900	13900	13100
17	6140	4800	7500	4600	6800	9400	9910	16500	51300	35100	13800	11800
18	6050	4750	7400	4700	6800	11000	9910	28200	51400	34400	13700	11600
19	6010	4800	7200	4900	6800	14000	9790	45800	45300	34900	13400	15300
20	5970	3900	7600	5400	6800	25000	9690	68400	41700	34000	13500	23400
21	5950	2430	7000	5800	7000	23000	9020	81900	43200	32800	13500	21100
22	5880	1800	6000	6000	7200	22000	8760	81500	42400	32300	13200	17600
23	5820	1760	5400	6200	7500	21000	8730	42000	41200	32000	12900	15700
24	5780	1700	5000	6200	8000	19000	8760	37100	43200	30100	12600	14100
25	5740	1640	5000	6400	7900	17000	8770	35600	45800	28500	12300	13200
26	5680	2680	5000	6600	7700	17900	8560	37700	47700	27300	12100	12700
27	5610	4720	5200	6500	7600	18500	8400	38300	47700	26600	12000	12400
28	5540	9540	5200	6200	7400	18700	8380	36400	43700	26300	12000	12500
29	5460	10200	5200	5800	---	18200	9190	34400	38300	25900	11800	12500
30	5350	7620	5200	6000	---	18000	16900	33800	38200	23800	11400	12300
31	5140	---	5400	6200	---	17200	---	36000	---	23600	10500	---
TOTAL	188960	142280	168060	165700	197100	397700	332930	902100	1266700	1101300	462200	372100
MEAN	6095	4743	5421	5345	7039	12830	11100	29100	42220	35530	14910	12400
MAX	6990	10200	7600	6600	8000	25000	16900	81900	53600	44500	23100	23400
MIN	5140	1640	1970	4600	6400	6500	8380	13000	30200	23600	10500	8730
AC-FT	374800	282200	333300	328700	390900	788800	660400	1789000	2512000	2184000	916800	738100
CAL YR 1977 TOTAL	2613090			7159		27600		1640		5183000		
WTR YR 1978 TOTAL	5697130			15610		81900		1640		11300000		

06309000 YELLOWSTONE RIVER AT MILES CITY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: May 1974 to September 1975, July 1977 to January 1978.

INSTRUMENTATION.--Temperature recorder May 1974 to September 1975, July 1977 to January 1978.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum (water years 1974, 1975, 1977), 26.0°C July 18, 1977; minimum (water years 1975, 1978), 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Minimum, 0.0°C on many days during November to January.

REMARKS.--Thermograph probe located in flow, out from left bank. Flow from Tongue River is near right bank. Temperature record is equivalent to Yellowstone River near Miles City (station 06296120) located above confluence of the Tongue River.

TEMPERATURE (LEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	12.5	11.5	12.0	9.0	7.5	8.5	.5	.5	.5	.0	.0	.0
2	13.5	11.0	12.0	9.0	7.5	8.0	.5	.5	.5	.0	.0	.0
3	13.5	11.5	12.5	8.0	6.5	7.0	.5	.5	.5	.0	.0	.0
4	13.0	11.5	12.0	7.0	6.0	6.5	.5	.0	.0	.0	.0	.0
5	13.0	11.0	11.5	7.0	5.0	6.0	.5	.0	.0	.0	.0	.0
6	11.5	10.0	11.0	7.0	5.5	6.5	.5	.0	.0	.0	.0	.0
7	10.5	10.0	10.0	6.0	5.5	6.0	.0	.0	.0	.0	.0	.0
8	12.0	10.0	10.5	5.5	3.5	4.5	.0	.0	.0	.0	.0	.0
9	10.5	9.0	10.0	4.0	3.0	3.5	.0	.0	.0	.0	.0	.0
10	9.0	6.5	7.5	3.5	2.5	3.0	.0	.0	.0	.0	.0	.0
11	8.5	6.0	7.0	3.5	2.0	3.0	.0	.0	.0	.0	.0	.0
12	9.0	6.5	7.5	4.5	3.0	3.5	.0	.0	.0	.0	.0	.0
13	10.0	7.5	9.0	4.0	3.0	3.5	.0	.0	.0	.0	.0	.0
14	10.5	9.0	9.5	4.0	3.0	3.5	.0	.0	.0	.0	.0	.0
15	10.5	8.0	9.5	4.0	3.5	4.0	.0	.0	.0	.0	.0	.0
16	11.5	8.5	10.0	4.0	2.5	3.5	.0	.0	.0	.0	.0	.0
17	11.5	9.0	10.0	3.0	2.0	2.5	.0	.0	.0	.0	.0	.0
18	11.5	9.0	10.0	1.5	1.0	1.5	.0	.0	.0	.0	.0	.0
19	11.5	9.0	10.5	1.0	.0	.5	.0	.0	.0	.0	.0	.0
20	11.5	10.0	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	11.5	9.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	12.0	9.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	12.0	9.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	12.0	10.0	11.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	12.5	10.0	11.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	11.5	10.5	11.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	11.5	9.5	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	11.5	9.5	10.5	.5	.0	.0	.0	.0	.0	.0	.0	.0
29	11.0	9.5	10.5	.5	.0	.5	.0	.0	.0	.0	.0	.0
30	11.5	10.0	10.5	.5	.5	.5	.0	.0	.0	.0	.0	.0
31	10.0	9.0	9.5	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	13.5	6.0	10.5	9.0	.0	3.0	.5	.0	.0	.0	.0	.0

06309075 SUNDAY CREEK NEAR MILES CITY, MT

LOCATION.--Lat 46°28'23", long 105°50'34", in NW¼SW¼SW¼ sec.3, T.8 N., R.47 E., Custer County, Hydrologic Unit 10100001, on left bank 15 ft (5 m) downstream from bridge on FAS Route 489, 5.5 mi (8.8 km) downstream from confluence of North and South Sunday Creeks, 9.5 mi (15.3 km) upstream from mouth, and 5.5 mi (8.8 km) north of Miles City.

DRAINAGE AREA.--714 mi² (1,849 km²).

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,380 ft (725 m), from topographic map.

REMARKS.--Records fair except those for winter period, which are poor. Diversions for irrigation of about 400 acres (1.62 km²) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,760 ft³/s (191 m³/s) May 7, 1975, gage height, 13.30 ft (4.054 m); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)		Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)	
Mar. 22	0445	*3740	106	*10.05	3.063	June 1	0345	2300	65.1	7.94	2.420
Mar. 27	0845	2010	56.9	7.44	2.268	July 19	0315	2090	59.2	7.58	2.310
May 18	1230	2750	77.9	9.07	2.765	Sept. 14	0215	812	23.0	5.25	1.600
May 23	1130	1710	48.4	6.91	2.106	Sept. 19	1730	2570	72.8	8.66	2.640

No flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	UCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	.22	1.0	1.1	.00	.00	237	1.8	1480	34	9.9	.00
2	284	1.0	.80	.80	.00	.00	175	1.8	330	23	80	.00
3	114	5.2	.60	.70	.00	.00	124	1.6	175	14	47	.00
4	45	2.7	.40	.60	.00	.00	92	1.6	114	11	23	.00
5	25	1.6	.20	.50	.00	.00	68	1.4	100	54	12	.00
6	16	1.4	.10	.40	.00	.00	53	1.2	120	48	6.5	.00
7	54	1.0	.10	.50	.00	.00	46	1.3	90	114	3.1	.00
8	46	1.0	.10	.25	.00	.00	37	3.1	70	118	1.6	.00
9	21	.70	.10	.20	.00	.00	27	124	60	69	1.0	.00
10	12	.45	.15	.20	.00	.10	18	64	80	47	.75	.00
11	6.5	.25	.20	.20	.00	10	13	61	100	42	.50	.00
12	3.8	.50	.40	.15	.00	80	10	64	50	37	.39	.29
13	3.1	.22	.60	.10	.00	80	8.7	42	23	31	.30	336
14	1.8	.22	1.0	.10	.00	100	7.0	21	16	24	.18	504
15	1.2	.22	2.0	.10	.00	250	6.1	12	11	15	.18	91
16	.75	.22	2.8	.10	.00	350	5.6	4.3	151	7.6	.15	23
17	.50	.22	3.2	.10	.00	400	4.2	57	171	3.1	.15	6.7
18	.34	.22	3.5	.05	.00	450	3.8	2140	56	76	.07	35
19	.50	.20	3.5	.10	.00	600	3.6	1800	23	693	.00	1460
20	.22	.20	5.0	.10	.00	1000	3.4	1330	16	124	.00	895
21	.22	.20	14	.10	.00	2340	2.7	354	12	45	.00	214
22	.18	.20	16	.10	.00	3000	2.7	163	11	14	1.2	111
23	.18	.20	10	.10	.00	1210	2.4	572	4.3	56	.75	69
24	.18	.20	4.0	.10	.00	812	2.1	135	6.1	14	.15	40
25	.15	.30	2.8	.10	.00	1050	2.1	86	34	7.0	.75	31
26	.18	.50	2.5	.05	.00	1580	1.8	79	161	3.4	.30	30
27	.18	.70	2.3	.00	.00	1680	1.8	82	164	1.6	.18	27
28	.18	.90	2.1	.00	.00	879	1.6	48	103	.89	.15	23
29	.18	1.0	1.9	.00	---	562	1.6	31	50	.50	.07	16
30	.22	1.2	1.6	.00	---	429	1.6	79	38	.22	.04	10
31	.22	---	1.4	.00	---	315	---	1560	---	.54	.04	---
TOTAL	723.63	22.94	84.35	6.70	.00	17157.10	963.0	8932.6	3829.4	1717.70	190.40	3959.70
MEAN	23.3	.76	2.72	.22	.000	553	32.1	288	128	55.4	6.14	132
MAX	289	5.2	16	1.1	.00	3000	237	2140	1480	693	80	1460
MIN	.15	.20	.10	.00	.00	.00	1.6	1.2	6.1	.22	.00	.00
AC=FT	1440	46	167	13	.00	34030	1910	17720	7600	3410	378	7850

CAL YR 1977	TOTAL	2798.91	MEAN	7.67	MAX	289	MIN	.00	AC-FI	5550
WTR YR 1978	TOTAL	37587.52	MEAN	103	MAX	3000	MIN	.00	AC-FI	74550

YELLOWSTONE RIVER BASIN

515

06309079 MUSTER CREEK NEAR KINSEY, MT

LOCATION.--Lat 46°37'05", long 105°45'08", in NW¼SW¼SE¼ sec.13, T.10 N., R.47 E., Custer County, Hydrologic Unit 10100004, on right bank, at bridge on Caprock Road, 5.8 mi (9.3 km) northwest of Kinsey.

DRAINAGE AREA.--28.5 mi² (73.8 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COLLECTING SAMPLE (CODE NUMBER)	STREAM FLOW INS (AF4-TARE) (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE AIR (DEG C)	TEMPERATURE WATER (DEG C)	DISSOLVED OXYGEN (MG/L)	DISSOLVED OXYGEN SATURATION (%)	COLIFORMS, FECALES (COLS./100 ML)
MAR 16...	1600	99001	9.6	402	8.5	--	.0	12.8	96	<1
MAY 09...	0915	99001	.15	1520	8.4	9.5	7.0	12.2	109	--

DATE	TIME	STREPTOCOCCI, FECALES (COLS. PER 100 ML)	HARDNESS (MG/L AS CaCO3)	HARDNESS, NONCALCAREOUS (MG/L AS CaCO3)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNESIUM DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	POTASSIUM, DIS-SOLVED (MG/L AS K)	SILICATE, DIS-SOLVED (MG/L AS SiO2)	CARBONATE, DIS-SOLVED (MG/L AS CO3)
MAR 16...	1600	26	0	7.9	2.1	90	7.4	4.3	130	0
MAY 09...	--	--	--	--	--	--	--	--	260	2

DATE	TIME	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLOU-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (MG/L)	NITROGEN, DIS-SOLVED (MG/L AS N)
MAR 16...	1.0	100	3.1	.2	7.8	302	280	.41	7.85	1.7
MAY 09...	1.7	--	--	--	--	--	--	--	--	5.9

DATE	TIME	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, DIS-SOLVED (MG/L AS N)	PHOSPHORUS, DIS-SOLVED (MG/L AS P)	PHOSPHORUS, DIS-SOLVED (MG/L AS P)	BORON, DIS-SOLVED (MG/L AS B)	IRON, DIS-SOLVED (MG/L AS FE)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)
MAR 16...	.00	2.3	2.3	4.0	.02	.94	70	170	11	5.7	5.7
MAY 09...	.16	5.3	5.5	9.4	--	2.0	--	--	--	--	--

DATE	TIME	ALUMINUM, DIS-SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE)	BERYLLIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)
MAR 16...	1600	190	6	2	700	100	0	0	1	0	40
MAY 09...	0915	--	20	--	1100	--	10	--	1	--	220

YELLOWSTONE RIVER BASIN

06309079 MUSTER CREEK NEAR KINSEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CU)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOVERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DIS- SOLVED (UG/L AS MN)
MAR 10...	10	14	0	70	14	43	1	30	20	440	0
MAY 09...	--	80	--	250	--	190	--	100	--	1100	--

DATE	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MU)	MOLYBDENUM, DIS- SOLVED (UG/L AS MU)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELENIUM, TOTAL RECOVERABLE (UG/L AS SE)	SELENIUM, DIS- SOLVED (UG/L AS SE)	VANADIUM, TOTAL RECOVERABLE (UG/L AS V)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 10...	.0	.0	3	1	47	8	2	2	2.0	210	30
MAY 09...	.3	--	0	--	150	--	5	--	--	680	--

DATE	TIME	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	BARIUM, RECOVERABLE FM BOT- TOM MA- TERIAL (UG/G AS BA)	BERYLLIUM, RECOVERABLE FM BOT- TOM MA- TERIAL (UG/G AS BG)	CADMIUM RECOVERABLE FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHROMIUM, RECOVERABLE FM BOT- TOM MA- TERIAL (UG/G AS CR)	COBALT, RECOVERABLE FM BOT- TOM MA- TERIAL (UG/G AS CO)	COPPER, RECOVERABLE FM BOT- TOM MA- TERIAL (UG/G AS CU)
MAR 10...	1600	12	300	1	1	4	10	16
MAY 09...	0915	13	320	1	40	4	16	13

DATE	LEAD, RECOVERABLE FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGANESE, RECOVERABLE FM BOT- TOM MA- TERIAL (UG/G AS MN)	MERCURY RECOVERABLE FM BOT- TOM MA- TERIAL (UG/L AS HG)	MOLYBDENUM, RECOVERABLE FM BOT- TOM MA- TERIAL (UG/G AS MU)	NICKEL, RECOVERABLE FM BOT- TOM MA- TERIAL (UG/G AS NI)	SELENIUM, TOTAL IN BOT- TOM MA- TERIAL (UG/G AS SE)	ZINC, RECOVERABLE FM BOT- TOM MA- TERIAL (UG/G AS ZN)
MAR 10...	30	1100	.0	0	25	0	37
MAY 09...	30	1700	.0	0	26	0	27

06309079 MUSTER CREEK NEAR KINSEY, MT--Continued

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, DIS- SOLVED (PCI/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (PCI/L AS U-NAT)	GROSS BETA, DIS- SOLVED (CS-137) AS	GROSS BETA, SUSP. TOTAL (CS-137) AS
MAR 16...	1600	<3.3	<2.2	150	85	7.6	81
MAY 09...	0915	<15	<10	390	270	20	190

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (LFS)	SEDIM- ENT, SUS- PENDED (MG/L)	SEDIM- ENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINE THAN .004 MM	SED. SUSP. FALL DIAM. % FINE THAN .016 MM
MAR 16...	1600	1.0	9.6	2460	64	96	99
MAY 09...	0915	7.0	.15	9840	4.0	96	96
JUL 19...	1515	23.0	.54	12500	16	--	--

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	BED MAT. FALL DIAM. % FINE THAN .062 MM	BED MAT. FALL DIAM. % FINE THAN .125 MM	BED MAT. FALL DIAM. % FINE THAN .250 MM	BED MAT. FALL DIAM. % FINE THAN .500 MM	BED MAT. FALL DIAM. % FINE THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINE THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINE THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINE THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINE THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINE THAN 32.0 MM	BED MAT. SIEVE DIAM. % FINE THAN 64.0 MM
MAR 16...	1600	21	33	57	67	71	71	76	87	99	100	--
MAY 09...	0915	9	14	24	32	36	36	47	69	86	94	100

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	MAR 17,78 1600		MAY 9,78 0915	
	TOTAL CELLS/ML		TOTAL CELLS/ML	
DIVERSITY: DIVISION	0.0		0.0	
..CLASS	0.0		0.0	
...ORDER	0.0		0.0	
....FAMILY	0.0		0.0	
.....GENUS	0.0		0.0	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHRYSTOPHYTA				
..BACILLARIOPHYCEAE				
...PENNACEAE				
....NAVICULACEAE				
.....NAVICULA	--	-	140#100	

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

YELLOWSTONE RIVER BASIN

06309145 CUSTER CREEK NEAR KINSEY, MT

LOCATION.--Lat 46°42'03", long 105°29'14", in NE¼NW¼ sec.19, T.11 N., R.50 E., Prairie County, Hydrologic Unit 10100001, on right bank, at prairie trail ford and just upstream from railroad bridge, about 0.8 river mile (1.3 km) above mouth, and 12.0 mi (19.3 km) northeast of Kinsey.

DRAINAGE AREA.--151 mi² (391 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	
MAR 23...	1315	99001	111	500	8.0	9.0	3.0	12.4	100	K20	
APR 25...	1530	99001	1.2	3420	8.4	26.0	22.0	8.8	109	320	
MAY 09...	1445	99001	3.7	2140	8.2	22.5	20.0	8.0	94	440	
JUN 06...	1200	99001	7.4	1910	8.6	26.0	23.0	9.0	113	320	
JUL 19...	1700	99001	.15	3300	8.5	24.0	23.5	8.2	103	290	
DATE	TIME	STREP- TOCOC1 FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NON-CAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
MAR 23...	5400	94	4	22	9.4	73	3.3	3.5	110	0	
APR 25...	850	690	310	140	83	580	9.6	8.4	450	4	
MAY 09...	--	360	97	81	36	400	9.2	7.9	320	0	
JUN 06...	650	340	110	71	40	320	7.5	6.2	270	4	
JUL 19...	500	580	260	110	75	590	11	10	390	1	
DATE	TIME	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLOR- IDE, DIS- SOLVED (MG/L AS CL)	FLUOR- IDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TUNS PER AC-FT)	SOLIDS, DIS- SOLVED (TUNS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
MAR 23...	1.8	160	1.3	.1	4.5	512	328	.42	93.5	.38	
APR 25...	2.9	1500	7.5	.2	7.5	2500	2550	3.40	8.10	.02	
MAY 09...	3.2	890	26	.4	8.5	1520	1610	2.07	15.2	1.9	
JUN 06...	1.1	770	3.7	.4	4.6	1340	1350	1.82	26.8	.33	
JUL 19...	2.0	1500	4.8	.3	8.2	2500	2490	3.40	1.01	.00	
DATE	TIME	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
MAR 23...	.08	.73	.81	1.2	.03	.53	60	30	7.2	6.3	
APR 25...	.01	.33	.34	.36	.00	.00	270	30	5.1	.3	
MAY 09...	.08	3.4	3.5	5.4	.02	1.0	180	10	10	1.1	
JUN 06...	.04	.71	.75	1.1	.00	.06	190	30	7.3	1.0	
JUL 19...	.00	.44	.44	.44	.00	.00	420	40	11	.8	

YELLOWSTONE RIVER BASIN

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06309145 CUSTER CREEK NEAR KINSEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, TOTAL RECJV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
MAR 23...	1315	20	6	1	300	200	0	0	0	1	20
MAY 09...	1445	60	20	3	600	0	0	0	1	1	50

DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PD)	LEAD, DIS- SOLVED (UG/L AS PD)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAR 23...	0	6	0	31	5	7	0	20	10	390	20
MAY 09...	5	24	1	80	4	42	3	60	40	640	20

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL SOLVED (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 23...	.0	.0	4	0	26	3	1	1	1.0	60	0
MAY 09...	.1	.0	1	1	60	1	3	2	3.0	220	10

YELLOWSTONE RIVER BASIN

06309145 CUSTER CREEK NEAR KINSEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	BARIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS BA)	BERYL- LIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CO)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)
MAR 23...	1315	54	3300	10	1	30	5	6
MAY 09...	1445	7	130	1	0	5	10	10

DATE	TIME	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/L AS HG)	MOLYB- DENUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	NICKEL, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS NI)	SELE- NIUM, RECOV. TOTAL IN BOT- TOM MA- TERIAL (UG/G)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)
MAR 23...	10	11000	.0	--	10	0	110	
MAY 09...	30	250	.0	0	15	0	23	

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, DIS- SOLVED (PCI/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (PCI/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)
MAR 23...	1315	<5.0	<3.4	43	29	7.2	27
MAY 09...	1445	50	34	100	68	23	94

06309145 CUSTER CREEK NEAR KINSEY, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 1.00 MM
MAR 23...	1315	3.0	111	982	294	69	77	92	96	98	99	100
APR 25...	1530	22.0	1.2	10	.03	--	--	--	--	--	--	--
MAY 09...	1445	20.0	3.7	3250	32	90	92	--	--	--	--	--
JUN 06...	1200	23.0	7.4	88	1.8	--	--	--	--	--	--	--
JUL 19...	1700	23.5	.15	40	.02	--	--	--	--	--	--	--

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. FALL DIAM. % FINER THAN 2.00 MM
MAY 09...	1445	19	29	34	56	59	39

DATE	TIME	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 64.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 128 MM
MAY 09...	1445	43	49	56	65	88	100

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPOS- URE (DAYS)	PERI- PHYTON BIOMASS TJIAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS TJIAL DRY WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2)
MAY 09...	1445	14	.157	.000	.060	.000

YELLOWSTONE RIVER BASIN

06309145 CUSTER CREEK NEAR KINSEY, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE TIME	PHYTOPLANKTON									
	MAR 23,78 1315		APR 25,78 1530		MAY 9,78 1445		JUN 6,78 1200		JUL 19,78 1700	
TOTAL CELLS/ML	620		960		1800		2900		1400	
DIVERSITY: DIVISION	1.0		0.0		0.0		1.1		1.7	
..CLASS	1.0		0.0		0.0		1.1		1.7	
..ORDER	1.0		0.0		0.0		1.3		2.3	
...FAMILY	1.3		0.9		1.0		1.8		2.9	
....GENUS	1.3		0.9		1.0		2.4		3.0	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCEALES										
....JOCYSTACEAE										
....ANKISTRODES MUS	43	7	--	-	--	-	1100#	37	66	5
....KIMCHVERIELLA	--	-	--	-	--	-	20	1	44	3
....JOCYSTIS	--	-	--	-	--	-	740#	25	--	-
...SCENEDESMAEAE										
....ACTINASTRUM	--	-	--	-	--	-	280	10	--	-
...SCENEDES MUS	--	-	--	-	--	-	--	-	44	3
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	180	13
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...PENNALES										
...NAVICULACEAE										
....ENIUMONEIS	--	-	*	0	--	-	--	-	22	2
...CENTRALES										
...COSCINOIDISCEAE										
...CYCLOTELLA	--	-	--	-	--	-	--	-	44	3
...PENNALES										
...ACHNANTHACEAE	--	-	--	-	--	-	--	-	44	3
...ACHNANTHES	--	-	--	-	--	-	--	-	44	3
...CYMBELLACEAE										
...CYMBELLA	14	2	14	1	1100#	62	200	7	110	8
...EUNOTIACEAE	--	-	--	-	--	-	--	-	22	2
...EUNOTIA	--	-	--	-	--	-	--	-	22	2
...FRAGILARIACEAE										
...SYNEDRA	--	-	190#	19	--	-	--	-	--	-
...NAVICULACEAE										
...CALONEIS	--	-	14	1	--	-	--	-	--	-
...DIPLONEIS	--	-	--	-	--	-	--	-	22	2
...NAVICULA	72	12	--	-	--	-	120	4	--	-
...NITZSCHIAEAE										
...NITZSCHIA	29	5	750#	78	710#	38	--	-	88	6
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROCOCCOCEALES										
...CHROCOCCOCEAE										
...ANACYSTIS	--	-	--	-	--	-	320	11	560#	42
...HORMOGONIALES										
...OSCILLATORIACEAE										
...OSCILLATORIA	460#	74	--	-	--	-	160	5	66	5
EUGLENOPHYTA (EUGLENIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
...TRACHELOMONAS	--	-	--	-	--	-	--	-	22	2
PYRRHOPHYTA (FIRE ALGAE)										
..DIUOPHYCEAE										
...PERIDINIALES										
...GLENJDINIAEAE										
...GLENJDINIUM	--	-	--	-	--	-	--	-	22	2

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

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LOCATION. --Lat 45°04'04", long 105°52'10", in NW¼SE¼NW¼ sec.8, T.9 S., R.48 E., Powder River County, Hydrologic Unit 10090207, on left bank 500 ft (152 m) downstream from discontinued post office at Moorhead, 6.2 mi (10.0 km) upstream from Buffalo Creek, and at mile 184.8 (297.3 km).

WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 1309: 1932(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,334.6 ft (1,016.39 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 28, 1931, nonrecording gage at site 0.3 mi (0.5 km) upstream at different datum. Aug. 28, 1931, to Mar. 21, 1956, water-stage recorder at site 1.2 mi (1.9 km) upstream at different datum. Mar. 22, to July 24, 1956, nonrecording gage at site 0.3 mi (0.5 km) downstream at different datum. July 25 to Sept. 12, 1956, nonrecording gage at present site and datum.

REMARKS.--Water-discharge records fair except those for winter period, which are poor. Some regulation by three reservoirs in Wyoming with combined usable capacity of 36,800 acre-ft (45.5 hm³). Diversions for irrigation of about 66,300 acres (268 km²) above station.

AVERAGE DISCHARGE.--47 years, 470 ft³/s (13.31 m³/s), 340,500 acre-ft/yr (420 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,000 ft³/s (935 m³/s) May 20, 1978, gage height, 15.24 ft (4.645 m); maximum gage height, 17.7 ft (5.39 m) Mar. 21, 1956, datum then in use (ice jam); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 30, 1923, reached a stage of 19 ft (5.8 m) site and datum used 1931-56, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,700 ft³/s (105 m³/s) and maximums (*):

Date	Time	Discharge		Gage height		Date	Time	Discharge		Gage height	
		(ft ³ /s)	(m ³ /s)	(ft)	(m)			(ft ³ /s)	(m ³ /s)	(ft)	(m)
Mar. 21	0015	5.520	156	6.12	1.865	May 20	2115	*33,000	935	*15.24	4.645

Minimum discharge, 54 ft³/s (1.53 m³/s) Nov. 19, gage height, 2.14 ft (0.652 m), result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	420	172	150	160	140	170	591	793	4730	2530	445	215
2	230	179	150	160	140	170	583	866	4400	2560	428	206
3	551	160	150	160	140	170	561	837	3880	2150	466	202
4	496	170	150	160	140	170	558	920	3490	1620	466	183
5	330	180	140	160	140	170	503	1180	3260	1550	495	170
6	268	179	130	160	140	180	467	1980	3170	1330	399	161
7	239	174	110	160	140	200	443	2510	3200	1040	340	152
8	233	166	100	150	140	230	428	3090	3530	1220	337	154
9	210	200	100	150	140	300	395	3140	3730	1320	316	146
10	201	208	100	150	140	300	372	2760	3830	1300	309	139
11	194	237	110	150	140	1100	376	2990	4000	1500	297	152
12	167	240	130	150	150	2500	374	3630	3920	1170	273	136
13	182	237	170	150	150	3000	361	3330	3610	867	264	133
14	177	230	180	150	150	2600	351	2690	3280	691	264	202
15	175	232	160	150	150	1930	349	2410	3360	564	294	208
16	174	237	180	150	150	1290	329	2140	3990	489	336	196
17	169	231	180	150	150	1170	329	4660	3740	426	361	169
18	170	230	170	150	160	1600	322	13000	3360	489	329	183
19	173	220	160	150	170	2960	336	20000	2970	489	326	201
20	172	200	160	150	160	3760	336	27500	2660	555	376	245
21	171	90	160	150	190	4360	317	15700	2490	574	342	261
22	167	90	160	150	190	3360	323	7260	2370	595	323	360
23	172	95	160	150	190	2110	310	5910	2330	982	311	340
24	171	95	160	150	190	1460	307	5490	2510	2260	286	298
25	172	120	160	150	190	1130	307	5520	2480	1500	269	274
26	176	140	160	150	180	1260	307	5470	2510	968	236	260
27	176	150	160	150	180	1390	297	5530	2310	726	224	252
28	179	150	160	150	160	1040	324	5540	1930	595	210	254
29	176	150	160	150	---	803	523	5160	1990	555	205	230
30	176	150	160	150	---	664	800	5050	2230	498	201	245
31	177	---	160	150	---	658	---	5060	---	471	207	---
TOTAL	6872	5358	4660	4720	4440	42520	12159	172158	95340	33566	9928	6387
MEAN	222	179	150	152	139	1372	405	5553	3178	1083	320	213
MAX	551	240	180	160	190	4380	800	27500	4730	2560	495	360
MIN	167	90	100	150	140	170	297	793	1930	428	201	132
AC-FT	13530	10630	9240	9360	6810	84340	24120	341500	189100	66580	19690	12670
CAL YR 1977	TOTAL	127994	MEAN	351	MAX	3880	MIN 17	AC-FT	253900			
WTR YR 1978	TOTAL	398108	MEAN	1091	MAX	27500	MIN 90	AC-FT	789600			

YELLOWSTONE RIVER BASIN

06324500 POWDER RIVER AT MOORHEAD, MT--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at bridge on county road, 1.1 mi (1.8 km) upstream from discontinued post office at Moorhead, 1.2 mi (1.9 km) upstream from present gage.

PERIOD OF RECORD.--Water years 1951-53, 1956-57, 1969-72, 1975 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: February 1951 to September 1953, October 1955 to September 1957, October 1974-77, March to September 1978.

SUSPENDED SEDIMENT DISCHARGE: October 1974-77, March to September 1978.

REMARKS.--Flow regulated by reservoirs and diversions for irrigation upstream from station. Flow affected by ice during most of winter months.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum daily, 32.0°C July 7, 1951; minimum daily (water years 1951-53, 1956-57, 1975-77), 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily, 40,500 mg/L June 24, 1976; minimum daily, 5 mg/L Sept. 15, 1975.

SEDIMENT LOADS: Maximum daily, 2,230,000 tons (2,023,000 tonnes) May 20, 1978; minimum daily, 0.24 ton (0.22 tonne) Sept. 15, 1975.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum daily, 29.0°C Aug. 25.

SEDIMENT CONCENTRATIONS: Maximum daily, 41,000 mg/L May 13; minimum daily, 161 mg/L Sept. 17.

SEDIMENT LOADS: Maximum daily, 2,230,000 tons (2,023,000 tonnes) May 20; minimum daily, 67 tons (61 tonnes) Sept. 7.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY LUL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE)	SPE- CIFIC CON- DUCTI- VANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (Jfu)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
DEC										
12...	1045	--	197	0	2350	8.4	12.0	5.0	1900	11.2
NOV										
01...	1000	--	171	0	2440	8.5	5.0	4.0	800	11.4
DEC										
07...	1030	--	132	83	2150	8.1	3.0	.0	40	11.3
JAN										
04...	1130	--	154	2	2500	7.7	-3.0	.0	120	7.5
FEB										
25...	1045	--	179	0	2250	7.7	-1.0	.0	50	8.9
MAR										
15...	1230	--	1630	2	1400	8.3	2.5	.5	2200	11.8
APR										
12...	0930	--	386	1	2150	8.3	9.5	6.0	310	10.0
MAY										
02...	1045	--	677	0	1980	8.2	15.0	13.5	1300	9.4
JUN										
06...	1130	--	3210	1	960	8.2	24.0	19.5	900	7.9
JUL										
11...	1145	--	1000	0	1260	8.4	31.5	24.0	1200	7.2
AUG										
03...	0900	--	430	1	2560	8.4	16.5	16.5	970	8.2
SEP										
01...	1630	99001	211	--	2150	8.2	35.5	25.5	--	--
13...	0930	--	152	61	2780	8.1	11.0	9.0	160	10.4

06324500 POWDER RIVER AT MOORHEAD, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT										
12...	2.6	680	460	160	69	230	4.7	7.5	270	0
NOV										
01...	1.6	610	380	130	70	320	5.6	7.0	290	0
DEC										
07...	1.2	730	430	160	80	220	3.5	6.4	360	0
JAN										
04...	--	750	400	170	79	300	4.8	6.8	430	0
FEB										
28...	--	630	340	140	69	270	4.7	6.5	360	0
MAR										
15...	--	460	290	100	37	160	3.5	6.0	140	0
APR										
12...	--	650	410	150	67	250	4.3	6.9	290	0
MAY										
02...	--	510	320	120	52	250	4.8	6.4	240	0
JUN										
06...	--	330	170	60	31	80	2.1	4.0	190	0
JUL										
11...	--	390	240	97	37	140	3.1	4.6	190	0
AUG										
03...	--	760	580	190	69	310	4.9	7.6	220	1
SEP										
01...	--	610	400	130	69	230	4.1	6.9	250	0
13...	--	680	490	150	74	360	6.0	7.4	230	0

DATE	ALKAL- LITY (MG/L AS CaCO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CALCI- UM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SOM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (MG/L PER ML-FI)	SOLIDS, DIS- SOLVED (MG/L PER DAY)	WITKO- GEN, CO2+H2S TOTAL (MG/L AS H)
OCT										
12...	220	1.7	800	180	.5	5.9	1640	2.23	472	.17
NOV										
01...	240	2.3	730	220	.3	2.9	1620	2.20	746	.18
DEC										
07...	300	4.6	770	110	.2	11	1340	2.09	549	.45
JAN										
04...	350	14	720	200	.3	13	1700	2.31	707	.63
FEB										
28...	300	11	620	180	.5	13	1480	2.01	715	.74
MAR										
15...	110	1.1	520	58	.5	5.6	956	1.30	4210	.55
APR										
12...	240	2.3	710	150	.5	7.5	1490	2.03	1550	.20
MAY										
02...	200	2.4	590	160	.5	6.5	1310	1.78	3100	.18
JUN										
06...	160	1.9	310	32	.3	9.8	647	.88	5610	.31
JUL										
11...	160	1.2	430	77	.4	9.1	889	1.21	2400	.24
AUG										
03...	160	1.4	940	180	.7	8.0	1820	2.48	2110	.02
SEP										
01...	220	2.6	740	160	.4	5.2	1470	2.14	894	.01
13...	190	2.9	870	230	.4	5.9	1810	2.46	743	.02

YELLOWSTONE RIVER BASIN

06324500 POWDER RIVER AT MOORHEAD, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, AMMONIA (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT 12...	.06	2.7	2.8	3.0	.00	--	320	20	--	--
NOV 01...	.28	1.4	1.7	1.9	.81	--	410	20	--	--
DEC 07...	.09	.45	.54	.99	.06	--	270	30	--	--
JAN 04...	.15	1.1	1.2	1.8	.13	--	370	20	4.5	.7
FEB 28...	.14	.32	.46	1.2	.09	--	320	30	--	--
MAR 15...	.24	5.3	5.5	6.1	2.2	--	200	30	--	--
APR 12...	.00	1.2	1.2	1.4	.37	--	260	40	--	--
MAY 02...	.01	3.6	3.6	3.6	1.7	--	230	40	--	--
JUN 06...	.08	2.7	2.8	3.1	1.6	--	100	30	--	--
JUL 11...	.07	4.0	4.1	4.3	1.5	--	160	30	11	>5.0
AUG 03...	.06	9.0	9.1	9.1	.77	--	310	20	--	--
SEP 01...	.01	.68	.69	.90	.13	.01	300	20	--	--
13...	.01	.83	.84	.86	.17	--	380	30	--	--

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 12...	1045	10	1	20	0	10	1	2

DATE	TIME	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANAD- IUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 12...	70	70	0	.0	2	2	3	.4	20

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	PCB, TOTAL (UG/L)	PCB, IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DANE, TOTAL (UG/L)	CHLOR- DANE, IN BOT- TOM MA- TERIAL (UG/KG)	DDO, TOTAL (UG/L)	DDO, IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL (UG/L)	DDE, IN BOT- TOM MA- TERIAL (UG/KG)
OCT 01...	1740	.0	0	.00	.0	.0	0	.00	.0	.00	.0
JUN 09...	1430	.0	--	.00	--	.0	--	.00	--	.00	--
SEP 15...	1410	.0	0	.00	.0	.0	0	.00	.0	.00	.0

DATE	TIME	DDT, TOTAL (UG/L)	DDT, IN BOT- TOM MA- TERIAL (UG/KG)	DI- AZINOV, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	DI- ELDRIN, IN BOT- TOM MA- TERIAL (UG/KG)	ENDO- SULFAN, TOTAL (UG/L)	ENDO- SULFAN, IN BOT- TOM MA- TERIAL (UG/KG)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)
OCT 01...		.00	.0	.00	.00	.0	.00	.00	.0	.00
JUN 09...		.00	--	.00	.00	--	.00	.00	--	.00
SEP 15...		.00	.0	.00	.00	.0	--	.00	.0	.00

YELLOWSTONE RIVER BASIN

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06324500 POWDER RIVER AT MOORHEAD, MT--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	HEPTA- CHLOR, TOTAL IN 30T- TUM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL IN 30T- TUM MA- TERIAL (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN 30T- TUM MA- TERIAL (UG/KG)	MALA- THION, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR, TOTAL (UG/L)
OCT 01...	.0	.00	.0	.00	.0	.00	.00	.00	--	.00
JUN 09...	--	.00	--	.00	--	.00	.00	.00	--	.00
SEP 15...	.0	.00	.0	.00	.0	.00	.00	.00	.00	.00

DATE	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOX- APHENE, TOTAL IN 30T- TUM MA- TERIAL (UG/KG)	TRI- THION, TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2,4-D, TOTAL IN 30T- TUM MA- TERIAL (UG/KG)	2,4,5-T TOTAL (UG/L)	2,4,5-T TOTAL IN 30T- TUM MA- TERIAL (UG/KG)	SILVEX, TOTAL (UG/L)	SILVEX, TOTAL IN 30T- TUM MA- TERIAL (UG/KG)
OCT 01...	.00	0	0	.00	.00	--	.00	--	.00	--
JUN 09...	.00	0	--	.00	.02	0	.00	0	.00	.0
SEP 15...	.00	0	0	.00	.00	0	.00	0	.00	.0

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTANT- ANEOUS (CFS)	SEDI- MENT, SUS- PENDED (KG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINEP THAN .004 MM	SED. SUSP. FALL DIAM. % FINEP THAN .015 MM	SED. SUSP. FALL DIAM. % FINEP THAN .062 MM
DEC 07...	1050	.0	132	177	63	--	--	--
JAN 04...	1130	.0	154	545	143	--	--	--
FEB 28...	1045	.0	179	155	75	--	--	--
MAR 15...	1230	.5	1650	4160	18300	63	64	--
MAR 23...	1440	3.5	1820	5850	26700	24	34	49
APR 12...	0930	6.0	346	792	825	--	--	--
MAY 02...	1045	13.5	677	4160	9850	35	57	73
JUN 06...	1130	19.5	3210	4520	39200	26	37	64
JUL 11...	1145	24.0	1000	2790	7530	62	62	91
AUG 03...	0900	16.5	430	1950	2260	--	--	--
SEP 13...	0930	9.0	152	333	157	--	--	--

YELLOWSTONE RIVER BASIN

06324500 POWDER RIVER AT MOORHEAD, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM
DEC 07...	--	--	--	80	--	--	--
JAN 04...	--	--	--	88	--	--	--
FEB 28...	--	--	--	87	--	--	--
MAR 15...	--	--	--	92	95	98	100
23...	81	98	100	--	--	--	--
APR 12...	--	--	--	75	--	--	--
MAY 02...	92	99	100	--	--	--	--
JUN 06...	88	98	100	--	--	--	--
JUL 11...	96	100	--	--	--	--	--
AUG 03...	--	--	--	93	--	--	--
SEP 13...	--	--	--	98	--	--	--

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH			
1											---	---		
2											---	---		
3											---	---		
4											---	---		
5											---	---		
6											---	---		
7											---	---		
8											---	---		
9											---	---		
10											---	---		
11											---	---		
12											---	---		
13											---	---		
14											---	---		
15											---	---		
16											3260	11400		
17											3590	10700		
18											21400	92400		
19											32300	258000		
20											27100	275000		
21											17500	207000		
22											9860	91300		
23											6810	38800		
24											5570	22000		
25											6360	19700		
26											4770	16200		
27											4610	17300		
28											3290	9240		
29											3180	6940		
30											2540	4550		
31											2440	4330		
TOTAL											---	1084860		

06324500 POWDER RIVER AT MOORHEAD, MT--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCEN- TRATION	LOADS (T/DAY)	MEAN CONCEN- TRATION	LOADS (T/DAY)	MEAN CONCEN- TRATION	LOADS (T/DAY)	MEAN CONCEN- TRATION	LOADS (T/DAY)	MEAN CONCEN- TRATION	LOADS (T/DAY)	MEAN CONCEN- TRATION	LOADS (T/DAY)											
	(MG/L)		(MG/L)		(MG/L)		(MG/L)		(MG/L)		(MG/L)												
APRIL				MAY				JUNE				JULY				AUGUST				SEPTEMBER			
1	2440	3890	3820	8180	7680	98100	6230	42600	1200	1440	325	189											
2	1660	2610	4620	10800	6780	80500	6930	47900	1010	1170	289	161											
3	1360	2060	5540	12500	6380	66400	4050	23300	2100	2420	257	140											
4	1490	2160	6270	15600	6020	56700	4180	20500	3590	4520	228	113											
5	1350	1830	6180	19700	5390	47700	3290	13800	2840	3800	206	95											
6	1150	1450	12600	67400	4190	35900	2490	8940	1640	1770	190	83											
7	1040	1240	20400	138000	4610	39800	1970	5530	966	910	163	67											
8	1030	1190	20600	172000	5450	51900	2150	7080	966	879	163	68											
9	902	962	15900	135000	5630	56700	5790	20600	874	750	207	82											
10	883	887	13600	101000	5400	55800	4980	17500	681	568	243	91											
11	837	850	21200	171000	5520	59600	5160	18100	451	362	279	99											
12	762	790	35800	351000	4300	45500	5170	16300	478	355	313	132											
13	681	664	41000	371000	4780	46600	5980	14300	497	354	343	142											
14	718	680	31900	249000	4000	35400	5460	10200	469	334	335	183											
15	754	710	19700	128000	4650	42200	3660	5570	543	431	311	175											
16	718	638	14500	83800	5870	63200	2390	3160	626	568	227	120											
17	708	629	15200	191000	3480	55100	1500	1730	662	681	161	73											
18	662	576	23200	814000	3420	31200	1210	1600	736	654	197	97											
19	762	709	22300	1200000	3010	24100	890	1180	745	656	270	147											
20	782	709	30100	2230000	2990	21600	1160	1740	1340	1360	417	276											
21	736	630	32300	1280000	2640	17700	1150	1780	921	850	778	590											
22	736	642	20300	398000	3240	20700	1340	2150	684	597	2810	2730											
23	782	655	15900	254000	2360	14800	3300	10600	660	554	2710	2490											
24	745	618	11300	168000	2050	13900	19600	120000	604	466	2330	1870											
25	690	572	9990	149000	2290	15300	17600	71300	481	349	3410	2520											
26	718	595	10500	155000	1480	10000	16300	42600	501	319	3730	2620											
27	662	531	10400	150000	1520	9480	8830	17300	543	328	2820	1920											
28	791	692	11200	168000	1600	8420	8000	12900	435	247	1680	1150											
29	3460	5530	9830	137000	1460	7840	5340	7710	427	236	1280	864											
30	4080	8810	9810	134000	3520	21200	2550	3430	413	224	910	602											
31	---	---	10200	134000	---	---	1830	2330	361	202	---	---											
TOTAL	---	44509	---	9600930	---	1133740	---	573730	---	28354	---	19889											

TOTAL LOAD FOR YEAR: 12486062 TONS.
 TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
 DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	13.0	---	13.5	23.0	26.0	25.5
2						---	13.0	16.0	13.0	21.0	17.5	26.0
3						---	15.0	15.0	16.0	20.0	19.0	26.0
4						---	14.5	10.0	19.0	19.0	17.5	27.0
5						---	14.0	10.0	23.0	22.0	25.0	26.0
6						---	15.0	7.5	21.0	20.0	21.0	26.0
7						---	14.0	7.0	19.5	21.0	26.0	27.0
8						---	13.0	9.5	21.0	18.5	26.0	24.0
9						---	11.5	13.0	22.0	16.0	26.0	---
10						---	14.0	12.0	19.0	16.0	27.0	---
11						---	12.0	11.0	17.0	19.5	29.0	---
12						---	11.0	11.0	16.5	21.0	27.5	---
13						---	13.5	19.0	22.0	23.0	20.0	14.5
14						---	14.5	19.0	22.0	24.0	19.0	16.0
15						.5	11.5	22.0	21.0	19.0	24.0	20.0
16						2.5	15.0	16.0	15.0	20.0	24.0	---
17						2.0	10.0	10.0	14.0	20.0	20.0	15.0
18						4.0	---	11.0	18.0	22.0	16.0	13.0
19						5.0	12.5	11.0	14.5	19.0	22.0	9.0
20						6.5	15.0	14.0	20.5	19.0	20.0	13.0
21						7.5	11.0	16.0	20.0	18.0	21.0	15.0
22						5.0	10.0	19.5	20.5	18.5	18.0	17.0
23						5.5	---	19.0	17.5	15.0	24.0	18.5
24						5.5	16.5	18.0	18.5	22.0	27.0	22.0
25						9.0	9.5	---	19.0	25.0	29.0	20.0
26						10.0	---	19.0	16.5	27.0	23.0	18.0
27						13.0	---	15.0	19.0	25.0	19.0	20.0
28						15.0	---	16.0	21.0	26.0	22.0	16.0
29						17.0	---	17.0	23.0	26.0	22.0	18.0
30						17.0	---	10.5	23.0	27.0	23.0	11.0
31						13.0	---	12.0	---	26.0	25.0	---
MEAN						8.0	13.0	14.0	19.0	21.0	23.0	19.5
WTR YR 1978	MEAN	17.5		MAX	29.0		MIN	.5				

YELLOWSTONE RIVER BASIN

06324710 POWDER RIVER AT BROADUS, MT

LOCATION.--Lat 45°25'37", long 105°24'05", in NW&SE¼ sec.3, T.5 S., R.51 E., Powder River County, Hydrologic Unit 10090207, on right bank 150 ft (45.7 m) upstream from bridge on U.S. Highway 212, 0.4 mi (0.6 km) downstream from Doyle Creek, 1 mi (2 km) south of Broadus and 7 mi (11 km) upstream from Little Powder River.

DRAINAGE AREA.--8,748 mi² (22,657 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,016.30 ft (919.368 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records fair except those for winter period, which are poor. Some regulation by three reservoirs in Wyoming with combined usable capacity of 36,800 acre-feet (45.4 hm³). Diversions for irrigation of about 70,000 acres (283 km²) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,000 ft³/s (850 m³/s) May 21, 1978, gage height, 12.96 ft (3.950 m³/s); minimum daily discharge, 6.6 ft³/s (0.19 m³/s) July 19, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 13	----	a4,500 127	unknown	May 13	1600	4,870 138	6.06 1.847
Mar. 21	1100	8,560 242	7.21 2.198	May 21	1230	*30,000 850	*12.96 3.950
a--about							

Minimum daily discharge, 100 ft³/s (2.83 m³/s) Nov. 21, 22.

REVISIONS.--The maximum discharges for the water years 1976 and 1977 have been revised to 5,240 ft³/s (148 m³/s) June 24, 1976, gage height, 6.19 ft (1.887 m), from revision to rating curve, and 6,600 ft³/s (187 m³/s) May 18, 1977, gage height 6.63 ft (2.021 m), from revision to rating curve, superseding figures published in reports for 1976 and 1977.

CORRECTIONS.--Corrected daily discharges, in cubic feet per second, for May 17 and May 18, 1977 are as follows: May 17, 3,120 ft³/s; May 18, 4,540 ft³/s. These figures supersede those daily discharges published in MT-77-1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	356	172	150	170	160	185	701	549	5030	2150	402	249
2	345	168	145	170	155	180	635	563	4750	2250	362	257
3	229	165	140	170	150	180	607	535	4140	2040	525	241
4	459	172	135	170	150	180	549	549	3650	1730	427	238
5	427	168	125	170	150	180	508	718	3230	1730	510	208
6	324	165	120	165	150	200	515	974	3230	1430	581	194
7	295	165	115	160	150	220	501	2130	3130	1310	504	187
8	276	159	115	160	150	240	475	2950	3480	1140	422	184
9	244	162	110	160	150	360	488	3660	3470	1220	407	174
10	219	165	115	160	150	500	475	3000	3420	1310	392	152
11	208	159	130	160	150	800	438	3090	3510	1240	312	149
12	204	182	140	160	150	1500	450	4100	3610	1200	339	177
13	198	208	160	160	150	4000	438	4380	3440	1150	316	197
14	188	208	170	160	155	3400	402	3160	3230	991	312	184
15	181	200	180	160	155	2500	438	2220	2990	947	294	191
16	179	196	185	160	160	1700	488	1950	3620	775	325	245
17	176	190	190	160	165	1490	402	3990	3480	721	407	226
18	169	190	180	150	170	1510	596	8480	3220	655	465	208
19	168	180	175	150	175	4050	590	17000	2840	618	412	197
20	167	140	170	150	180	7170	590	20000	2530	587	316	205
21	163	100	170	150	190	7530	408	25100	2400	618	481	261
22	162	100	170	160	195	5600	413	9640	2210	636	427	348
23	162	105	170	160	195	3130	584	6670	2240	668	407	362
24	160	110	170	160	195	1700	590	5930	2230	1240	387	449
25	159	125	170	160	195	1130	596	5660	2390	1480	367	392
26	165	135	170	160	190	1190	590	5720	2210	1030	339	343
27	163	140	170	160	190	1320	573	5690	2250	755	303	316
28	167	145	170	160	185	1250	579	5800	2080	668	257	303
29	175	150	170	160	---	1010	596	5680	1810	550	261	253
30	172	150	170	160	---	806	501	5510	2070	510	230	273
31	172	---	170	160	---	701	---	5360	---	449	234	---
TOTAL	6832	4774	4820	4975	4660	55912	13716	170958	91890	33798	11523	7363
MEAN	220	159	155	160	166	1804	457	5515	3063	1090	372	245
MAX	459	208	190	170	195	7530	701	25100	5030	2250	581	449
MIN	159	100	110	150	150	180	373	535	1810	449	230	149
AC-FT	13550	9470	9560	9870	9240	110900	27210	339100	182300	67040	22860	14600
CAL YR 1977 TOTAL	128946.7	MEAN	353	MAX	4450	MIN	6.9	AC-FT	255800			
WTR YR 1978 TOTAL	411221.0	MEAN	1127	MAX	25100	MIN	100	AC-FT	815700			

06324710 POWDER RIVER AT BROADUS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1976 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1975 to current year.

SUSPENDED SEDIMENT DISCHARGE: October 1975 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum daily, 31.0°C July 23, 1976, July 18, 22, 1977; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily, 44,100 mg/L July 29, 1977; minimum daily, 24 mg/L Sept. 13, 1976.

SEDIMENT LOADS: Maximum daily, 1,570,000 tons (1,420,000 tonnes) May 21, 1978, minimum daily, 1.5 tons (1.4 tonnes) July 21, 22, 1977.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum daily, 27.0°C Aug. 13; minimum daily, 0.0°C on many days during November to March.

SEDIMENT CONCENTRATIONS: Maximum daily, 34,800 mg/L May 13; minimum daily, 71 mg/L Sept. 10.

SEDIMENT LOADS: Maximum daily, 1,570,000 tons (1,420,000 tonnes) May 21; minimum daily, 29 tons (26 tonnes) Sept. 10.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	4.0	---	.0	.0	.0	8.5	10.5	11.0	24.0	21.5	18.5
2	9.0	2.0	.0	.0	.0	---	8.0	9.5	11.0	23.5	19.0	19.5
3	9.0	5.5	.0	.0	.0	.0	10.0	12.5	13.0	21.0	16.5	19.5
4	10.0	6.0	.0	.0	.0	.0	12.0	10.5	15.0	26.0	---	20.0
5	7.0	5.0	.0	---	.0	.0	10.0	---	16.0	21.0	---	21.0
6	8.0	7.5	.0	.0	.0	.0	8.0	8.5	17.5	21.5	---	20.5
7	9.0	6.0	.0	.0	.0	.0	8.0	7.0	17.5	20.0	21.5	21.0
8	8.0	3.0	.0	.0	.0	.0	8.0	6.0	---	21.0	21.0	21.0
9	7.5	.5	.0	.0	.0	.0	9.0	6.5	21.0	20.0	21.0	19.5
10	4.5	.0	.0	.0	.0	.0	7.0	10.0	18.0	19.5	22.0	18.5
11	1.0	2.0	.0	.0	.0	.0	7.0	12.0	16.5	21.0	21.0	18.0
12	2.5	1.5	.0	.0	---	.0	4.5	10.5	15.5	---	22.0	11.0
13	5.5	2.5	.0	.0	.0	.0	5.0	10.5	16.0	20.0	27.0	6.5
14	8.0	3.0	.0	.0	.0	.0	7.0	14.0	18.0	21.5	20.0	10.0
15	5.0	3.0	.0	.0	.0	.0	9.5	15.5	14.5	21.0	17.5	12.0
16	5.5	2.0	.0	.0	.0	.0	7.5	17.0	18.0	23.0	18.0	14.5
17	6.5	.0	.0	.0	.0	.0	9.0	14.5	16.5	23.5	18.0	14.5
18	5.5	---	.0	.0	.0	.5	5.0	11.5	16.5	21.0	15.5	13.0
19	6.0	.0	.0	.0	.0	1.5	5.0	10.0	18.0	20.0	15.0	8.0
20	6.0	---	.0	.0	.0	2.5	5.0	9.5	19.5	19.0	17.0	7.5
21	7.0	.0	.0	.0	.0	2.5	6.5	14.0	17.0	17.5	18.5	8.5
22	6.0	---	.0	.0	.0	3.5	8.0	14.0	19.5	17.5	19.0	11.0
23	5.5	.0	.0	.0	.0	3.5	8.0	16.0	19.5	19.0	18.5	12.0
24	6.0	.0	.0	---	.0	2.5	7.0	17.0	---	21.5	19.0	13.5
25	6.0	.0	.0	.0	.0	4.0	9.5	17.5	22.0	22.5	20.5	14.0
26	6.0	.0	.0	.0	.0	4.5	12.5	16.5	18.0	21.0	20.0	14.5
27	6.0	.0	.0	.0	.0	6.5	14.0	16.5	18.5	21.5	19.0	14.5
28	6.0	.0	.0	.0	.0	8.5	14.0	16.0	20.0	23.0	16.0	15.0
29	6.0	.0	.0	.0	---	9.5	11.5	16.0	22.0	20.5	17.5	13.0
30	7.0	.0	.0	.0	---	10.5	10.5	15.5	22.5	21.0	17.0	11.0
31	5.0	---	.0	---	---	12.0	---	12.5	---	21.0	17.5	---
MEAN	6.5	2.0	.0	.0	.0	2.5	8.5	12.5	17.5	21.0	19.0	15.0
WTR YR 1978	MEAN	9.0	MAX	27.0	MIN	.0						

YELLOWSTONE RIVER BASIN

06324710 POWDER RIVER AT BROADUS, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SJS- PENDED (T/DAY)	SED. SJS. FALL DIAM. % FINER THAN .004 MM	SED. SJS. FALL DIAM. % FINER THAN .016 MM	SED. SJS. FALL DIAM. % FINER THAN .062 MM	SED. SJS. FALL DIAM. % FINER THAN .125 MM	SED. SJS. FALL DIAM. % FINER THAN .250 MM	SED. SJS. FALL DIAM. % FINER THAN .500 MM	SED. SJS. FALL DIAM. % FINER THAN .062 MM
OCT												
11...	1435	6.5	207	5720	3200	85	97	98	99	100	--	--
JAN												
03...	1600	.0	168	334	152	--	--	--	--	--	--	81
FEB												
08...	1050	.0	152	304	125	--	--	--	--	--	--	84
MAR												
14...	1600	1.0	3420	7000	64600	28	41	54	82	98	100	--
23...	1105	4.5	2930	8040	63600	25	37	67	90	97	100	--
APR												
11...	1345	8.5	446	1190	1430	--	--	--	--	--	--	61
MAY												
18...	1030	12.0	6300	14300	328000	27	43	82	96	99	100	--
22...	1520	17.0	8910	22600	544000	45	69	90	97	100	--	--
JUN												
05...	1645	20.5	3490	5040	47500	30	46	65	88	98	100	--
JUL												
20...	1500	19.0	583	1270	2000	--	--	--	--	--	--	61
AUG												
02...	1345	20.0	365	1410	1390	--	--	--	--	--	--	96

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)
OCTOBER												
1	19900	23300	1690	785	351	142	289	133	320	138	211	105
2	15900	14600	1720	760	331	130	321	147	318	133	184	92
3	18200	11300	1750	780	325	123	307	141	345	140	191	93
4	18400	23200	1680	873	351	121	326	150	310	126	210	102
5	28300	33200	1910	866	343	116	321	147	311	126	237	115
6	25300	22300	1680	938	257	83	323	144	325	132	289	156
7	18200	14500	1840	820	209	65	269	116	270	109	295	175
8	13300	9910	1780	764	243	75	315	136	309	125	500	324
9	10500	6920	1830	800	196	58	308	133	341	138	531	516
10	5300	4910	1960	873	268	83	287	124	311	126	359	485
11	6100	3430	2120	910	372	131	319	138	316	128	362	782
12	3800	2090	3020	1480	446	169	317	137	286	116	550	2230
13	3040	1630	3360	1890	329	142	304	131	261	106	5080	54900
14	2960	1500	2770	1560	297	136	284	123	274	115	4980	45700
15	2430	1190	2780	1500	295	143	320	138	235	98	4200	28400
16	2150	1040	2490	1320	300	150	352	152	242	105	5260	24100
17	2040	969	2610	1340	239	123	346	149	255	114	7050	28400
18	1930	881	3100	1590	225	109	362	147	211	97	9260	39700
19	1830	830	3680	1790	252	119	344	139	210	99	14100	155000
20	1770	798	1540	582	314	144	370	150	265	129	18500	356000
21	1790	788	281	76	260	119	349	141	240	123	17200	350000
22	1680	735	277	75	437	201	392	169	291	153	10800	163000
23	1610	704	290	82	580	266	368	159	320	168	7930	67000
24	1540	665	307	91	440	202	342	148	323	170	5400	24800
25	1690	726	319	108	462	212	374	162	295	155	4080	12400
26	1640	731	356	130	372	171	359	155	291	149	3740	12000
27	1630	717	339	128	334	153	380	164	216	111	3810	13600
28	1800	812	356	139	352	162	315	136	228	114	4320	14600
29	1640	869	348	141	381	175	300	130	---	---	3000	8180
30	1900	882	355	144	316	145	302	130	---	---	2620	5700
31	1790	831	---	---	322	148	308	133	---	---	2240	4240
TOTAL	---	197158	---	23255	---	4316	---	4402	---	3543	---	1414895

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	2580	4880	4710	6980	9420	128000	5020	30100	2930	3180	370	249
2	2190	3750	4700	7140	8350	107000	9030	54900	1410	1380	258	179
3	2050	3350	5090	7350	6620	74000	6540	36000	941	826	212	138
4	2100	3110	5190	7690	5580	55000	3610	16900	1080	1250	196	126
5	1780	2440	6000	11600	4990	43500	4320	20200	1940	2670	164	92
6	1900	2640	7960	20900	5160	45000	3310	12800	2810	4410	157	82
7	1660	2250	16500	94900	4820	40700	2540	8980	2060	2800	142	72
8	1630	2090	21500	171000	5290	49700	1870	5760	1410	1610	124	62
9	1680	2210	18000	178000	5630	52700	2020	6650	989	1090	93	44
10	1670	2140	14200	115000	5460	50400	3000	10600	826	874	71	29
11	1510	1790	14600	122000	5760	54600	5150	17200	845	712	83	33
12	1530	1860	31900	353000	5380	52400	5560	18000	557	510	91	43
13	1520	1800	34800	412000	4900	45500	5120	15900	447	381	110	59
14	1290	1400	29400	251000	4560	39800	4410	11800	410	345	141	70
15	1410	1670	26000	156000	4040	32600	5100	13000	373	296	137	71
16	1020	1340	23200	122000	6580	64300	4190	8770	414	363	183	121
17	846	918	16200	161000	6190	58200	3120	6070	582	640	135	82
18	1120	1200	22500	515000	4900	42600	2260	4000	723	908	107	60
19	1100	1160	17500	803000	3830	29400	1920	3200	659	733	107	57
20	1060	1120	17200	929000	3170	21700	1450	2300	618	527	97	54
21	1240	1370	23100	1570000	2730	17700	1210	2020	820	1060	170	120
22	1110	1240	21800	567000	1450	8650	1180	2030	867	1000	400	376
23	1200	1240	16400	295000	2580	15600	1370	2470	798	877	713	697
24	1250	1320	14200	227000	2840	17100	3140	10500	607	634	1530	1850
25	1470	1570	12300	188000	3260	21000	12000	48000	497	492	1520	1610
26	1490	1570	10900	168000	3290	19600	18000	50100	443	405	1760	1630
27	1040	1050	10100	161000	3620	20800	17000	34700	348	285	2670	2280
28	1250	1280	10600	166000	2670	15000	13100	23600	339	235	2790	2280
29	1090	1170	10500	161000	2060	10100	8810	13100	335	236	2770	1890
30	3670	5790	9450	141000	3330	19300	6470	8910	352	219	1680	1240
31	---	---	8900	129000	---	---	4810	5350	291	184	---	---
TOTAL	---	60696	---	8217560	---	1251950	---	503910	---	31132	---	15696
TOTAL LOAD FOR YEAR:		11718515 TONS.										

YELLOWSTONE RIVER BASIN

06324970 LITTLE POWDER RIVER ABOVE DRY CREEK, NEAR WESTON, WY

LOCATION.--Lat 44°55'45", long 105°21'06", in NW¼SW¼ sec.13, T.57 N., R.71 W., Campbell County, Hydrologic Unit 10090208, on left bank 3.1 mi (5.0 km) upstream from Dry Creek, 5.0 mi (8.0 km) south of the Wyoming-Montana State line, and 20 mi (32 km) north of Weston.

DRAINAGE AREA.--1,235 mi² (3,199 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1972 to current year.

REVISED RECORDS.--WDR WY-77-1: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 3,410 ft (1,039 m), from topographic map.

REMARKS.--Water-discharge records good except those for October to March, which are poor. Diversion for irrigation of about 80 acres (32 hm²) below station. Since August 1976, the Rawhide Mine has intermittently pumped water into the river in T.52 N., R.71 W., about 45 mi (72 km) upstream.

AVERAGE DISCHARGE.--6 years, 30.8 ft³/s (0.872 m³/s), 22,310 acre-ft/yr (27.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,300 ft³/s (150 m³/s) May 19, 1978, gage height, 11.62 ft (3.542 m); maximum gage height, 11.63 ft (3.545 m) Mar. 20, 1978 (backwater from ice); no flow at times some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 130 ft³/s (3.68 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 2	unknown	215 6.09	5.12 1.561	May 19	0530	*5,300 150	11.62 3.542
Mar. 20	0930	4,720 133	a*11.63 3.545	June 1	0230	668 18.9	6.56 1.999
May 10	0200	2,070 58.6	8.91 2.716	June 22	1930	139 3.94	4.41 1.344

a-Backwater from ice.

Minimum daily discharge, 0.26 ft³/s (0.007 m³/s) Oct. 27.

REVISIONS.--The maximum discharge for the water year 1976 has been revised to 622 ft³/s (17.6 m³/s) June 19, 1976, gage height, 6.54 ft (1.993 m), superseding figure published in the report for 1976.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	1.5	1.3	2.2	1.7	1.7	130	33	436	22	11	3.4
2	190	1.2	1.3	2.4	1.9	1.6	104	25	227	46	13	3.2
3	84	.75	1.5	2.5	2.2	1.5	94	23	170	36	12	2.8
4	67	1.4	1.3	2.7	2.3	1.7	84	30	139	24	11	2.8
5	40	.85	1.1	2.9	2.2	1.9	74	166	124	23	9.5	2.8
6	35	.75	1.0	3.1	2.3	1.9	67	349	112	20	9.2	2.4
7	37	.85	1.3	2.6	2.3	2.1	61	299	95	20	8.9	2.2
8	38	1.5	1.1	2.1	2.1	2.3	58	916	90	18	9.2	2.4
9	36	.85	.95	2.0	2.1	2.5	53	1710	92	18	8.9	2.5
10	40	1.4	1.2	2.0	2.0	2.7	45	1660	75	17	8.3	2.5
11	36	.85	1.5	2.1	1.9	2.5	41	932	66	16	8.0	2.5
12	36	1.1	1.8	2.3	1.9	2.9	38	382	61	16	7.1	3.0
13	35	.96	1.7	2.2	1.8	3.1	42	225	58	15	6.1	3.6
14	33	1.2	2.1	2.1	1.8	83	36	161	50	14	6.7	3.6
15	21	1.3	2.3	2.0	1.9	118	34	125	43	14	7.4	3.6
16	10	1.3	2.1	1.8	1.9	170	31	103	41	13	6.7	3.4
17	7.5	1.1	2.4	2.0	2.0	140	33	124	42	12	5.8	3.2
18	4.7	.85	4.6	1.8	2.0	340	31	2800	40	12	5.4	2.8
19	1.5	.68	7.5	1.7	2.1	1400	30	5000	35	12	5.2	3.0
20	1.4	.56	9.0	1.9	2.1	4410	29	2840	33	12	5.2	3.0
21	.75	.60	8.3	2.2	2.2	4480	28	1090	32	12	4.6	4.9
22	.75	.76	5.5	2.1	2.3	2780	28	526	53	12	4.1	3.2
23	1.2	.94	5.1	2.2	2.2	1560	28	299	58	12	4.1	2.4
24	1.2	1.2	3.9	2.1	2.0	812	27	234	39	20	4.1	2.2
25	.85	1.3	4.0	2.0	1.8	538	28	222	43	11	4.1	1.8
26	.43	1.5	4.4	2.0	1.9	478	24	181	37	10	4.1	1.7
27	.26	1.4	4.6	2.1	2.0	491	22	172	34	10	3.9	1.7
28	.50	1.4	4.3	2.0	1.8	456	22	213	30	12	3.9	1.7
29	.43	1.5	3.9	2.1	---	329	22	205	27	12	3.9	1.7
30	.37	1.4	3.2	1.9	---	222	31	290	24	11	3.9	1.6
31	.85	---	2.6	1.8	---	168	---	427	---	11	3.6	---
TOTAL	813.69	32.95	96.85	66.9	56.7	19003.4	1375	21802	2406	513	208.9	81.6
MEAN	26.2	1.10	3.12	2.16	2.03	613	45.8	703	80.2	16.5	6.74	2.72
MAX	190	1.5	9.0	3.1	2.3	4480	130	5000	436	46	13	4.9
MIN	.26	.56	.95	1.7	1.7	1.5	22	23	24	10	3.6	1.6
AC-FT	1610	65	192	133	112	37690	2730	43240	4770	1020	414	162
CAL YR 1977 TOTAL	4132.22			11.3	MAX 253	MIN .00	AC-FT 8200					
WTR YR 1978 TOTAL	46456.99			MEAN 127	MAX 5000	MIN .26	AC-FT 92150					

06324970 LITTLE POWDER RIVER ABOVE DRY CREEK, NEAR WESTON, WY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)
UCT											
01...	1115	53	880	7.9	9.0	220	9.2	240	250	130	55
NOV											
08...	0920	1.1	--	--	2.0	--	--	--	--	--	--
11...	0930	.96	2180	8.0	1.0	20	11.8	K20	730	400	150
DEC											
07...	0940	1.3	--	--	.0	--	--	--	--	--	--
10...	0900	1.2	2800	8.0	.0	10	12.2	K2	1000	600	220
JAN											
02...	0930	2.4	2200	7.6	.0	40	11.6	K4	680	340	140
10...	1010	2.0	--	--	.0	--	--	--	--	--	--
FEB											
03...	0930	2.2	3500	8.0	.0	15	11.8	29	1000	540	210
09...	1050	3.7	--	--	.0	--	--	--	--	--	--
MAR											
04...	0930	1.7	3400	8.0	.0	20	13.2	K12	990	530	200
21...	1730	4210	--	--	4.5	--	--	--	--	--	--
23...	1145	1610	--	--	4.0	--	--	--	--	--	--
28...	1400	431	--	--	7.5	--	--	--	--	--	--
31...	0930	175	1020	7.8	12.0	150	8.4	K4	350	210	66
APR											
03...	1720	90	--	--	10.5	--	--	--	--	--	--
MAY											
09...	1245	1750	--	--	4.5	--	--	--	--	--	--
12...	0945	393	1450	7.9	10.0	300	8.8	K410	550	410	94
16...	1200	103	2600	7.6	16.5	100	7.9	--	930	650	160
JUN											
09...	0830	100	3000	8.3	17.0	60	8.4	210	990	630	200
23...	1150	54	--	--	21.0	--	--	--	--	--	--
JUL											
20...	0910	12	--	--	18.5	--	--	--	--	--	--
21...	0945	12	3800	8.2	17.0	15	8.2	110	1000	630	190
AUG											
09...	1845	8.6	--	--	29.5	--	--	--	--	--	--
18...	0930	5.4	3500	8.1	17.0	10	7.6	140	980	620	180
30...	1230	3.4	3850	--	20.5	--	--	--	--	--	--
SEP											
06...	1015	2.5	--	--	21.0	--	--	--	--	--	--
15...	0930	3.6	4000	8.2	14.0	8	8.6	K32	980	660	180

YELLOWSTONE RIVER BASIN

06324970 LITTLE POWDER RIVER ABOVE DRY CREEK, NEAR WESTON, WY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT											
01...	27	100	2.8	8.7	150	0	120	3.0	340	11	.3
NOV											
08...	--	--	--	--	--	--	--	--	--	--	--
11...	67	330	5.3	18	400	0	330	6.4	1100	9.3	.6
DEC											
07...	--	--	--	--	--	--	--	--	--	--	--
10...	120	500	6.7	19	540	0	440	8.6	1600	15	.8
JAN											
02...	79	340	5.7	16	410	0	340	16	1000	12	.4
10...	--	--	--	--	--	--	--	--	--	--	--
FEB											
03...	120	480	6.5	19	580	0	480	9.3	1500	20	.7
09...	--	--	--	--	--	--	--	--	--	--	--
MAR											
04...	120	450	6.2	17	570	0	470	9.1	1400	13	.7
21...	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--
31...	46	120	2.8	11	180	0	150	4.6	470	9.6	.2
APR											
03...	--	--	--	--	--	--	--	--	--	--	--
MAY											
09...	--	--	--	--	--	--	--	--	--	--	--
12...	76	120	2.2	13	170	0	140	3.4	620	9.8	.3
16...	130	290	4.1	19	350	0	290	14	1200	14	.4
JUN											
09...	120	370	5.1	22	440	0	360	3.5	1400	18	.5
23...	--	--	--	--	--	--	--	--	--	--	--
JUL											
20...	--	--	--	--	--	--	--	--	--	--	--
21...	130	530	7.3	21	460	0	380	4.6	1700	15	.6
AUG											
09...	--	--	--	--	--	--	--	--	--	--	--
18...	130	570	7.9	23	440	0	360	5.6	1800	9.2	.7
30...	--	--	--	--	--	--	--	--	--	--	--
SEP											
06...	--	--	--	--	--	--	--	--	--	--	--
15...	130	570	7.9	25	400	0	330	4.0	1800	21	.6

06324970 LITTLE POWDER RIVER ABOVE DRY CREEK, NEAR WESTON, WY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FI)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
UCT										
01...	6.3	622	.85	89.0	--	--	--	--	.06	.72
NOV										
08...	--	--	--	--	--	--	--	--	--	--
11...	11	1900	2.58	4.92	--	--	--	--	.69	.03
DEC										
07...	--	--	--	--	--	--	--	--	--	--
10...	14	2760	3.75	8.94	--	--	--	--	1.1	.04
JAN										
02...	12	1800	2.45	11.7	--	--	--	--	.83	.12
10...	--	--	--	--	--	--	--	--	--	--
FEB										
03...	15	2650	3.60	15.7	--	--	--	--	.00	.25
09...	--	--	--	--	--	--	--	--	--	--
MAR										
04...	14	2500	3.40	11.5	--	--	--	--	.54	.13
21...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
31...	8.6	821	1.12	388	--	--	--	--	1.7	.10
APR										
03...	--	--	--	--	--	--	--	--	--	--
MAY										
09...	--	--	--	--	--	--	--	--	--	--
12...	4.5	1030	1.40	1090	--	--	--	--	1.3	.09
16...	12	2000	2.72	556	.04	--	.51	.01	.80	.03
JUN										
09...	8.3	2300	3.21	637	--	.02	--	--	.94	.06
23...	--	--	--	--	--	--	--	--	--	--
JUL										
20...	--	--	--	--	--	--	--	--	--	--
21...	13	2630	3.85	91.7	--	--	--	--	.59	.00
AUG										
09...	--	--	--	--	--	--	--	--	--	--
18...	12	2940	4.00	42.9	--	--	--	--	.79	.02
30...	--	--	--	--	--	--	--	--	--	--
SEP										
06...	--	--	--	--	--	--	--	--	--	--
15...	10	2930	3.98	28.5	--	--	--	--	.55	.01

YELLOWSTONE RIVER BASIN

06324970 LITTLE POWDER RIVER ABOVE DRY CREEK, NEAR WESTON, WY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)	ALGAL GROWTH POTEN- TIAL, BOTTLE TEST (MG/L)
OCT										
01...	.22	1.0	--	--	.11	100	40	8.5	2.8	--
NOV										
08...	--	--	--	--	--	--	--	--	--	--
11...	.01	.73	--	--	.06	170	110	--	--	--
DEC										
07...	--	--	--	--	--	--	--	--	--	--
10...	.06	1.2	--	--	.09	210	110	--	--	--
JAN										
02...	.13	1.1	--	--	.03	200	110	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
FEB										
03...	.24	.45	--	--	.03	200	50	--	--	--
09...	--	--	--	--	--	--	--	--	--	--
MAR										
04...	.48	1.2	--	--	.04	210	50	--	--	--
21...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
31...	.58	2.4	--	--	.16	200	50	13	2.2	--
APR										
03...	--	--	--	--	--	--	--	--	--	--
MAY										
09...	--	--	--	--	--	--	--	--	--	--
12...	.06	1.5	--	--	.20	180	200	--	--	--
15...	.00	.83	.03	.00	.10	260	20	--	--	.7
JUN										
09...	.03	1.0	--	--	.04	290	90	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
JUL										
20...	--	--	--	--	--	--	--	--	--	--
21...	.02	.61	--	--	.01	250	150	--	--	--
AUG										
04...	--	--	--	--	--	--	--	--	--	--
18...	.02	.63	--	--	.02	240	450	--	--	--
30...	--	--	--	--	--	--	--	--	--	--
SEP										
06...	--	--	--	--	--	--	--	--	--	--
15...	.02	.56	--	--	.05	240	200	--	--	--

YELLOWSTONE RIVER BASIN

06324970 LITTLE POWDER RIVER ABOVE DRY CREEK, NEAR WESTON, WY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, TOTAL DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, TOTAL DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
OCT 01...	1115	5900	0	4	0	0	0	10	3	7
MAR 31...	0930	3600	20	2	1	0	0	3	2	10

DATE	CHRO- MIUM, TOTAL DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, TOTAL DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, TOTAL DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM TOTAL DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, TOTAL DIS- SOLVED (UG/L AS MN)
OCT 01...	0	20	3	6200	<100	5	20	20	100	0
MAR 31...	0	13	4	4100	15	9	30	30	180	90

DATE	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MU)	MOLYB- DENUM, TOTAL DIS- SOLVED (UG/L AS MU)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, TOTAL DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, TOTAL DIS- SOLVED (UG/L AS SE)	VANA- DIUM, TOTAL DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, TOTAL DIS- SOLVED (UG/L AS ZN)
OCT 01...	1	1	<50	6	1	1	.0	60	10
MAR 31...	5	2	9	4	1	1	.0	40	20

YELLOWSTONE RIVER BASIN

06324970 LITTLE POWDER RIVER ABOVE DRY CREEK, NEAR WESTON, WY--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM
NOV										
08...	0920	2.0	1.1	174	.52	--	--	--	--	--
DEC										
07...	0940	.0	1.3	182	.64	--	--	--	--	--
JAN										
10...	1010	.0	2.0	134	.72	--	--	--	--	--
FEB										
09...	1050	.0	3.7	112	1.1	--	--	--	--	--
MAR										
21...	1730	4.5	4210	--	--	70	84	93	98	100
23...	1145	4.0	1610	--	--	78	92	100	--	--
28...	1400	7.5	431	946	1100	--	--	--	--	--
APR										
03...	1720	10.5	90	224	54	--	--	--	--	--
MAY										
09...	1245	4.5	1750	--	--	76	84	--	--	--
16...	1200	16.5	103	377	105	--	--	--	--	--
JUN										
23...	1150	21.0	54	4220	615	--	--	--	--	--
JUL										
20...	0910	16.5	12	72	2.3	--	--	--	--	--
AUG										
09...	1845	29.5	8.6	63	1.5	--	--	--	--	--
SEP										
06...	1015	21.0	2.5	70	.47	--	--	--	--	--

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM
MAY							
16...	1200	16.5	--	--	--	--	0
AUG							
09...	1845	29.5	1	1	4	6	12

DATE	2.00 MM	4.00 MM	8.00 MM	16.0 MM	32.0 MM	64.0 MM	128 MM
MAY							
16...	1	6	16	25	34	61	100
AUG							
09...	18	27	43	62	84	100	--

YELLOWSTONE RIVER BASIN

539

06326050 MIZPAH CREEK AT OLIVE, MT

LOCATION.--Lat 45°32'30", long 105°31'40", in SW¼ sec.26, T.3 S., R.50 E., Powder River County, Hydrologic Unit 10090210, at bridge on U.S. Highway 212 at Olive, approximately 1.0 mi (1.6 km) downstream from YT Creek.

DRAINAGE AREA.--129 mi² (334 km²).

PERIOD OF RECORD.--Water year 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COLLECTING SAMPLE (CODE NUMBER)	STREAM-FLOW, INSTANTANEOUS (CFS)	WEATHER (NMJ CODE NUMBER)	SPECIFIC CONDUCTANCE (MICRO-MHJS)	PH (UNITS)	TEMPERATURE, AIR (DEG C)	TEMPERATURE (DEG C)	TURBIDITY (JTU)	OXYGEN, DISSOLVED (MG/L)
APR 12...	1230	--	1.0	1	5300	8.1	10.0	6.5	2	10.2
MAY 02...	1425	--	.70	0	5800	8.0	17.0	15.5	3	7.0
JUN 07...	0745	--	1.6	2	4980	8.0	12.5	19.0	2	5.8
JUL 12...	0700	--	.45	0	5190	7.9	16.5	22.0	2	4.9
AUG 02...	1540	--	.36	1	5100	7.9	18.0	22.0	1	4.6
31...	1115	99001	.12	--	5000	8.0	28.0	21.0	--	--
SEP 12...	1620	--	.36	61	5300	8.0	7.0	14.5	3	6.8

DATE	OXYGEN, DISSOLVED (PERCENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	HARDNESS, AS CALCIUM (MG/L)	HARDNESS, NONCARBONATE (MG/L)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM DISSOLVED (MG/L AS MG)	SODIUM DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)
APR 12...	94	2.3	2400	2000	350	380	580	5.1	20	550
MAY 02...	79	1.1	2500	2000	350	390	660	5.8	24	570
JUN 07...	71	1.5	2300	1900	340	360	560	5.0	16	490
JUL 12...	63	1.6	2000	1700	220	360	660	6.4	17	450
AUG 02...	59	1.8	2000	1600	220	340	560	5.5	17	380
31...	--	--	2000	1600	210	350	600	5.9	21	388
SEP 12...	75	3.7	1900	1600	190	350	580	5.8	21	390

DATE	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CA CO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE DISSOLVED (MG/L AS CL)	FLUORIDE DISSOLVED (MG/L AS F)	SILICA DISSOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)
APR 12...	0	450	7.0	3000	30	.2	12	4640	6.31	12.5
MAY 02...	0	470	9.1	3300	30	.2	10	5050	6.87	9.54
JUN 07...	0	400	7.8	2900	22	.3	6.0	4450	6.05	19.2
JUL 12...	0	370	9.1	3100	19	.3	19	4620	6.28	5.61
AUG 02...	0	310	7.7	2800	17	.2	13	4160	5.66	4.04
31...	0	320	6.2	3000	22	.2	9.0	4400	6.54	1.56
SEP 12...	0	320	6.2	2900	22	.2	9.2	4270	5.81	4.38

YELLOWSTONE RIVER BASIN

06326050 MIZPAH CREEK AT OLIVE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, NO ₂ +NO ₃ TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)
APR 12...	.02	.00	.98	.98	1.0	.06	--	410	60
MAY 02...	.02	.03	1.2	1.2	1.2	.13	--	460	90
JUN 07...	.01	.04	.76	.80	.81	.05	--	520	30
JUL 12...	.00	.03	1.1	1.1	1.1	.33	--	520	90
AUG 02...	.05	.00	1.3	1.3	1.4	.32	--	500	50
31...	.02	.06	1.7	1.8	1.8	.23	.18	480	50
SEP 12...	.01	.08	1.1	1.2	1.2	.26	--	460	80
DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
APR 12...	1230	100	0	2	2	0	0	2	30
JUL 12...	0700	--	0	--	6	--	0	0	--
DATE	TIME	CHRO- MIUM, DIS- SOLVED (UG/L AS CH)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
APR 12...	0	1	590	29	100	110	80	100	.0
JUL 12...	10	1	--	4	--	110	--	500	--
DATE	TIME	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MU)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANAD- IUM, TOTAL RECOV- ERABLE (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)
APR 12...	.0	4	2	3	1	1	.0	40	20
JUL 12...	.0	--	5	1	--	1	.0	--	20

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)
APR 12...	1230	6.5	1.0	55	.15
MAY 02...	1425	15.5	.70	21	.04
JUN 07...	0745	19.0	1.6	84	.36
JUL 12...	0700	22.0	.45	24	.03
AUG 02...	1540	22.0	.36	32	.03
SEP 12...	1620	14.5	.38	17	.02

06326300 MIZPAH CREEK NEAR MIZPAH, MT

LOCATION.--Lat 46°15'39", long 105°17'34", in NW¼NE¼SW¼ sec.24, T.6 N., R.51 E., Custer County, Hydrologic Unit 10090210, on left bank 10 ft (3 m) upstream from county bridge, 1.0 mi (1.6 km) upstream from mouth, and 1.6 mi (2.6 km) northwest of Mizpah.

DRAINAGE AREA.--797 mi² (2,064 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,490 ft (759 m), from topographic map.

REMARKS.--Water-discharge records fair except those below 0.5 ft³/s (0.014 m³/s) and winter period, which are poor. Minor irrigation or diversions above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,010 ft³/s (56.9 m³/s) Mar. 23, 1978, gage height, 9.75 ft (2.972 m) from rating curve extended above 1,600 ft³/s (45.3 m³/s); maximum gage height, 10.64 ft (3.243 m) Mar. 20, 1978 (backwater from ice); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 150 ft³/s (4.25 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 1	1815	247 7.00	3.88 1.183	May 19	0600	1,010 28.6	7.00 2.134
Oct. 7	1445	424 12.0	4.78 1.457	May 31	2130	221 6.26	3.76 1.146
Mar. 20	1700	ice jam	*10.64 3.243	July 2	0615	211 5.98	3.70 1.128
Mar. 23	0015	*2,010 56.9	9.75 2.972	July 19	0345	764 21.6	6.16 1.878
May 8	1115	220 6.23	3.70 1.128	Sept. 19	1000	226 6.40	3.76 1.146

No flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	145	.00	2.3	2.2	1.9	1.1	106	9.6	135	79	31	.18
2	102	.13	2.2	2.2	1.9	.80	75	9.6	80	124	9.2	.18
3	32	.13	2.0	2.2	1.9	.80	55	9.2	51	31	4.3	.23
4	9.6	.00	1.8	2.2	1.9	.80	40	9.2	36	22	2.0	.18
5	2.2	.00	1.4	2.1	1.9	.80	36	8.7	30	80	1.6	.18
6	1.0	.00	.80	2.1	1.9	.80	29	12	31	27	1.0	.13
7	160	.00	.80	2.1	1.9	.80	24	16	31	47	.76	.04
8	87	.04	.60	2.1	1.9	.80	22	153	27	13	.60	.00
9	44	.13	.40	2.0	1.9	.80	21	93	26	9.6	.53	.00
10	10	.18	.60	2.0	1.9	2.0	21	57	27	4.6	.46	.00
11	4.3	.28	1.0	1.9	1.9	3.4	20	24	26	4.3	.39	.08
12	3.8	.39	1.8	1.9	1.9	6.4	20	18	22	4.0	.33	.28
13	1.9	.46	2.3	1.9	1.9	10	20	20	16	3.0	.28	.70
14	1.5	.53	2.6	1.9	1.9	18	20	12	14	2.8	.18	.45
15	.93	.46	2.9	1.9	1.8	31	20	7.6	12	2.8	.18	.15
16	.76	.46	2.9	1.9	1.6	48	19	6.1	11	2.4	.28	5.5
17	.53	.46	2.9	1.9	1.5	78	17	20	17	2.2	.23	2.4
18	.39	.33	2.8	1.9	1.5	130	18	225	27	6.1	.18	5.8
19	.23	.20	2.8	1.9	1.5	300	19	952	22	215	.18	108
20	.13	.15	2.7	1.9	1.6	620	17	560	18	29	.18	28
21	.13	.10	2.6	1.9	2.0	1270	16	300	17	17	.23	10
22	.04	.05	2.6	1.9	2.9	1400	16	165	17	53	.18	4.0
23	.00	.00	2.6	1.9	3.4	1670	16	135	14	15	.18	2.0
24	.00	.00	2.5	1.9	3.4	1150	15	106	13	9.2	.23	1.1
25	.00	.00	2.5	1.9	3.2	794	14	94	16	8.7	.23	.60
26	.00	.60	2.4	1.9	2.7	704	13	74	13	4.3	.18	.39
27	.00	1.4	2.4	1.9	2.2	638	12	62	16	3.0	.13	.28
28	.00	2.0	2.3	1.9	1.8	426	11	49	13	2.4	.18	.13
29	.00	2.2	2.3	1.9	---	263	9.6	43	9.2	2.0	.23	.13
30	.00	2.3	2.3	1.9	---	187	10	49	8.0	2.2	.23	.08
31	.00	---	2.2	1.9	---	135	---	115	---	36	.18	---
TOTAL	607.44	12.98	64.30	61.1	57.7	9896.30	751.6	3414.0	795.2	861.6	56.04	327.61
MEAN	19.6	.43	2.07	1.97	2.06	319	25.1	110	26.5	27.8	1.81	10.9
MAX	160	2.3	2.9	2.2	3.4	1670	106	952	135	215	31	108
MIN	.00	.00	.40	1.9	1.5	.80	9.6	6.1	8.0	2.0	.13	.00
AC-FT	1200	26	128	121	114	19630	1490	6770	1580	1710	111	650
CAL YR 1977	TOTAL	1618.03	MEAN	4.43	MAX	160	MIN	.00	AC-FT	3210		
WTR YR 1978	TOTAL	16905.87	MEAN	46.3	MAX	1670	MIN	.00	AC-FT	33530		

YELLOWSTONE RIVER BASIN

06326300 MIZPAH CREEK NEAR MIZPAH, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COL-LECTING SAMPLE (CODE NUMBER)	STREAM-FLOW, INSTANTANEOUS (CFS)	WEATHER (MMO CODE NUMBER)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHJS)	PH (UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	OXYGEN, DIS-SOLVED (MG/L)	
OCT 13...	1130	--	2.0	0	710	8.1	18.0	9.0	3800	10.8	
DEC 23...	0930	--	.59	70	1750	8.0	-4.0	.0	180	12.0	
FEB 14...	0930	--	.16	2	2750	8.4	-8.0	.0	45	12.8	
MAR 21...	1045	--	1270	0	270	8.1	9.5	.5	1400	11.4	
APR 19...	1515	--	19	0	1240	8.3	9.0	11.5	1900	10.6	
MAY 03...	1000	--	8.6	2	1920	8.3	14.0	14.5	25	8.8	
JUN 07...	1245	--	29	1	2100	8.5	22.5	21.5	90	7.9	
JUL 12...	1245	--	4.1	1	2050	8.6	24.0	24.0	60	8.2	
AUG 31...	0940	99001	.05	--	3120	8.8	23.0	20.0	--	--	
SEP 15...	0830	--	15	0	740	8.1	12.0	11.0	6000	6.4	
DATE	TIME	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIU-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS (MG/L AS CACU3)	HARD-NESS, NONCAR-BONATE (MG/L AS CACU3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE AS HCU3)
OCT 13...	100	4.3	--	--	--	--	--	--	--	--	170
DEC 23...	90	4.6	200	0	42	22	360	11	7.2	410	
FEB 14...	96	2.4	290	0	60	35	560	14	6.4	740	
MAR 21...	86	9.2	47	0	12	4.1	37	2.4	11	86	
APR 19...	107	3.2	220	28	49	23	190	5.6	7.5	230	
MAY 03...	95	2.2	380	110	73	48	300	6.7	11	330	
JUN 07...	98	2.0	540	120	84	81	320	6.0	10	490	
JUL 12...	108	2.9	350	28	75	40	360	8.4	9.6	360	
AUG 31...	--	--	280	0	48	39	600	16	11	510	
SEP 15...	64	6.4	18	0	4.0	1.9	150	15	4.9	220	
DATE	TIME	CAR-BONATE (MG/L AS CU3)	ALKA-LINITY (MG/L AS CACU3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CU2)	SULFATE DIS-SOLVED (MG/L AS SU34)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L AS SULF)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)
OCT 13...	0	140	2.2	220	4.2	.5	8.9	--	--	--	--
DEC 23...	0	340	6.6	590	6.6	.5	8.6	1240	1.69	1.98	1.98
FEB 14...	2	610	4.7	870	9.3	.4	11	1920	2.61	.93	.93
MAR 21...	0	71	1.1	48	7.9	.1	5.4	168	.23	576	576
APR 19...	0	190	1.8	410	4.2	.3	7.1	805	1.09	41.3	41.3
MAY 03...	0	270	2.6	710	6.1	.3	7.0	1520	1.80	30.7	30.7
JUN 07...	11	420	2.6	750	6.1	.2	5.8	1510	2.05	118	118
JUL 12...	17	320	1.6	780	6.5	.5	8.0	1470	2.00	16.3	16.3
AUG 31...	14	440	1.4	1100	5.8	.6	3.2	2070	3.06	.30	.30
SEP 15...	0	180	2.8	170	7.7	.6	13	461	.63	18.7	18.7

YELLOWSTONE RIVER BASIN

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06326300 MIZPAH CREEK NEAR MIZPAH, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 13...	.84	.13	5.9	6.0	6.8	6.6	--	250	--
DEC 23...	1.5	.06	1.0	1.1	2.6	.12	--	280	120
FEB 14...	.38	.06	.21	.27	.65	.04	--	310	30
MAR 21...	.58	.06	3.1	3.2	3.8	1.2	--	80	50
APR 19...	.67	1.0	1.7	2.7	3.4	1.3	--	210	30
MAY 03...	.02	.03	.78	.81	.83	.06	--	230	30
JUN 07...	.02	.03	1.1	1.1	1.1	.08	--	250	20
JUL 12...	.00	.03	1.9	1.9	1.9	.11	--	360	50
AUG 31...	.02	.03	.90	.93	.95	.04	.01	550	30
SEP 15...	.57	.39	13	13	14	3.1	--	200	210

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
FEB 14...	0930	--	0	--	9	--	0	--	2	--
MAR 21...	1045	3000	0	5	0	0	0	4	2	60
APR 19...	1515	--	0	--	7	--	0	--	0	--
JUL 12...	1245	--	0	--	2	--	0	--	2	--

DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
FEB 14...	0	--	4	--	--	6	--	40	--	120
MAR 21...	0	80	5	56000	52	19	40	20	1200	0
APR 19...	0	--	5	--	--	1	--	120	--	10
JUL 12...	10	--	5	--	--	7	--	30	--	10

YELLOWSTONE RIVER BASIN

06326300 MIZPAH CREEK NEAR MIZPAH, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	MERCURY TOTAL RECV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENJM, DIS- SOLVED (UG/L AS MO)	NICKEL, TJIAL RECV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
FEB 14...	--	.1	5	--	4	--	1	1.0	--	20
MAR 21...	.0	.0	0	66	2	1	0	1.0	250	10
APR 19...	--	.0	0	--	7	--	0	1.0	--	20
JUL 12...	--	.1	4	--	6	--	2	.0	--	0

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. 2 FINE THAN .062 MM
OCT 13...	1130	8.0	2.0	5640	30	99
DEC 23...	0930	.0	.59	246	.39	99
FEB 14...	0930	.0	.18	144	.07	92
MAR 21...	1045	.5	1270	4050	13900	85
APR 19...	1515	11.5	19	3660	188	100
MAY 03...	1000	14.5	9.6	69	1.6	99
JUN 07...	1245	21.5	29	217	17	92
JUL 12...	1245	24.0	4.1	136	1.5	99
SEP 15...	0830	11.0	15	18400	745	100

LOCATION (REVISED).--Lat 46°25'48", long 105°18'34", in SW¼SW¼SE¼ sec.23, T.8 N., R.51 E., Custer County, Hydrologic Unit 10090209, on right bank at downstream side of bridge on U.S. Highway 12, 0.1 mi (0.2 km) west of Locate, and 25 mi (40 km) east of Miles City.

WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 926: 1939. WSP 1309: 1938-39 (M). WSP 1729: Drainage area.

REMARKS.--Water-discharge records fair Oct. 1 to Nov. 19, poor during winter period and periods of no gage-height record, Nov. 20 to Mar. 22, and good Mar. 23 to Sept. 30. Some regulation by three reservoirs in Wyoming with combined usable capacity of 36,800 acre-ft (45.5 km³). Diversions for irrigation of about 74,500 acres (302 km²) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 31,000 ft³/s (878 m³/s) Feb. 19, 1943; maximum gage height, 12.27 ft (3.740 m) Mar. 16, 1978 (backwater from ice); no flow Jan. 16 to Feb. 12, Feb. 22-24, 1950. July 27, Sept. 21-27, Oct. 1, 1960, Sept. 4-8, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s (141 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)	Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)
Mar. 16	---	ice jam		*12.27	3.740	May 13	1315	5,170	146	5.31	1.618
Mar. 22	---	*30,000	858	11.59	3.533	May 23	0100	27,400	776	11.27	3.435

Minimum daily discharge, 86 ft³/s (2.44 m³/s) Nov. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	532	191	170	160	125	120	2170	436	6090	2660	779	267
2	703	195	160	160	130	120	1890	818	5980	2600	602	234
3	683	195	160	160	140	120	1690	963	5620	2710	438	229
4	519	199	150	165	140	120	1520	1060	4960	2620	404	212
5	430	199	140	170	140	130	1310	1080	4570	2450	353	202
6	627	203	120	160	135	140	1180	1150	4240	2120	366	185
7	623	212	120	155	135	155	1080	1330	3920	1990	485	173
8	1030	168	110	150	135	170	996	2970	3680	1840	579	153
9	793	191	100	140	135	180	947	3990	3710	1490	556	125
10	525	199	110	140	135	200	875	4870	3960	1550	465	102
11	424	180	140	140	130	200	805	4750	4000	1640	456	96
12	342	220	160	140	130	200	770	4860	4160	1660	426	163
13	294	233	160	140	130	200	759	5020	4390	1570	420	690
14	279	224	160	135	130	200	748	4540	4110	1450	394	618
15	270	256	160	130	127	200	703	3720	3750	1350	391	305
16	251	265	160	125	125	500	682	2980	3580	1250	377	227
17	237	265	150	127	125	1400	682	2750	4160	1180	361	198
18	224	256	150	125	125	2770	726	3830	4440	1290	357	231
19	220	180	150	125	125	2860	641	7940	4160	1790	396	418
20	224	90	150	130	125	7000	637	11900	3810	1120	459	350
21	207	86	150	130	130	15000	603	16900	3250	949	475	267
22	199	90	150	130	130	20000	580	22200	3040	1030	424	240
23	203	96	150	130	120	16300	577	19400	2910	934	450	233
24	195	99	150	130	120	11200	535	9870	2670	978	484	250
25	191	90	150	130	120	8660	516	7920	2590	868	448	330
26	188	105	150	125	120	8790	489	6950	2750	1920	421	438
27	188	115	150	120	120	5860	457	6590	2640	1630	395	426
28	188	130	150	120	120	4980	448	6150	2700	1200	416	394
29	191	150	160	120	---	4290	444	5970	2520	903	479	357
30	195	170	160	120	---	3460	446	5970	2280	861	357	338
31	191	---	160	120	---	2640	---	6160	---	752	305	---
TOTAL	11566	5272	4560	4252	3602	118165	25908	185057	114640	48355	13718	8451
MEAN	373	176	147	137	129	3812	864	5970	3821	1560	443	262
MAX	1030	265	170	170	140	20000	2170	22200	6090	2710	779	690
MIN	188	86	100	120	120	120	444	436	2280	752	305	96
AC-FT	22940	10460	9040	8430	7140	234400	51390	367100	227400	95910	27210	16760
CAL YR 1977	TOTAL	149987		MEAN	411	MAX	3110	MIN 13		297500		
WTR YR 1978	TOTAL	543546		MEAN	1489	MAX	22200	MIN 66	AC-FT	1078000		

YELLOWSTONE RIVER BASIN

06326500 POWDER RIVER NEAR LOCATE, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951-63, 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1951 to July 1963, October 1974 to current year.

WATER TEMPERATURES: December 1950 to July 1963, October 1974 to current year.

SUSPENDED-SEDIMENT DISCHARGE: March 1950 to September 1953, October 1974 to September 1977, March to September 1978.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 9,270 micromhos Dec. 16, 1955; minimum daily, 231 micromhos July 18, 1963.

WATER TEMPERATURES: Maximum daily, 30.0°C July 26, 1959; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily, 60,000 mg/L Aug. 6, 1953; (1974-77, March to September 1978), 17 mg/L Dec. 3, 1974.

SEDIMENT LOADS: Maximum daily, 1,020,000 tons (925,000 tonnes) May 26, 1952; minimum daily, less than 1 ton (.91 tonne) on several days during September 1950.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,990 micromhos Dec. 6, 7; minimum daily, 648 micromhos Mar. 22.

WATER TEMPERATURES: Maximum daily, 27.0°C Aug. 13; minimum daily, 0.0°C on many days during November to March.

SEDIMENT CONCENTRATIONS: Maximum daily, 23,000 mg/L May 15; minimum daily, 174 mg/L Sept. 10.

SEDIMENT LOADS: Maximum daily, 749,000 tons (679,000 tonnes) May 22; minimum daily, 48 tons (44 tonnes) Sept. 10.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (AMD CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JFU)	TUR- BID- ITY (NTJ)	OXYGEN, DIS- SOLVED (PER- CENT) SATUR- ATION	OXYGEN, DIS- SOLVED (MG/L)
OCT											
13...	1445	265	2	1770	8.4	14.5	11.5	3800	--	10.2	102
NOV											
02...	1500	187	1	2500	8.5	11.5	8.0	1000	--	10.6	98
DEC											
08...	1130	117	0	2850	8.0	-30.0	.0	140	--	9.4	71
JAN											
05...	1200	167	2	2600	8.0	-25.0	.0	110	--	7.2	54
FEB											
23...	1045	121	2	2220	7.8	.0	.0	60	--	7.9	59
MAR											
23...	1000	16300	2	615	8.0	2.5	2.5	2400	--	10.8	87
APR											
13...	1130	771	0	2430	8.4	7.0	7.0	310	--	11.2	101
MAY											
03...	1130	929	2	2270	8.4	14.0	14.0	650	--	9.3	99
22...	1430	24100	1	1850	7.5	23.0	18.0	--	6400	7.3	84
JUN											
08...	1115	3770	0	1200	8.1	20.5	19.5	1300	--	7.8	93
JUL											
13...	1115	1450	0	1700	8.2	26.0	21.0	--	2000	7.8	96
AUG											
16...	0900	383	1	2350	8.4	23.0	18.5	--	290	8.4	98
SEP											
14...	0930	651	1	1300	8.2	14.0	10.0	--	5000	9.6	92

YELLOWSTONE RIVER BASIN

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06326500 POWDER RIVER NEAR LOCATE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HC03)	CAR- BONATE (MG/L AS C03)
OCT 13...	280	1200	410	230	99	40	250	5.4	7.2	220	0
NOV 02...	36	79	590	350	130	64	340	6.1	8.1	290	0
DEC 08...	K8	240	910	520	200	100	350	5.0	9.6	480	0
JAN 05...	K30	65	710	370	160	76	340	5.5	7.6	420	0
FEB 23...	K12	26	640	330	140	70	290	5.0	7.0	380	0
MAR 23...	K240	K28000	180	100	44	16	61	2.0	5.3	87	0
APR 13...	K7	120	700	440	160	74	310	5.1	9.6	320	2
MAY 03...	K140	K6700	610	370	140	63	290	5.1	9.8	290	2
22...	--	--	730	610	180	67	200	3.2	11	--	--
JUN 08...	210	1200	400	210	94	41	140	3.0	5.6	240	0
JUL 13...	720	1800	610	380	150	56	190	3.4	6.2	--	--
AUG 16...	K100	113	680	490	150	74	300	5.0	6.1	--	--
SEP 14...	K16000	K18000	180	45	46	17	200	6.4	6.0	--	--

DATE	ALKA- LITY (MG/L AS CAC03)	CARBON DIOXIDE DIS- SOLVED (MG/L AS C02)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLOR- IDE, DIS- SOLVED (MG/L AS CL)	FLUOR- IDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 13...	180	1.4	650	81	.6	7.1	1260	1240	1.71	902	.39
NOV 02...	240	1.5	800	190	.6	7.8	1730	1680	2.35	873	.16
DEC 08...	340	7.7	1000	130	.3	13	2190	2040	2.98	692	.42
JAN 05...	340	6.7	840	170	.5	13	1840	1810	2.50	830	.96
FEB 23...	310	9.6	700	150	.4	13	1570	1560	2.14	513	.65
MAR 23...	71	1.4	220	13	.2	4.9	388	408	.53	17100	.38
APR 13...	270	2.1	880	110	.4	9.8	1720	1710	2.34	3580	.20
MAY 03...	240	1.9	790	140	.5	8.0	1600	1590	2.18	4010	.21
22...	120	--	950	37	.5	6.0	1560	1520	2.07	96900	1.2
JUN 08...	200	3.1	460	36	.4	7.9	899	903	1.22	9150	.29
JUL 13...	230	--	690	79	.5	9.8	1280	1320	1.74	5010	.40
AUG 16...	190	--	900	110	.5	9.7	1740	1660	2.37	1800	.00
SEP 14...	140	--	420	40	.4	10	822	824	1.12	1450	.84

YELLOWSTONE RIVER BASIN

06326500 POWDER RIVER NEAR LOCATE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, ORGANIC (MG/L AS N)	NITRO- GEN, AMMONIA (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT 13...	--	.04	--	.55	--	.02	.00	--	6.9	--
NOV 02...	--	.02	--	.39	--	.19	.04	16	--	--
DEC 08...	--	.06	--	.53	--	.15	.01	9.0	--	--
JAN 05...	--	.09	--	.87	--	.12	.01	--	6.8	1.0
FEB 23...	.47	.08	.55	.03	1.2	.07	.02	4.7	--	--
MAR 23...	4.9	.19	5.1	.54	5.5	2.7	.05	--	11	--
APR 13...	1.1	.01	1.1	.90	1.5	.56	.01	12	--	--
MAY 05...	1.4	.04	1.4	.36	1.5	.70	.00	19	--	--
MAY 22...	--	.04	--	1.1	--	2.9	.06	--	8.2	>5.0
JUN 08...	3.4	.11	3.5	.51	3.8	2.2	.00	55	--	--
JUL 13...	9.6	.07	9.7	.85	10	2.5	.01	--	6.9	--
AUG 16...	1.1	.02	1.1	.42	1.1	.22	.00	13	--	--
SEP 14...	9.1	.02	9.1	1.1	9.9	2.4	.02	85	--	--

DATE	TIME	ARSENIC	ARSENIC	BARIUM,	BARIUM,	CADMIUM	CADMIUM	CHRO-	CHRO-	
		TOTAL (UG/L AS AS)	DIS- SOLVED (UG/L AS AS)	TOTAL RECUV- ERABLE (UG/L AS BA)	DIS- SOLVED (UG/L AS BA)	TOTAL RECUV- ERABLE (UG/L AS CD)	DIS- SOLVED (UG/L AS CD)	MUM, TOTAL RECUV- ERABLE (UG/L AS CR)	MUM, DIS- SOLVED (UG/L AS CR)	
JCT 13...	1445	92	1	1200	300	20	4	220	10	
JAN 05...	1200	2	3	100	100	2	0	20	0	
MAR 23...	1000	14	0	1000	400	0	1	60	0	
MAY 22...	1430	17	2	2700	0	10	0	240	5	
JUL 13...	1115	13	10	700	100	0	1	60	0	
DATE	TIME	COBALT, TOTAL RECUV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECUV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECUV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECUV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECUV- ERABLE (UG/L AS MN)

OCT 13...	200	6	390	2	300000	20	400	19	5600
JAN 05...	0	0	23	3	4200	10	12	10	50
MAR 23...	15	0	100	2	110000	30	49	0	2500
MAY 22...	130	0	340	3	250000	0	400	0	6500
JUL 13...	30	0	8	7	95000	40	66	3	1600

DATE	MANGA- NESE, TOTAL DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECUV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECUV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECUV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 13...	10	.4	.0	10	0	10	0	1600	20
JAN 05...	10	.1	.0	4	4	0	0	90	30
MAR 23...	0	.0	.0	2	0	0	0	440	20
MAY 22...	0	.6	.1	17	7	1	0	1200	10
JUL 13...	10	.5	.0	4	2	1	0	450	10

06326500 POWDER RIVER NEAR LOCATE, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1520	2420	2740	2500	2400	2270	1530	2350	1240	1010	2180	2250
2	1340	2470	2840	2500	2160	2310	1660	2400	1280	1040	1820	2360
3	1600	2470	2960	2500	2380	2330	1800	2270	1400	1170	2020	2410
4	2310	2480	2980	2430	2350	2390	1900	1950	1290	1270	2270	2450
5	1780	2480	2880	2520	2550	2430	1980	1850	1240	1350	2350	2450
6	1670	2460	2990	2530	2460	2450	2070	2000	1320	1240	2440	2520
7	1950	2470	2990	2590	2460	2440	2130	1990	1290	1340	2520	2530
8	1660	2480	2780	2620	2280	2420	2190	1850	1280	1350	2550	2500
9	1420	2550	2630	2640	2380	2370	2210	1780	1230	1360	2620	2500
10	1630	2640	2630	2620	2440	2340	2250	1800	1150	1400	2540	2510
11	1680	2460	2580	2430	2280	1920	2310	1860	1100	1450	2410	2520
12	1730	2390	2520	2570	2420	1140	2330	1800	1020	1490	2220	2450
13	1780	2390	2470	2560	---	1630	2340	1750	939	1770	2320	2000
14	1950	2410	2490	2570	2450	---	2320	1950	854	1550	2470	1340
15	2050	2400	2380	2560	2190	---	2320	2050	864	1530	2420	1540
16	2100	2420	2270	2510	2170	---	2300	1980	882	1800	2340	2110
17	2230	2360	2080	2420	2390	1540	2320	2000	880	1750	2350	2430
18	2250	2210	2330	2460	2330	1380	2310	1670	880	1870	2360	2520
19	2290	2280	2570	2420	---	1280	2330	1380	972	1130	2410	2380
20	2300	---	2710	2420	2330	1110	2360	1580	863	1680	2450	2010
21	2370	2610	2720	2420	2340	814	2400	1800	910	1800	2390	2420
22	2420	2810	2740	2400	2230	648	2420	2000	982	1800	2360	2470
23	2450	2920	2630	2420	2250	652	2430	2220	908	1870	2250	2450
24	2440	2930	2440	2260	2170	685	2420	2100	1030	1910	2130	2450
25	2450	2850	2390	2190	2160	671	2450	2100	1040	2070	2180	2530
26	2450	2780	2370	2320	2170	708	2450	1780	1060	2010	2310	2590
27	2450	2680	2430	2300	2210	737	2450	1650	1070	1690	2330	2510
28	2440	2720	2590	2300	2240	933	2480	1460	1020	1980	2250	2550
29	2430	2720	2630	2290	---	1120	2470	1330	969	2190	2180	2610
30	2420	2690	2620	2260	---	1230	2420	1260	970	2030	2060	2670
31	2420	---	2570	2270	---	1380	---	1320	---	2100	2140	---
MEAN	2060	2550	2610	2450	2320	1550	2250	1850	1070	1610	2310	2370

WTR YR 1978 MEAN 2080 MAX 2990 MIN 648
TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
JNCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.5	3.5	.0	.0	.0	.0	7.5	8.0	12.0	23.5	22.0	19.5
2	6.5	4.5	.0	.0	.0	.0	8.5	8.0	12.5	24.0	19.5	19.0
3	8.5	3.0	.0	.0	.0	.0	11.5	11.0	13.5	23.0	16.0	19.5
4	9.5	3.0	.0	.0	.0	.0	9.0	11.5	16.0	23.5	19.0	20.0
5	7.5	3.5	.0	.0	.0	.0	11.5	10.5	18.0	21.5	19.5	21.0
6	7.5	5.0	.0	.0	.0	.0	10.0	10.0	18.5	22.0	21.0	21.0
7	8.5	3.5	.0	.0	.0	.0	9.5	10.0	18.0	20.5	22.0	20.5
8	7.5	2.0	.0	.0	.0	.0	9.0	7.5	19.0	22.0	22.0	20.5
9	8.5	.5	.0	.0	.0	.0	10.5	7.5	19.5	18.5	21.5	16.0
10	4.0	.5	.0	.0	.0	.0	7.0	10.5	21.5	20.5	21.0	17.5
11	1.0	.5	.0	.0	.0	.0	7.0	12.5	18.0	22.5	24.0	18.0
12	2.5	1.0	.0	.0	.0	.0	6.0	11.5	17.0	22.0	25.0	14.5
13	6.0	.5	.0	.0	.0	.0	4.0	11.5	19.5	19.5	27.0	12.0
14	7.5	1.5	.0	.0	.0	---	8.0	14.0	20.5	20.5	20.5	9.5
15	5.5	3.5	.0	.0	.0	---	11.0	16.0	21.0	21.5	17.5	11.5
16	6.0	2.0	.0	.0	.0	---	9.0	18.0	19.0	24.0	20.0	13.0
17	7.0	.5	.0	.0	.0	.5	9.0	16.0	18.5	24.5	18.5	12.5
18	6.0	.5	.0	.0	.0	.5	7.0	14.0	18.0	21.0	14.5	12.0
19	6.5	.5	.0	.0	.0	.5	5.5	13.5	19.5	18.0	14.0	7.0
20	7.5	---	.0	.0	.0	.5	7.0	12.5	16.5	19.0	17.0	6.5
21	7.5	.0	.0	.0	.0	.5	7.0	13.5	17.0	18.0	19.5	8.0
22	6.5	.0	.0	.0	.0	.5	9.0	15.5	20.5	17.5	18.5	10.5
23	6.0	.0	.0	.0	.0	.5	8.5	17.5	19.5	20.5	18.0	12.5
24	7.5	.0	.0	.0	.0	4.5	8.5	19.0	20.5	22.5	19.5	14.0
25	7.5	.0	.0	.0	.0	5.5	10.5	17.5	20.5	23.0	22.0	14.5
26	8.0	.0	.0	.0	.0	5.0	10.0	17.5	19.0	23.5	19.5	15.5
27	7.0	.0	.0	.0	.0	8.0	12.0	17.5	19.5	22.5	18.5	15.0
28	7.5	.0	.0	.0	.0	8.0	11.0	18.0	21.5	23.5	15.5	15.5
29	8.0	.0	.0	.0	---	10.0	9.0	18.0	23.5	21.5	16.5	13.5
30	8.5	.0	.0	.0	---	12.0	8.0	17.0	23.0	19.0	17.0	11.5
31	6.5	---	.0	.0	---	13.5	---	13.5	---	21.0	18.0	---
MEAN	7.0	1.5	.0	.0	.0	2.5	8.5	13.5	18.5	21.5	19.5	14.5
WTR YR 1978	MEAN	9.0	MAX	27.0	MIN	.0						

YELLOWSTONE RIVER BASIN

06326500 POWDER RIVER NEAR LOCATE, MT--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1											288	93
2											277	90
3											218	71
4											220	71
5											335	118
6											340	129
7											302	126
8											301	138
9											281	137
10											450	243
11											980	529
12											1000	540
13											1470	794
14											1750	945
15											1860	1000
16											1870	2520
17											1550	5860
18											1130	8450
19											1430	14900
20											5200	98300
21											10400	421000
22											10100	545000
23											4700	207000
24											4850	147000
25											4120	96300
26											3720	88300
27											3220	50900
28											2840	38200
29											2650	30700
30											2260	21100
31											1840	15100
TOTAL											---	1793654
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	1490	8730	504	593	8660	110000	2860	20500	9720	20400	476	343
2	1390	7090	1190	2630	5310	85700	2370	16600	6230	13400	351	222
3	1240	5690	1430	3720	4770	72400	2610	19100	5990	7080	325	201
4	1220	5010	1520	4430	4150	55600	4980	35200	5230	3520	316	181
5	1060	3750	1350	3940	4050	50000	5250	34700	1930	1840	290	158
6	976	3110	1970	6120	4280	49000	4160	23800	1340	1320	248	124
7	930	2710	1490	5350	4020	42500	3260	17500	1450	1900	245	114
8	926	2490	6630	53200	3300	32800	2680	13300	1800	2810	220	91
9	951	2430	7550	81300	2920	29200	1860	7460	2260	3390	177	60
10	606	1900	11100	146000	3180	34000	1640	6860	2260	2840	174	48
11	652	1810	9540	122000	3960	42600	1530	6770	1650	2030	193	50
12	813	1690	9270	122000	5300	59500	1910	8560	1970	2270	251	110
13	788	1610	11300	153000	5390	63900	4000	17000	1170	1330	9140	21100
14	712	1440	16800	206000	4290	47600	3010	11800	977	1040	14000	23800
15	636	1210	23000	231000	3940	39900	2530	9220	1070	1130	6290	5180
16	548	1010	20800	167000	3010	29100	3370	11400	719	732	2180	1340
17	605	1110	18200	135000	4820	54100	3190	10200	673	656	840	449
18	643	1260	14000	145000	5160	61900	5100	20600	627	604	448	279
19	769	1330	14500	311000	4990	56000	8260	43000	541	576	2980	3950
20	649	1120	11300	363000	3420	35200	3430	10400	673	834	3860	3610
21	592	964	8640	394000	2350	20600	2350	6020	845	1080	1250	901
22	548	658	12500	749000	2700	22200	2310	6420	832	952	390	253
23	611	952	12400	650000	2740	21500	1870	4720	772	938	234	147
24	605	674	11000	293000	3080	22200	1670	4410	870	1140	302	204
25	580	808	10500	225000	2730	19100	1250	2930	840	1020	437	389
26	536	708	8730	164000	3190	23700	3830	20200	871	990	580	686
27	554	684	9720	173000	2640	18800	4770	21000	792	845	587	675
28	510	617	6210	103000	1710	12500	9200	29800	884	993	865	920
29	561	673	6120	98600	1280	8710	14200	34600	1310	1690	960	945
30	529	640	10700	172000	1010	6220	14500	33700	2080	2000	938	856
31	---	---	8910	148000	---	---	12400	25200	766	631	---	---
TOTAL	---	64478	---	5431883	---	1226730	---	532990	---	81983	---	67586
TOTAL LOAD FOR YEAR:			9199304	TONS.								

YELLOWSTONE RIVER BASIN

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06326500 POWDER RIVER NEAR LOCATE, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM
OCT							
13...	1445	11.5	265	7180	5140	--	--
NOV							
02...	1500	8.0	187	1730	873	--	--
DEC							
08...	1130	.0	117	494	156	--	--
JAN							
05...	1200	.0	167	339	153	--	--
FEB							
23...	1045	.0	121	138	45	--	--
MAR							
22...	1535	3.0	19600	8180	433000	42	61
23...	1000	2.5	16300	7060	311000	39	46
APR							
13...	1130	7.0	771	1040	2160	--	--
MAY							
03...	1130	14.0	929	1570	3940	48	68
22...	1400	--	22600	19000	1160000	--	--
22...	1450	18.0	24100	14700	957000	55	73
22...	1500	--	23000	17000	1060000	--	--
22...	1600	--	23600	17700	1130000	--	--
22...	1700	18.0	23500	17900	1140000	--	--
22...	1800	17.5	24000	18200	1180000	--	--
22...	1900	17.5	24100	18700	1220000	--	--
22...	2000	17.0	24700	19000	1270000	--	--
22...	2100	--	25200	19000	1290000	--	--
22...	2330	--	26600	18500	1330000	--	--
23...	0100	--	27200	17500	1290000	--	--
23...	0230	--	26800	16800	1220000	--	--
23...	0400	--	27000	15300	1120000	--	--
23...	0600	15.0	25600	15100	1040000	--	--
JUN							
08...	1115	19.5	3770	5710	58100	26	39
JUL							
13...	1115	21.0	1450	4600	18000	62	80
AUG							
16...	0900	18.5	383	686	709	--	--
SEP							
14...	0930	10.0	651	14900	26200	88	92

YELLOWSTONE RIVER BASIN

06326500 POWDER RIVER NEAR LOCATE, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM	SED. SUSP. FALL DIAM. % FINER THAN 2.00 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM
OCT							
13...	--	--	--	--	--	--	91
NOV							
02...	--	--	--	--	--	--	91
DEC							
08...	--	--	--	--	--	--	07
JAN							
05...	--	--	--	--	--	--	73
FEB							
23...	--	--	--	--	--	--	90
MAR							
22...	75	85	95	100	--	--	--
23...	74	86	92	94	99	100	--
APR							
13...	--	--	--	--	--	--	58
MAY							
03...	76	86	99	100	--	--	--
22...	--	--	--	--	--	--	77
22...	85	95	100	--	--	--	--
22...	--	--	--	--	--	--	81
22...	--	--	--	--	--	--	81
22...	--	--	--	--	--	--	82
22...	--	--	--	--	--	--	84
22...	--	--	--	--	--	--	82
22...	--	--	--	--	--	--	83
22...	--	--	--	--	--	--	83
22...	--	--	--	--	--	--	85
23...	--	--	--	--	--	--	85
23...	--	--	--	--	--	--	83
23...	--	--	--	--	--	--	86
23...	--	--	--	--	--	--	82
JUN							
08...	56	71	95	100	--	--	--
JUL							
13...	83	90	99	100	--	--	--
AUG							
10...	--	--	--	--	--	--	72
SEP							
14...	97	98	100	--	--	--	--

06326500 POWDER RIVER NEAR LOCATE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
16...	0600	2350	8.4	14.0	17.5	8.2	93
16...	0700	2330	8.4	14.5	18.0	8.3	95
16...	0800	2350	8.4	19.0	18.0	8.4	97
16...	0900	2350	8.4	23.0	18.5	8.4	98
16...	1000	2320	8.4	22.0	19.0	8.4	99
16...	1100	2350	8.4	23.5	20.0	8.4	101
16...	1200	2330	8.3	28.0	21.0	8.3	102
16...	1300	2330	8.3	31.5	22.0	8.1	101
16...	1400	2340	8.4	29.0	22.5	8.0	101
16...	1500	2350	8.3	29.5	23.0	7.9	101
16...	1600	2300	8.3	32.0	23.0	7.8	100
16...	1700	2300	8.4	30.5	23.5	7.8	101
16...	1800	2300	8.3	29.0	23.0	7.7	99
16...	1900	2290	8.0	25.5	22.5	7.7	97
16...	2000	2310	8.0	23.5	22.0	7.7	96
16...	2100	2350	8.1	22.5	21.5	7.6	94
16...	2200	2300	8.0	16.5	21.0	7.6	94
16...	2300	2310	8.0	16.5	20.5	7.6	93
16...	2400	2300	8.1	15.5	20.0	7.4	89
17...	0100	2300	8.0	14.5	19.5	7.8	93
17...	0200	2310	8.1	14.5	19.5	7.9	94
17...	0300	2310	8.2	14.5	19.0	7.9	93
17...	0400	2330	8.1	14.5	18.5	8.0	93
17...	0500	2300	8.2	14.5	18.5	8.0	85

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE TIME	PHYTOPLANKTON							
	NOV 2, 77 1500		MAR 23, 78 1000		MAY 3, 78 1130		MAY 22, 78 1430	
TOTAL CELLS/ML	110		68		2600		0	
DIVERSITY: DIVISION	0.8		0.0		1.5		0.0	
..CLASS	0.8		0.0		1.5		0.0	
..ORDER	0.8		0.0		1.7		0.0	
...FAMILY	0.8		0.0		2.8		0.0	
....GENUS	0.6		0.0		2.8		0.0	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCELES								
....JOCYSTACEAE								
.....ANKISTRJUESMUS	--	-	68#100	--	--	-	--	-
.....SELENASTRUM	--	-	--	-	190	7	--	-
...SCENEDESMACEAE								
....SCENEDESMUS	--	-	--	-	380	14	--	-
...VOLVOCALES								
..CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	--	-	190	7	--	-
CHRYSDOPHYTA								
..BACILLARIOPHYCEAE								
...PENNALES								
...FRAGILARIACEAE								
....SYNEDRA	--	-	--	-	570#	21	--	-
...NAVICULACEAE								
....PLEURUSIGMA	--	-	--	-	190	7	--	-
...NITZSCHACEAE								
....NITZSCHIA	--	-	--	-	190	7	--	-
...SURIRELLACEAE								
....SURIRELLA	--	-	--	-	380	14	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...HORMOGONALES								
...OSCILLATORIACEAE								
....LYNGBYA	86#	75	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....TRACHELOMONAS	29#	25	--	-	570#	21	--	-

YELLOWSTONE RIVER BASIN

06326500 POWDER RIVER NEAR LOCATE, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE TIME	PHYTOPLANKTON		
	JUN 8,78 1115	JUL 13,78 1115	AUG 16,78 0900
TOTAL CELLS/ML	180	620	9600
DIVERSITY: DIVISION	0.7	0.9	1.0
..CLASS	0.7	0.9	1.0
..ORDER	0.8	0.9	1.3
...FAMILY	1.6	1.1	2.0
....GENUS	1.6	1.1	2.5

ORGANISM	CELLS PER- /ML CENT		CELLS PER- /ML CENT		CELLS PER- /ML CENT	
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....DUCCASTACEAE						
.....ANKISTRUMESMUS	--	-	--	-	2800#	30
.....CHODATELLA	--	-	--	-	89	1
.....KIRCHNERIELLA	--	-	--	-	89	1
.....DUCCASTIS	59#	33	--	-	--	-
...SCENEDESMACEAE						
....ACTINASTRUM	--	-	--	-	530	6
....SCENEDESMUS	45#	50	490#	79	3300#	34
....TETRASTRUM	--	-	--	-	350	4
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	--	-	--	-	350	4
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
....COSCINOIDISCEAE						
.....CYCLOIDELLA	15	8	--	-	270	3
..PENNALES						
...NAVICULACEAE						
....CALDWELLS	--	-	14	2	--	-
....NAVICULA	15	8	14	2	--	-
...NITZSCHACEAE						
.....NITZSCHIA	--	-	57	9	270	3
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
....CHROCOCCACEAE						
.....ANACYSTIS	--	-	--	-	1300	14
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
....EUGLENACEAE						
.....TRACHELIMONAS	--	-	43	7	180	2

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

DATE TIME		LENGTH OF EXPOSURE (DAYS)	PERIPHYTON			
			PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUORUM (MG/M2)
OCT 13...	1445	23	4.02	3.70	.032	.008
JUL 19...	0900	41	.236	.157	.000	.000
AUG 16...	0900	28	2.05	1.97	.040	.000

YELLOWSTONE RIVER BASIN

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06326530 YELLOWSTONE RIVER NEAR TERRY, MT

LOCATION.--Lat 46°48'17", long 105°17'36", in SW¼SW¼ sec.10, T.12 N., R.51 E., Prairie County, Hydrologic Unit 10100004, at bridge on county road, 1.2 mi (1.9 km) northeast of Terry, 11.8 mi (19.0 km) downstream from Powder River, and at mile 134.8 (219.9 km).

DRAINAGE AREA.--63,447 mi² (164,328 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--The water discharge is measured or computed by adding the discharge of Yellowstone River at Miles City (station 06309000) to that of Powder River near Locate (station 06326500). Some regulation by reservoirs on tributary streams and diversions for irrigation.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
UCT										
09...	1110	7620	3	770	8.5	8.5	10.5	1300	9.6	93
NOV										
06...	1245	5180	1	765	8.6	14.0	6.5	40	11.2	98
DEC										
03...	1400	6520	3	772	8.3	2.0	.0	25	12.7	95
JAN										
06...	1400	5170	3	1010	8.0	-12.0	.0	5	12.2	91
FEB										
07...	1200	7340	3	1050	8.0	-8.5	.0	4	11.2	84
MAR										
15...	1430	10100	3	840	8.0	3.0	.0	160	10.6	79
23...	1400	37300	3	618	7.9	4.5	2.5	1200	11.4	91
APR										
06...	1350	14700	1	945	8.2	13.0	11.5	140	9.7	97
MAY										
04...	1510	14500	3	930	8.2	10.0	13.0	330	9.3	96
22...	0900	103000	0	1010	7.8	20.0	16.0	1800	7.7	86
JUN										
06...	1520	37800	1	780	8.4	25.0	20.0	270	8.1	96
JUL										
19...	1000	35700	1	565	8.3	16.5	19.0	640	7.8	91
AUG										
08...	1150	17600	1	570	8.6	24.5	22.5	35	8.1	101
SEP										
06...	1000	9200	0	662	8.7	23.0	22.5	3	7.7	97

DATE	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CaCO3)
UCT										
09...	230	76	55	23	87	2.5	4.1	190	0	160
NOV										
06...	260	94	57	28	75	2.0	3.8	200	0	160
DEC										
03...	260	98	62	26	66	1.8	3.8	200	0	160
JAN										
06...	350	160	85	34	92	2.1	4.7	240	0	200
FEB										
07...	330	140	82	30	84	2.0	4.4	230	0	190
MAR										
15...	260	99	61	25	79	2.2	5.0	190	0	160
23...	180	76	45	17	60	1.9	4.9	130	0	110
APR										
06...	300	130	67	32	86	2.2	4.6	210	0	170
MAY										
04...	280	130	62	31	88	2.3	4.8	190	0	160
22...	320	210	77	31	95	2.1	7.5	140	0	110
JUN										
06...	290	140	68	29	88	1.7	3.8	180	3	150
JUL										
19...	180	72	45	16	54	1.8	3.0	130	0	110
AUG										
08...	180	55	44	17	44	1.4	3.1	150	1	120
SEP										
06...	220	81	55	20	62	1.8	3.5	170	0	140

YELLOWSTONE RIVER BASIN

06326530 YELLOWSTONE RIVER NEAR TERRY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS CU2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TUN PER AC-FT)	SOLIDS, DIS- SOLVED (TUN PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
OCT 09...	1.0	230	18	.5	8.7	520	.71	10700	.22	.01
NOV 06...	.8	210	16	.5	7.4	497	.68	6950	.01	.01
DEC 03...	1.6	220	8.3	.5	13	498	.68	8770	.61	.07
JAN 06...	3.8	310	23	.6	14	682	.93	9520	.74	.15
FEB 07...	3.7	290	17	.5	13	635	.86	12600	.57	.08
MAR 15...	3.0	220	18	.5	9.3	512	.70	14000	.54	.29
23...	2.0	180	9.7	.3	6.4	388	.53	39100	.43	.18
APR 06...	2.1	260	18	.4	10	582	.79	23100	.38	.06
MAY 04...	1.9	300	18	.5	11	609	.83	23800	.37	.11
22...	3.5	370	7.8	.4	8.1	656	.89	182000	.85	.01
JUN 06...	1.2	260	12	.4	11	544	.74	55500	.33	.05
JUL 19...	1.0	160	9.7	.2	7.3	359	.49	34000	.28	.01
AUG 08...	.6	150	8.5	.3	9.0	351	.48	16700	.04	.00
SEP 06...	--	180	13	.4	10	--	--	--	.00	.01

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)
OCT 09...	3.2	3.2	3.4	.00	190	30	--	5.2	11
NOV 06...	.38	.39	.40	.05	200	10	--	2.8	.8
DEC 03...	.23	.30	.91	.04	200	10	--	--	--
JAN 06...	.46	.61	1.4	.03	220	20	--	2.7	.3
FEB 07...	.18	.26	.83	.03	210	10	--	--	--
MAR 15...	.70	.99	1.5	.23	170	30	--	--	--
23...	4.1	4.3	4.7	1.6	120	30	17	--	>5.0
APR 06...	.77	.83	1.2	.22	170	20	--	3.1	2.1
MAY 04...	1.2	1.3	1.7	.46	180	30	--	--	--
22...	5.3	5.3	6.2	1.7	130	170	--	8.2	>5.0
JUN 06...	1.1	1.1	1.4	.36	110	20	--	--	--
JUL 19...	2.1	2.1	2.4	.88	90	30	--	4.3	>5.0
AUG 08...	.46	.48	.52	.07	100	<10	--	--	--
SEP 06...	.46	.47	.47	.05	140	510	--	--	--

DATE	TIME	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	ALUMINUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE)	BERYLLIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	CHROMIUM, DIS- SOLVED (UG/L AS CR)
NOV 06...	1245	520	10	8	8	0	0	<10	1	28	5
MAY 22...	0900	--	20	5	2	0	0	1	1	110	10

06326530 YELLOWSTONE RIVER NEAR TERRY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
NOV 06...	<10	0	1500	<100	3	50	60	30	0	.0
MAY 22...	160	4	110000	91	87	100	40	2800	0	.3
DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 06...	.0	7	2	<50	3	2	2	1.1	10	6
MAY 22...	.0	7	1	120	3	8	2	.0	380	30

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SJS- PENDE (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM
UCT 09...	1110	10.5	7620	2760	56800	--	--	--	--	--	--	97
NOV 06...	1245	6.5	5180	74	1040	--	--	--	--	--	--	95
DEC 03...	1400	.0	6520	107	1880	--	--	--	--	--	--	71
JAN 06...	1400	.0	5170	52	726	--	--	--	--	--	--	--
FEB 07...	1200	.0	7340	11	218	--	--	--	--	--	--	--
MAR 15...	1430	.0	10100	267	7280	--	--	--	--	--	--	--
23...	1400	2.5	37300	4510	454000	--	--	--	--	--	--	68
APR 06...	1350	11.5	14700	436	17300	--	--	--	--	--	--	61
MAY 04...	1510	13.0	14500	750	29400	--	--	--	--	--	--	82
22...	0900	16.0	103000	5560	1550000	48	65	79	95	99	100	--
JUN 06...	1520	20.0	37800	1070	109000	--	--	--	--	--	--	64
JUL 19...	1000	19.0	35700	1830	176000	--	--	--	--	--	--	88
AUG 08...	1150	22.5	17600	134	6370	--	--	--	--	--	--	75
SEP 06...	1000	22.5	9200	49	1220	--	--	--	--	--	--	67

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPJ- SURE (DAYS)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)
NOV 06...	1245	28	--	--	.260	.000
AUG 08...	1150	20	5.35	4.88	.310	.020

YELLOWSTONE RIVER BASIN

06326555 CHERRY CREEK NEAR TERRY, MT

LOCATION.--Lat 46°51'00", long 105°19'27", on sec. line 25/30, T.13 N., on range line 50/51 E., Prairie County, Hydrologic Unit 10100004, on county road bridge 0.4 mi (0.6 km) upstream from Dry Creek and 4.0 mi (6.4 km) northwest of Terry.

DRAINAGE AREA.--358 mi² (927 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
09...	1340	.92	61	1750	8.5	6.0	8.5	30	11.4	108
NOV										
06...	0940	.18	3	2900	8.4	7.5	6.0	6	11.7	102
DEC										
03...	1640	.18	40	2890	8.0	-1.0	.5	2	10.3	77
JAN										
06...	1600	.04	1	3000	7.9	-12.0	.5	1	9.6	73
MAR										
15...	1020	3.5	1	920	7.9	-5	.0	100	11.4	65
22...	1040	823	1	212	7.9	8.0	.0	450	12.1	90
APR										
06...	1050	18	0	1840	8.1	10.0	8.0	25	10.2	94
MAY										
04...	1230	4.7	3	2650	8.3	14.0	13.5	1	9.6	100
JUN										
06...	1320	4.2	1	2200	8.3	26.5	25.0	4	8.0	105
JUL										
19...	1240	.45	3	2480	8.3	17.5	21.0	8	8.2	100
AUG										
08...	1430	.01	1	2850	8.3	28.5	23.5	25	8.0	103

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
JCT									
09...	2.4	340	71	66	43	260	6.1	6.0	310
NOV									
06...	.4	570	200	94	82	490	8.4	7.6	460
DEC									
03...	1.1	600	200	110	80	470	8.3	7.2	490
JAN									
06...	--	620	240	110	84	480	8.4	7.7	470
MAR									
15...	6.7	190	38	38	22	130	4.2	6.7	180
22...	8.2	80	10	22	6.2	16	.8	5.4	66
APR									
06...	1.5	480	210	78	69	230	4.6	6.8	330
MAY									
04...	.4	580	210	100	81	400	7.2	8.5	450
JUN									
06...	.8	520	160	94	69	330	6.3	8.3	440
JUL									
19...	1.1	590	210	100	83	430	7.7	9.6	470
AUG									
08...	1.4	580	210	96	83	470	8.5	11	450

YELLOWSTONE RIVER BASIN

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06326555 CHERRY CREEK NEAR TERRY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TJENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 09...	10	270	1.7	620	5.7	.3	8.6	1170	1.59
NOV 06...	0	380	2.9	1200	9.3	.4	10	2120	2.88
DEC 03...	0	400	7.8	1100	8.9	.4	10	2030	2.76
JAN 06...	0	390	9.5	1200	9.7	.4	9.7	2130	2.90
MAR 15...	0	150	3.6	320	4.2	.2	6.4	616	.84
22...	0	71	1.7	47	1.9	.1	4.2	145	.20
APR 06...	0	270	4.2	710	6.0	.2	9.2	1270	1.73
MAY 04...	0	370	3.6	1100	9.4	.4	6.7	1930	2.62
JUN 06...	0	360	3.5	830	11	.3	6.3	1570	2.14
JUL 19...	0	390	3.8	1100	8.3	.4	13	1980	2.69
AUG 08...	0	370	3.6	1200	8.3	.4	12	2100	2.86

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	MURON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 04...	2.91	.07	.00	.05	.05	.12	.00	160	30
NOV 06...	1.03	.01	.01	.20	.21	.22	.01	250	20
DEC 03...	.99	.05	.00	.21	.21	.26	.00	200	20
JAN 06...	.23	.16	.03	.21	.24	.40	.00	170	20
MAR 15...	5.82	.69	.40	1.4	1.8	2.5	.12	100	60
22...	322	.31	.26	.49	.75	1.1	.48	80	110
APR 06...	61.7	.04	.03	1.3	1.3	1.3	.03	160	40
MAY 04...	24.5	.03	.01	.50	.51	.54	.02	210	20
JUN 06...	17.8	.01	.01	.35	.36	.37	.00	260	20
JUL 19...	2.41	.01	.00	.61	.61	.62	.01	330	30
AUG 08...	.06	.01	.00	.42	.42	.43	.01	350	50

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
NOV 06...	0940	20	--	1	--	0	--	1	--	5
JAN 06...	1600	2	--	1	--	10	--	1	--	0
MAR 22...	1040	20	4	3	0	0	0	1	20	0
JUL 19...	1240	10	--	3	--	10	--	1	--	10

YELLOWSTONE RIVER BASIN

06326555 CHERRY CREEK NEAR TERRY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
NOV 06...	--	0	--	--	6	--	50	--	20	--
JAN 06...	--	4	--	--	1	--	40	--	40	--
MAR 22...	27	4	14000	11	0	10	10	250	30	.0
JUL 19...	--	2	--	--	6	--	100	--	20	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 06...	.0	2	--	11	--	0	.2	--	10
JAN 06...	.0	1	--	0	--	5	.0	--	20
MAR 22...	.0	0	20	7	0	0	1.0	70	20
JUL 19...	.0	7	--	1	--	0	.0	--	20

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 09...	1340	8.5	.92	87	.22	99
NOV 06...	0940	6.0	.18	25	.01	63
JAN 06...	1600	.5	.04	10	.00	--
MAR 15...	1020	.0	3.5	147	1.4	99
MAR 22...	1040	.0	823	756	1680	94
APR 06...	1050	8.0	18	57	2.8	--
MAY 04...	1230	13.5	4.7	40	.51	--
JUN 06...	1320	25.0	4.2	42	.48	--
JUL 19...	1240	21.0	.45	65	.08	--
AUG 08...	1430	23.5	.01	97	.01	--

LOCATION.--Lat 46°25'17", long 104°45'40", in NE¼SE¼ sec. 30, T.8 N., R.56 E., Fallon County, Hydrologic Unit 10100005, on left bank, about 350 ft (107 m) upstream of U.S. Highway 12, 1 mi (2 km) east of road to Ismay, 6.5 mi (10.5 km) southeast of Ismay, and 11.5 mi (18.5 km) west of Plevna.

WATER-DISCHARGE RECORDS

REMARKS.--Water-discharge records good except those for winter period, which are fair.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,100 ft³/s (87.8 m³/s) Mar. 22, gage height, 9.35 ft (2.850 m); minimum, 0.15 ft³/s (0.004 m³/s) Nov. 17, gage height, 1.26 ft (0.384 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	.54	1.3	1.1	.50	2.9	302	14	92	32	4.8	1.1
2	73	.50	1.2	1.1	.60	2.8	192	13	128	24	6.6	1.3
3	53	.43	1.1	1.1	.70	2.7	140	12	65	48	4.8	.95
4	19	.43	1.0	1.1	.80	2.7	120	13	41	64	3.6	.79
5	9.2	.46	1.0	1.1	1.0	3.0	106	13	38	38	3.0	.70
6	6.3	.47	.90	1.1	1.2	4.0	98	14	31	23	2.7	.60
7	15	.41	.80	1.1	1.2	4.5	75	16	27	31	2.3	.55
8	44	.60	.60	1.1	1.1	6.0	61	57	22	88	2.1	.45
9	43	.71	.30	1.1	1.0	7.0	50	102	17	66	2.0	.35
10	17	.54	.30	1.1	1.0	9.0	44	93	14	37	2.1	.38
11	11	.56	.40	1.1	1.0	11	40	70	12	30	1.9	.31
12	8.7	1.1	.50	1.1	1.0	13	35	55	11	24	1.7	.51
13	6.6	.45	.50	1.1	1.0	11	31	46	10	17	1.7	.69
14	4.8	.29	.60	1.0	1.0	10	28	42	9.7	13	1.4	.76
15	3.9	.41	.80	1.0	1.0	15	25	36	8.9	12	1.4	.64
16	3.0	.47	1.1	.90	1.0	14	24	29	8.5	9.9	1.3	.53
17	2.3	.47	1.5	.90	1.0	30	22	26	7.6	7.2	1.4	.53
18	2.0	.53	1.6	.90	1.0	80	22	23	8.0	10	1.3	1.1
19	1.8	.60	1.5	.80	1.0	200	24	187	8.9	19	1.2	1.9
20	1.3	.90	1.4	.80	1.0	500	24	467	8.5	13	1.2	2.3
21	1.1	1.1	1.4	.80	1.1	1000	24	188	8.0	8.2	1.1	2.6
22	1.0	1.0	1.4	.80	1.2	2780	22	90	7.6	7.8	1.0	2.8
23	.86	.80	1.4	.70	2.0	1940	21	65	7.1	6.2	.40	2.6
24	.74	.70	1.3	.70	2.5	969	19	46	9.3	5.1	.94	2.3
25	.47	.70	1.2	.60	3.5	991	19	37	12	4.7	.75	1.9
26	.66	.80	1.1	.60	4.0	2090	17	26	9.3	3.7	.64	1.5
27	1.4	.90	1.1	.60	3.5	2760	16	22	13	3.5	.71	1.5
28	1.5	1.0	1.1	.60	3.0	1910	14	19	47	3.0	.96	1.5
29	.70	1.1	1.1	.50	---	1010	15	16	61	2.6	.94	1.5
30	.50	1.2	1.1	.50	---	739	15	20	39	2.4	.97	1.1
31	.45	---	1.1	.50	---	502	---	48	---	2.4	1.2	---
TOTAL	395.28	20.17	31.70	27.50	39.90	17619.6	1645	1907	781.4	655.7	58.61	35.74
MEAN	12.8	.67	1.02	.89	1.43	568	54.8	61.5	26.0	21.2	1.89	1.19
MAX	73	1.2	1.6	1.1	4.0	2780	302	467	128	88	6.6	2.8
MIN	.45	.29	.30	.50	.50	2.7	14	12	7.1	2.4	.64	.31
AC-FT	784	40	63	55	79	34950	3260	3780	1550	1300	116	71
WTR YR 1978	TOTAL	23217.60	MEAN	63.6	MAX	2780	MIN	.29	AC-FT	46050		

YELLOWSTONE RIVER BASIN

06326600 O'FALLON CREEK NEAR ISMAY, MT

LOCATION.--Lat 46°25'17", long 104°45'40", near center of east edge of sec.30, T.8 N., R.56 E., Fallon County, Hydrologic Unit 10100005, on left bank about 350 ft (107 m) upstream on U.S. Highway 12 bridge, 11.5 mi (18.5 km) west of Plevna, 1 mi (2 km) east of road to Ismay, and 6.5 mi (10.5 km) southeast of Ismay.

DRAINAGE AREA.--669 mi² (1,733 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT										
24...	1645	99001	.83	1060	8.6	21.5	14.5	8.6	90	<1
NOV										
21...	1215	99001	1.2	1750	8.4	-12.0	.0	14.9	110	K4
DEC										
23...	1045	99001	1.4	3350	8.2	-1.0	.0	9.7	74	75
JAN										
11...	1215	99001	1.1	3510	8.2	-12.0	.0	12.6	94	K8
FEB										
17...	1115	99001	.99	3750	8.2	--	.5	12.5	96	K7
MAR										
17...	1100	99001	26	940	8.6	11.0	.0	12.1	92	K45
APR										
28...	1350	99001	15	2550	8.6	11.0	12.0	--	--	<1
MAY										
17...	1145	99001	25	2470	8.6	13.0	17.0	8.2	90	190
JUN										
30...	1445	99001	34	3100	8.5	31.0	28.0	7.8	91	240
JUL										
21...	1145	99001	8.4	1740	8.2	24.0	20.0	8.6	101	120
AUG										
14...	1245	99001	1.4	2520	8.6	21.0	22.0	8.3	109	27
SEP										
15...	1115	99001	.73	2630	8.5	22.0	14.0	9.8	102	340

DATE	STREP- TUBERCLE FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CU3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SILICA- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CU3)
OCT										
24...	110	--	--	--	--	--	--	--	250	17
NOV										
21...	170	250	0	44	54	320	8.8	6.6	420	4
DEC										
23...	1300	470	0	73	70	640	13	9.6	750	0
JAN										
11...	66	510	0	77	77	700	14	9.0	860	0
FEB										
17...	107	620	0	97	91	790	14	9.5	920	0
MAR										
17...	K16000	140	0	25	20	150	5.4	8.3	220	6
APR										
28...	K60	510	85	83	73	460	8.9	9.1	490	14
MAY										
17...	200	420	0	66	61	480	10	9.1	520	2
JUN										
30...	210	510	60	72	80	590	11	9.9	510	19
JUL										
21...	350	270	0	49	37	330	8.7	8.5	450	0
AUG										
14...	90	320	0	44	52	490	12	10	550	12
SEP										
15...	400	310	0	34	55	580	14	11	580	10

06326600 O'FALLON CREEK NEAR ISMAY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 24...	1.1	--	--	--	--	--	--	--	--	--
NOV 21...	2.7	540	5.8	.5	7.9	1200	1170	1.63	3.89	.01
DEC 23...	7.6	1200	12	.6	11	2400	2390	3.26	9.07	.23
JAN 11...	8.9	1300	14	.8	10	2630	2620	3.58	7.81	.41
FEB 17...	9.3	1400	14	.7	13	2890	2870	3.93	7.72	.47
MAR 17...	.9	270	4.9	.2	7.2	599	600	.81	42.4	.67
APR 28...	2.1	1000	7.1	.4	9.2	1920	1900	2.61	77.8	.01
MAY 17...	2.1	940	5.3	.4	6.8	1840	1830	2.50	124	.00
JUN 30...	2.8	1500	5.7	.5	5.6	2250	2340	3.06	208	.00
JUL 21...	4.5	580	4.8	.4	11	1250	1240	1.70	28.3	.01
AUG 14...	2.3	830	7.5	.6	7.9	1760	1730	2.39	6.70	.01
SEP 15...	3.0	1100	9.7	.7	2.4	2070	2090	2.82	4.08	.00

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT 24...	--	--	--	--	--	--	--	--	--	--
NOV 21...	.00	.50	.50	.51	.02	.06	0	40	9.9	1.0
DEC 23...	.09	.70	.79	1.0	.02	.05	610	80	14	.7
JAN 11...	.25	.34	.59	1.0	.03	.05	740	70	9.3	.6
FEB 17...	.06	.29	.35	.82	.02	.05	720	20	1.6	.7
MAR 17...	.30	2.2	2.5	3.2	.15	.26	200	110	17	--
APR 28...	.04	.68	.72	.73	.02	.04	450	20	6.3	.9
MAY 17...	.04	1.4	1.4	1.4	.03	.12	460	20	13	1.1
JUN 30...	.00	.75	.75	.75	.02	.09	770	30	--	3.2
JUL 21...	.01	.99	1.0	1.0	.00	.10	430	40	11	2.1
AUG 14...	.02	.74	.76	.77	.00	.05	650	20	9.7	1.9
SEP 15...	.00	.89	.89	.89	.02	.04	690	20	10	1.5

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
NOV 21...	1215	20	2	1	400	0	0	0	2	0	4
FEB 17...	1115	0	--	1	--	100	--	0	--	2	--
APR 28...	1330	0	2	1	100	100	10	0	0	1	0
JUN 30...	1445	0	3	2	300	50	0	0	5	5	0

YELLOWSTONE RIVER BASIN

06326600 O'FALLON CREEK NEAR ISMAY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHROMIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CU)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
NOV 21...	0	0	0	3	2	21	4	30	30	80	20
FEB 17...	0	--	0	--	0	--	4	--	70	--	60
APR 28...	0	2	0	2	2	3	4	40	40	150	10
JUN 30...	0	4	0	9	4	52	55	50	60	100	10

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- NIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 21...	.0	.0	2	1	8	2	0	2	.4	30	6
FEB 17...	--	.0	--	2	--	2	--	1	1.0	--	20
APR 28...	.0	.0	5	0	1	2	1	1	1.0	10	10
JUN 30...	.0	.0	4	3	9	4	1	0	1.2	20	10

		ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	BARIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS BA)	BERYL- LIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	CHROMIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	
DATE	TIME							
NOV 21...	1215	--	100	0	<1	12	5	
JUN 30...	1445	36	130	0	0	5	15	
		COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MOLYB- DENUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	NICKEL, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS NI)	SELE- NIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)
DATE								
NOV 21...	19	10	440	1	25	--	8	
JUN 30...	10	40	680	1	15	0	27	

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, DIS- SOLVED (PCI/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (PCI/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)
NOV 21...	1215	23	16	.8	.5	12	1.9
JUN 30...	1445	66	45	3.2	2.2	30	5.2

06326600 O'FALLON CREEK NEAR ISMAY, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM
OCT							
24...	1645	14.5	.83	128	.29	--	--
NOV							
21...	1215	.0	1.2	31	.10	--	--
DEC							
23...	1045	.0	1.4	106	.40	--	--
JAN							
11...	1215	.0	1.1	138	.41	--	--
FEB							
17...	1115	.5	.99	130	.35	--	--
MAR							
17...	1100	.0	26	186	13	--	--
24...	1730	5.0	822	582	1290	66	82
APR							
04...	1100	4.5	117	199	63	--	--
28...	1330	12.0	15	111	4.5	--	--
MAY							
17...	1145	17.0	25	160	11	82	96
22...	1615	21.0	84	320	73	90	97
JUN							
16...	1730	23.0	8.7	203	4.8	--	--
30...	1445	28.0	34	161	15	--	--
JUL							
13...	1145	23.0	17	279	13	--	--
21...	1145	20.0	8.4	118	2.7	--	--
AUG							
14...	1245	22.0	1.4	101	.38	--	--
SEP							
15...	1115	14.0	.73	28	.06	--	--

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. FALL DIAM. % FINER THAN 2.00 MM
NOV							
21...	1215	--	--	1	2	4	4
FEB							
17...	1115	3	4	10	18	31	31
APR							
04...	1100	3	6	10	15	20	20
JUN							
30...	1445	--	--	1	2	4	4

DATE	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 64.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 128 MM
NOV						
21...	6	9	12	15	33	100
FEB						
17...	40	58	80	93	100	--
APR						
04...	28	46	65	79	100	--
JUN						
30...	8	15	31	45	64	100

YELLOWSTONE RIVER BASIN

06326600 O'FALLON CREEK NEAR ISMAY, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPOSURE (DAYS)	PERI- PHYTON	PERI- PHYTON	CHLOR-A PHYTON	CHLOR-B PHYTON
			BIO MASS TOTAL DRY WEIGHT G/SQ M	BIO MASS PHYTON ASH WEIGHT G/SQ M	CHROMO- GRAPHIC FLUOROM (MG/M2)	CHROMO- GRAPHIC FLUJROM (MG/M2)
MAR 17...	1100	28	.079	.000	.000	.000

PHYTOPLANKTON

DATE	NOV 21,77	DEC 23,77	JAN 11,78
TIME	1215	1045	1215
TOTAL CELLS/ML	140000	220	650
DIVERSITY: DIVISION	1.5	1.4	1.5
..CLASS	1.5	1.4	1.5
..JRDER	1.5	1.4	1.5
...FAMILY	1.8	1.8	2.4
....GENUS	2.7	2.2	2.5

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...CHARACIACEAE						
...SCHROEDERIA	1200	1	--	-	20	3
...ODCYSTACEAE						
...ANKISTROUESMUS	48000#	34	100#	47	78	12
...KIRCHNERIELLA	12000	9	--	-	--	-
...ODCYSTIS	11000	8	--	-	--	-
...SELENASTRUM	--	-	22	10	--	-
...SCENEDESMACEAE						
...SCENEDESMUS	4800	3	*	0	78	12
...ZYGNEMATALES						
...DESMIDIACEAE						
...COSMARUM	1200	1	--	-	--	-
CHRYSOPHYTA						
..BACILLARIOPHYCEAE						
...PENNIALES						
...CYMBELLACEAE						
...AMPHORA	--	-	--	-	20	3
...EPISTEMIA	--	-	7	3	--	-
...DIATOMACEAE						
...DIATOMA	--	-	--	-	20	3
...FRAGILARIACEAE						
...SYNEDRA	--	-	--	-	20	3
...NAVICULACEAE						
...DIPLONEIS	--	-	--	-	20	3
...GYROSIGMA	--	-	*	0	--	-
...NAVICULA	4800	3	22	10	78	12
...NITZSCHIA	1200	1	37#	17	20	3
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
...CHROCOCCACEAE						
...ANACYSTIS	7200	5	29	13	--	-
...HORMOGONALES						
...OSCILLATORIACEAE						
...OSCILLATORIA	--	-	--	-	290#	45
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
...EUGLENA	6000	4	--	-	--	-
...PHACUS	1200	1	--	-	--	-
...TRACHELOMONAS	41000#	29	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...PERIDINIALES						
...PERIDINIAEAE						
....PERIDINIUM	1200	1	--	-	--	-

06326600 O'FALLON CREEK NEAR ISMAY, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	FEB 17,78 1115	MAR 17,78 1100	APR 28,78 1330	MAY 17,78 1145
TOTAL CELLS/ML	420	1300	9000	20000
DIVERSITY: DIVISION	1.0	0.8	0.8	1.2
..CLASS	1.0	0.8	0.8	1.2
...ORDER	1.0	0.8	1.3	1.9
....FAMILY	2.5	0.8	1.4	2.2
.....GENUS	2.9	0.8	1.5	2.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCEAE								
....DUCYSTACEAE								
.....ANKISTRUMESMUS	19	5	--	--	860	10	2400	12
.....DICTYOSPHAERIUM	--	--	--	--	--	--	970	5
.....KIRCHNERIELLA	76#	18	--	--	--	--	*	0
.....JUCYSTIS	--	--	54	4	--	--	*	0
.....TETRAEDRUM	--	--	--	--	--	--	*	0
...SCENEDESMACEAE								
....ACTINASTRUM	--	--	--	--	290	3	580	3
....CRUCIGENIA	76#	18	--	--	--	--	--	--
....SCENEDESMUS	--	--	--	--	--	--	970	5
....TETRASTRUM	--	--	--	--	--	--	390	2
..TETRASPORALES								
...PALMELLACEAE								
....SPHAEROCYSTIS	--	--	--	--	--	--	190	1
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	--	27	2	220	2	140	1
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
....COSCINODISCACEAE								
.....CYCLOTELLA	*	0	--	--	6700#	75	190	1
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	19	5	--	--	--	--	--	--
....COCCONEIS	38	9	--	--	--	--	--	--
...FRAGILARIACEAE								
....SYNEDRA	--	--	--	--	72	1	*	0
...NAVICULACEAE								
....NAVICULA	57	14	54	4	72	1	*	0
...PINNULARIA	--	--	--	--	--	--	*	0
...NITZSCHACEAE								
....DENTICULA	--	--	--	--	72	1	--	--
....NITZSCHIA	95#	23	--	--	430	5	390	2
...SURIKELLACEAE								
....CYMATOPLEURA	19	5	--	--	--	--	--	--
....SURIELLA	19	5	--	--	--	--	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCACEAE								
....CHROCOCCACEAE								
.....ANACYSTIS	--	--	--	--	--	--	4200#	21
...HORMOGONALES								
....OSCILLATORIACEAE								
.....LYNGBYA	--	--	--	--	--	--	1100	5
....OSCILLATORIA	--	--	1100#	87	--	--	8200#	40
EUGLENOPHYTA (EUGLENIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
.....EUGLENA	--	--	--	--	72	1	--	--
....TRACHELOMONAS	--	--	41	3	220	2	190	1

06326600 O'FALLON CREEK NEAR ISMAY, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON									
DATE TIME	JUN 30,78 1445	JUL 21,78 1145	AUG 14,78 1245	SEP 15,78 1115					
TOTAL CELLS/ML	11000	1300	62000	210000					
DIVERSITY: DIVISION	1.5	1.1	1.3	0.1					
..CLASS	1.5	1.1	1.3	0.1					
..ORDER	2.4	1.5	2.1	0.3					
...FAMILY	2.8	1.7	2.2	0.3					
....GENUS	3.3	2.3	2.4	0.4					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	
CHLOROPHYTA (GREEN ALGAE)									
..CHLOROPHYCEAE									
...CHLOROCUCCALES									
...DOCYSTACEAE									
....ANKISTRUEDESMUS	860	8	77	6	2000	3	*	0	
....CHODATELLA	--	--	--	--	610	1	*	0	
....DICTYUSPHEKTIUM	190	2	130	10	1600	3	2000	1	
....KIRCHNERIELLA	--	--	44	3	400	1	*	0	
...DOCYSTIS	480	4	77	6	2000	3	*	0	
...SELENASTRUM	620	6	--	--	--	--	*	0	
...SCENEDESMACEAE									
....CRUCIGENIA	190	2	--	--	810	1	*	0	
...SCENEDESMUS	290	3	44	3	*	0	*	0	
....TETRASTRUM	--	--	44	3	--	--	--	--	
..TETRASPURALES									
...PALMELLACEAE									
...SPHAEROCYSTIS	570	5	--	--	--	--	--	--	
..VOLVOCALES									
...CHLAMYDOMONADACEAE									
....CHLAMYDOMONAS	190	2	77	6	810	1	--	--	
..ZYGEMATALES									
...DESMIDIACEAE									
....CUSMARIUM	*	0	--	--	--	--	--	--	
CHRYSOPHYTA									
..BACILLARIOPHYCEAE									
...CENTRALES									
...COSCINODISCAEAE									
....CYCLOTELLA	140	1	790#	59	11000#	18	--	--	
..PENNALES									
...ACHNANTHACEAE									
...COCCONEIS	--	--	22	2	--	--	--	--	
...NAVICULACEAE									
....ANOMONEIS	*	0	--	--	--	--	--	--	
....DIPLONEIS	--	--	--	--	610	1	--	--	
...NAVICULA	670	6	--	--	*	0	--	--	
...NITZSCHIAEAE									
....NITZSCHIA	1200	11	22	2	1000	2	--	--	
CYANOPHYTA (BLUE-GREEN ALGAE)									
..CYANOPHYCEAE									
...CHROCOCCALES									
...CHROCOCCACEAE									
....ANACYSTIS	3100#	27	--	--	28000#	45	200000#	96	
...COCCOCHLORIS	--	--	--	--	--	--	*	0	
...HORMOGONALES									
...NOSTOCACEAE									
....APHANIZUMENON	--	--	--	--	--	--	3600	2	
...OSCILLATORIAEAE									
....LYNGBYA	2000#	18	--	--	--	--	--	--	
...OSCILLATORIA	480	4	--	--	12000#	20	--	--	
EUGLENOPHYTA (EUGLENOIDS)									
..EUGLENOPHYCEAE									
...EUGLENALES									
...EUGLENACEAE									
....EUGLENA	*	0	--	--	--	--	--	--	
....PHACUS	--	--	11	1	--	--	--	--	
PYRRHOPHYTA (FIRE ALGAE)									
..DINOPHYCEAE									
...PERIDINIALES									
...GLENODINIAEAE									
....GLENODINIUM	*	0	--	--	--	--	--	--	
...PERIDINIAEAE									
....PERIDINIUM	--	--	11	1	400	1	--	--	

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06326850 O'FALLON CREEK AT MILDRED, MT

LOCATION.--Lat 46°40'20", long 104° 58'05", in SE¼SE¼ sec.30, T.11 N., R.54 E., Prairie County, Hydrologic Unit 10100005, on left bank 1,000 ft (300 m) downstream from county bridge, 0.5 mi (0.8 km) southwest of Mildred and 5 mi (8 km) downstream from Pine Creek.

DRAINAGE AREA.--1,396 mi² (3,616 km²).

PERIOD OF RECORD.--September 1975 to September 30, 1978 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 2,340 ft (713 m), from topographic map.

REMARKS.--Records poor. No gage-height record Oct. 31 to Nov. 7, Dec. 1-6, 8-12, Dec. 23 to Mar. 16, 20, Apr. 1-15, Apr. 30 to May 17.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,700 ft³/s (133 m³/s) Mar. 28, 1978, gage height, 9.70 ft (2.957 m); no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 150 ft³/s (4.25 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 22	1700	4,440 126	unknown	June 27	0800	337 9.54	3.82 1.164
Mar. 28	1000	*4,700 133	*9.70 2.957	July 5	1630	155 4.39	2.96 0.902
May 10	unknown	unknown	unknown	July 12	2030	183 5.18	3.12 0.951
May 21	0800	726 20.6	5.08 1.548	July 19	1400	1,070 30.3	5.92 1.804
June 3	0700	270 7.65	3.54 1.079				

Minimum daily discharge, 0.20 ft³/s (0.006 m³/s) Dec. 8-10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	3.0	2.4	2.5	1.6	2.0	1300	65	119	78	11	2.9
2	19	2.5	2.5	2.4	1.6	2.0	700	65	161	62	11	2.7
3	59	2.2	2.4	2.4	1.6	2.0	500	65	250	52	12	2.7
4	63	2.0	2.1	2.4	1.7	1.8	400	70	163	56	12	2.3
5	40	1.8	1.5	2.4	1.8	2.0	300	70	117	133	12	2.3
6	23	1.8	.90	2.4	1.8	2.2	250	70	100	81	9.9	1.8
7	23	1.8	.50	2.4	1.8	2.3	190	80	90	57	9.9	2.0
8	16	1.7	.20	2.4	1.8	2.4	160	150	74	44	8.6	1.8
9	37	1.7	.20	2.4	1.7	2.5	130	200	80	90	8.2	1.1
10	67	1.7	.20	2.4	1.6	2.7	120	220	68	80	7.4	1.0
11	55	1.7	.50	2.3	1.6	4.0	120	180	54	53	6.3	1.0
12	32	1.8	.90	2.3	1.6	6.0	115	150	50	76	7.4	1.4
13	22	1.8	1.4	2.3	1.6	9.0	110	120	44	112	6.7	1.7
14	15	1.8	1.9	2.3	1.6	15	105	100	42	59	6.0	2.5
15	13	1.8	2.3	2.3	1.6	25	100	80	33	52	5.3	2.3
16	11	1.8	2.8	2.3	1.6	40	95	75	32	40	5.3	2.2
17	9.4	1.7	3.4	2.3	1.6	60	90	75	31	33	4.7	2.0
18	8.6	1.5	3.9	2.2	1.6	90	99	71	30	32	4.7	3.1
19	7.4	1.5	4.0	2.2	1.8	150	99	63	31	397	4.4	4.4
20	7.0	1.4	4.0	2.2	2.0	800	90	269	31	230	4.7	4.7
21	6.3	.74	3.8	2.2	2.2	2070	83	605	29	131	3.9	4.7
22	5.7	.50	3.5	2.2	2.1	3520	76	315	23	92	3.1	4.7
23	5.7	.30	3.1	2.1	2.1	3230	75	189	25	57	3.1	5.0
24	4.7	.30	2.8	2.1	2.1	2170	65	149	23	41	3.3	5.0
25	4.1	.30	2.6	2.1	2.1	1490	54	117	43	32	3.9	4.7
26	4.1	.50	2.5	2.0	2.0	2130	57	95	87	24	3.9	4.1
27	4.1	.90	2.5	2.0	2.0	3770	61	75	271	18	3.9	3.9
28	4.1	1.3	2.5	2.0	2.1	4280	59	60	160	15	3.9	3.6
29	4.1	1.8	2.5	1.8	---	2620	60	55	119	14	3.6	3.3
30	4.1	2.2	2.5	1.8	---	1850	65	62	104	13	3.1	2.9
31	3.5	---	2.5	1.6	---	1620	---	112	---	12	2.9	---
TOTAL	589.9	45.84	68.80	68.7	50.3	29970.9	5728	4072	2484	2296	196.1	87.8
MEAN	19.0	1.53	2.22	2.22	1.80	967	191	131	82.8	74.1	6.33	2.93
MAX	67	3.0	4.0	2.5	2.2	4280	1300	605	271	397	12	5.0
MIN	3.5	.30	.20	1.6	1.6	1.8	54	55	23	12	2.9	1.0
AC-FT	1170	91	136	136	100	59450	11360	8080	4930	4550	389	174

CAL YR 1977 TOTAL 2337.83 MEAN 6.41 MAX 67 MIN .00 AC-FT 4640
WTR YR 1978 TOTAL 45658.34 MEAN 125 MAX 4280 MIN .20 AC-FT 90560

YELLOWSTONE RIVER BASIN

06326953 CLEAR CREEK NEAR HOYT, MT

LOCATION.--Lat 47°00'05", long 104°56'31", on common line between sec.1, T.14 N., R.53 E., and sec.6, T.14 N., R.24 E., Dawson County, Hydrologic Unit 10100004, at county road 6.5 mi (10.5 km) northwest of Hoyt.

DRAINAGE AREA.--38.1 mi² (98.7 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COLLECTING SAMPLE (CODE NUMBER)	STREAM FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (JvITS)	TEMPERATURE, AIR (DEG C)	TEMPERATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, (PER-CENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JAN 31...	1230	99001	.03	1240	7.8	-20.0	.5	6.4	49	36
MAR 25...	1215	99001	45	725	8.1	10.0	6.0	11.6	100	K2
APR 13...	1100	99001	8.6	1800	6.0	12.0	11.0	11.6	117	<1
MAY 25...	1045	99001	4.9	1720	8.2	14.5	14.0	10.0	105	K10
JUN 08...	1150	99001	10	1880	8.1	18.5	19.5	9.9	116	160
JUL 19...	1430	99001	8.7	1580	8.2	21.0	20.5	8.5	102	900

DATE	STREP-TJCCCI, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CaCO3)	HARDNESS, NONCARBONATE (MG/L AS CaCO3)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNESIUM DIS-SOLVED (MG/L AS Mg)	SODIUM DIS-SOLVED (MG/L AS Na)	SODIUM ADSORPTION RATIO	POTASSIUM DIS-SOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)
JAN 31...	5	500	120	75	73	110	2.2	4.3	460	0
MAR 25...	K71	310	150	55	43	44	1.1	7.9	200	0
APR 13...	K2	730	400	110	110	98	1.6	6.7	400	0
MAY 25...	300	730	390	110	110	150	2.4	7.1	420	0
JUN 08...	94	940	580	130	150	140	2.0	7.4	440	0
JUL 19...	720	660	330	98	100	130	2.2	7.7	400	0

DATE	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TUNS PER AC-FT)	SOLIDS, DIS-SOLVED (TUNS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
JAN 31...	12	310	7.1	.4	13	817	823	1.11	.07	.15
MAR 25...	2.5	220	3.7	.1	8.1	490	481	.67	59.5	.31
APR 13...	6.4	610	7.9	.3	10	1210	1150	1.65	28.1	.02
MAY 25...	4.2	640	8.0	.3	11	1200	1240	1.63	15.9	.06
JUN 08...	5.6	780	8.5	.2	9.4	1490	1440	2.03	41.4	.00
JUL 19...	4.0	590	7.7	.2	11	1190	1140	1.62	28.0	.00

YELLOWSTONE RIVER BASIN

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06326953 CLEAR CREEK NEAR HOYT, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
JAN 31...	.03	.37	.40	.55	.01	.01	200	30	3.2	.3
MAR 25...	.13	2.2	2.3	2.6	.04	.08	90	60	6.0	1.2
APR 13...	.01	.33	.34	.36	.00	.00	170	30	5.0	.9
MAY 25...	.00	.54	.54	.60	.00	.01	230	10	4.2	.3
JUN 08...	.01	.34	.35	.35	.00	.00	220	30	5.9	.4
JUL 19...	.00	.75	.75	.75	.00	.00	250	20	6.2	.5

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECov- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, TOTAL RECov- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECov- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECov- ERABLE (UG/L AS CR)
MAR 25...	1215	20	4	2	300	200	0	0	1	0	0
MAY 25...	1045	0	1	1	100	200	0	0	1	2	5

DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECov- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECov- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, TOTAL RECov- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECov- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECov- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAR 25...	0	0	0	3	2	6	10	20	20	60	50
MAY 25...	5	0	1	4	3	6	8	40	40	20	10

YELLOWSTONE RIVER BASIN

06326953 CLEAR CREEK NEAR HOYT, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MU)	MOLYB- DENUM, TOTAL DIS- SOLVED (UG/L AS MU)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL DIS- SOLVED (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 25...	.0	.0	7	1	3	1	5	3	1.0	10	0
MAY 25...	.1	.1	5	2	2	2	0	0	.0	10	20

DATE	TIME	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	BARIUM, RECOV. FM BOT- TOM MA- TERIAL (JG/G AS BA)	BERYL- LIUM, RECOV. FM BOT- TOM MA- TERIAL (JG/G)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COBALT, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CO)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)
MAR 25...	1215	16	800	10	2	60	10	18
MAY 25...	1045	7	110	0	0	4	10	80

DATE	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/L AS HG)	MOLYB- DENUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	NICKEL, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS NI)	SELE- NIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)
MAR 25...	30	3500	.1	1	20	1	350
MAY 25...	11	120	.0	2	4	0	15

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, DIS- SOLVED (PCI/L U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L U-NAT)	GROSS ALPHA, SUSP. TOTAL (PCI/L U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L CS-137)
MAR 25...	1215	12	8.2	10	6.8	42	3.2
MAY 25...	1045	<18	<12	<.4	<.3	8.5	.8

06326953 CLEAR CREEK NEAR HOYT, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)
JAN 31...	1230	.5	.03	15	.00
MAR 25...	1215	6.0	45	22	2.7
APR 13...	1100	11.0	8.6	5	.12
MAY 25...	1045	14.0	4.9	10	.13
JUN 08...	1150	19.5	10	7	.19
JUL 06...	1130	21.5	30	79	6.4
19...	1430	20.5	8.7	18	.42

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 64.0 MM
MAR 25...	1215	30	36	41	42	44	44	47	51	56	65	100
MAY 25...	1045	12	20	28	44	58	59	67	77	88	92	100

06326953 CLEAR CREEK NEAR HOYT, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JAN 31,78 1230	MAR 25,78 1215	APR 13,78 1100	MAY 25,78 1100	JUN 8,78 1150	JUL 19,78 1430
TOTAL CELLS/ML	21	6100	110	490	1100	1000
DIVERSITY: DIVISION	1.0	0.1	0.5	0.4	0.9	1.6
..CLASS	1.0	0.1	0.5	0.4	0.9	1.6
..ORDER	1.0	0.4	0.5	0.5	1.2	2.4
...FAMILY	1.5	0.4	2.0	2.6	1.7	3.1
....GENUS	1.5	1.2	2.0	2.6	1.7	3.1
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....DOCCYSTACEAE						
...ANKISTRODESMS	--	-	--	-	22	5
...SCENEDESMACEAE						
...SCENEDESMUS	--	-	--	-	--	-
...VOLVOCALES						
...CHLAMYDOMONADACEAE						
...CHLAMYDOMONAS	11#	50	--	-	22	5
...POLYBLEPHARIVACEAE						
...DUNALIELLA	--	-	--	-	--	-
CHRYSDOPHYIA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINOIDISCEAE						
...CYCLOTELLA	--	-	--	-	--	-
...PENNALES						
...ACHNANTHACEAE						
...ACHNANTHES	--	-	--	-	130#	27
...COCCONEIS	--	-	--	-	--	-
...RHODICUSPHEVIA	--	-	--	-	14	13
...CYMBELLACEAE						
...CYMBELLA	--	-	--	-	89#	16
...DIATOMACEAE						
...DIATOMA	--	-	--	-	22	5
...FRAGILARIACEAE						
...SYNEORA	--	-	--	-	45	4
...GUMPHONEMATACEAE						
...GUMPHONEMA	5#	25	--	-	22	5
...NAVICULACEAE						
...NAVICULA	5#	25	--	-	54#	50
...NITZSCHACEAE						
...NITZSCHIA	--	-	--	-	45	9
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...HORMOGONALES						
...OSCILLATORIACEAE						
...PHORMIDIUM	--	-	1800#	30	--	-
...CHROCCOCCALES						
...CHROCCOCCACEAE						
...ANACYSTIS	--	-	250	4	--	-
...HORMOGONALES						
...OSCILLATORIACEAE						
...OSCILLATORIA	--	-	3900#	64	--	-
EUGLENOPHYTA (EUGLENIIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
...EUGLENA	--	-	--	-	--	-
...TRACHELUMONAS	--	-	130	2	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

PERIPHYTON

DATE	TIME	LENGTH OF EXPOSURE (DAYS)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PEKI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)
JUN 08...	1150	14	1.10	.300	.014	<.020

YELLOWSTONE RIVER BASIN

575

06326995 UPPER SEVENMILE CREEK NEAR LINDSAY, MT

LOCATION.--Lat 47°08'17", long 104°56'40", in NW¼NE¼NE¼ sec.24, T.16 N., R.53 E., Dawson County, Hydrologic Unit 10100004, at bridge on gravel road 0.6 mi (1.0 km) south of State Highway 200, 11.5 mi (18.5 km) west-northwest of Glendive.

DRAINAGE AREA.--137 mi² (355 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
MAR 21...	1415	99001	347	380	8.1	12.0	5.5	--	--	K20
APR 13...	1400	99001	2.6	2850	7.9	9.5	14.0	9.2	97	<1
MAY 18...	1115	99001	.97	2450	8.1	16.5	15.0	8.5	90	250
JUN 07...	1220	99001	12	2300	8.0	17.0	19.5	9.0	105	270
JUL 19...	1015	99001	6.2	1780	8.0	14.5	16.0	9.9	109	470
AUG 04...	0710	99001	1.5	1990	8.1	10.0	15.0	7.5	81	K62
SEP 08...	0815	99001	.04	2390	8.4	23.0	19.0	9.1	107	K20

DATE	TIME	SIREP- TJCJCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACU3)	HARD- NESS, NONCAR- BONATE (MG/L AS CA)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCU3)	CAR- BONATE (MG/L AS CU3)
MAR 21...	3700		160	62	29	20	20	.7	8.1	120	0
APR 13...	K13		840	520	120	130	150	2.3	8.0	390	0
MAY 18...	120		920	530	120	150	290	4.2	11	470	0
JUN 07...	270		1000	660	130	170	220	3.0	10	450	0
JUL 19...	2500		740	350	99	120	190	3.0	9.3	480	0
AUG 04...	96		810	400	110	130	230	3.5	9.5	500	0
SEP 08...	93		840	400	120	130	290	4.2	10	520	8

DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
MAR 21...	1.5	100	2.0	.1	7.7	237	247	.32	222	.44
APR 13...	7.9	850	8.9	.2	8.0	1560	1470	2.12	11.0	.03
MAY 18...	6.0	1100	11	.3	9.7	1950	1920	2.65	5.11	.00
JUN 07...	7.2	1000	8.2	.2	8.4	1840	1770	2.50	59.6	.00
JUL 19...	7.7	690	7.9	.2	9.8	1350	1360	1.84	22.6	.01
AUG 04...	6.4	840	8.0	.3	8.5	1610	1580	2.19	6.52	.00
SEP 08...	3.4	950	9.3	.4	13	1860	1780	2.53	.20	.01

YELLOWSTONE RIVER BASIN

06326995 UPPER SEVENMILE CREEK NEAR LINDSAY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORO- V, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
MAR 21...	.13	.86	.99	1.4	.17	.34	80	100	10	4.9
APR 13...	.01	.16	.17	.20	.00	.00	150	40	4.9	.8
MAY 18...	.03	.33	.36	.36	.02	.02	210	0	4.9	--
JUN 07...	.01	5.2	3.2	3.2	.00	.00	270	30	7.1	.6
JUL 19...	.00	.42	.42	.43	.00	.01	260	40	6.0	.5
AUG 04...	.00	.47	.47	.47	.00	.00	270	30	5.9	.2
SEP 08...	.01	.47	.48	.49	.01	.01	300	20	6.5	<.9

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
MAR 21...	1415	20	2	2	200	300	0	0	0	1	0
JUN 07...	1220	1	--	1	--	100	--	5	--	1	--
SEP 08...	0815	10	1	1	200	200	10	0	0	0	0

DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAR 21...	0	2	0	23	5	3	0	9	20	130	40
JUN 07...	0	--	0	--	3	--	0	--	40	--	10
SEP 08...	0	0	0	5	8	5	0	70	60	20	20

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 21...	.0	.0	0	0	8	1	1	0	1.0	40	10
JUN 07...	--	.0	--	0	--	0	--	0	.0	--	20
SEP 08...	.0	.0	6	2	0	0	0	0	.0	20	10

06326995 UPPER SEVENMILE CREEK NEAR LINDSAY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	BARIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS BA)	BERYL- LIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)
MAR 21...	1415	8	3000	10	1	40	5

DATE	TIME	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/L AS HG)	MOLYB- DENIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	NICKEL, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS NI)	SELE- NIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)
MAR 21...		0	3100	.0	0	20	0	200

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, DIS- SOLVED (PCI/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (PCI/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)
MAR 21...	1415	8.6	5.8	19	13	14	13
SEP 08...	0815	<17	<12	<.4	<.3	11	<.4

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)
MAR 21...	1415	5.5	347	221	207
APR 13...	1400	14.0	2.6	4	.03
MAY 18...	1115	15.0	.97	9	.02
JUN 07...	1220	19.5	12	14	.45
JUL 06...	1700	26.0	62	19	3.2
JUL 19...	1015	16.0	6.2	21	.35
AUG 04...	0710	15.0	1.5	17	.07
SEP 08...	0815	19.0	.04	29	.00

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

LENGTH OF EXPJ- SURE (DAYS)	PERI- PHYION BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)
---	--	---	--	--

DATE	TIME	WEIGHT G/SQ M	WEIGHT G/SQ M	FLUOROM (MG/M2)	FLUOROM (MG/M2)
JUL 19...	1015	42	.394	.236	.900
					.270

DATE	MAR 21, 78	APR 13, 78	MAY 18, 78	JUN 7, 78
TIME	1415	1400	1115	1220
TOTAL CELLS/ML	930	820	160	160
DIVERSITY: DIVISION	0.4	0.0	0.6	1.4
...CLASS	0.4	0.0	0.6	1.4
...ORDER	0.5	0.2	0.6	1.4
...FAMILY	0.6	1.1	2.2	1.4
...GENUS	0.6	1.1	2.2	1.4

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...DUCCASTACEAE								
...ANKISTRODESMUS	--	-	--	-	22	14	67#	43
...SCENEDESMACEAE								
...SCENEDESMUS	--	-	--	-	--	-	--	-
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCAEAE								
...CYCLOTELLA	14	2	27	3	--	-	--	-
..PENNALES								
...ACHNANTHACEAE								
...ACHNANTHES	--	-	--	-	--	-	--	-
...COCCONEIS	--	-	--	-	--	-	--	-
...CYMBELLACEAE								
...CYMBELLA	--	-	--	-	--	-	--	-
...DIATOMACEAE								
...DIATOMA	--	-	--	-	45#	29	--	-
...FRAGILARIACEAE								
...SYNEDRA	14	2	160#	22	45#	29	--	-
...GOMPHONEMATACEAE								
...GOMPHONEMA	--	-	--	-	--	-	--	-
...NAVICULACEAE								
...NAVICULA	29	3	27	3	22	14	67#	43
...NITZSCHIAEAE								
...NITZSCHIA	29	3	580#	72	22	14	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCOCCALES								
...CHROCOCCOCCAEAE								
...ANACYSTIS	--	-	--	-	--	-	--	-
...HORMOGONALES								
...OSCILLATORIACEAE								
...OSCILLATORIA	850#	91	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENAEAE								
...TRACHELOMONAS	--	-	--	-	--	-	22	14

06326995 UPPER SEVENMILE CREEK NEAR LINDSAY, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE TIME	JUL 19,78 1015	AUG 4,78 0710	SEP 8,78 0815
TOTAL CELLS/ML	270	120	500
DIVERSITY: DIVISION	0.7	1.0	1.0
..CLASS	0.7	1.0	1.0
..ORDER	1.4	1.5	1.5
...FAMILY	2.4	1.5	2.4
....GENUS	2.4	1.5	2.5

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...DUCCASTACEAE						
....ANKISTRUEDESMUS	55#	20	--	-	--	-
....SCENEDESMACEAE						
....SCENEDESMUS	--	-	58#	50	--	-
CHRYSOPHYTA						
..BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCAEAE						
....CYCLOTELLA	55#	20	29#	25	--	-
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES					14	3
...COCCONEIS	69#	25	29#	25	66#	17
...CYMBELLACEAE						
....CYMBELLA	--	-	--	-	43	9
...DIATOMACEAE						
....DIATOMA						
...FRAGILARIACEAE						
....SYNEDRA	14	5	--	-	29	6
...GOMPHONEMACEAE						
....GOMPHONEMA	14	5	--	-	14	3
...NAVICULACEAE						
....NAVICULA	69#	25	--	-	43	9
...NITZSCHACEAE						
....NITZSCHIA	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCOCCALES						
...CHROCOCCACEAE						
....ANACYSTIS	--	-	--	-	86#	17
...HORMOGONALES						
...OSCILLATORIAEAE						
....OSCILLATORIA	--	-	--	-	190#	37
EUGLENOPHYTA (EUGLENIDS)						
..EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....TRACHELOMUNAS	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

YELLOWSTONE RIVER BASIN

06327850 GLENDIVE CREEK NEAR GLENDIVE, MT

LOCATION.--Lat 47°07'16", long 104°39'51", in SE¼NW¼NW¼ sec.29, T.16 N., R.56 E., Dawson County,
Hydrologic Unit 10100004, on frontage road bridge, 1.2 mi (1.9 km) east of Glendive, 2.4 mi (3.9 km)
upstream from mouth.

DRAINAGE AREA.--300 mi² (778 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (AMU LODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTJ)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT 20...	1045	1.4	1	1930	8.9	13.0	8.0	140	11.2	102
NOV 06...	1615	1.7	1	2250	8.9	4.0	4.0	25	12.4	102
MAR 20...	1530	1140	0	305	8.0	5.0	1.0	2000	13.0	98
APR 06...	1445	100	1	880	8.0	11.0	13.5	750	9.8	101
MAY 22...	1400	.20	2	2260	8.8	31.0	31.0	50	6.5	96
JUN 06...	1600	6.4	0	1920	8.7	26.5	26.5	65	6.9	96
JUL 13...	0900	1.3	0	2120	8.8	20.0	18.0	220	9.0	101
AUG 09...	1330	.25	0	1810	8.9	31.0	30.0	200	6.9	99
SEP 07...	0830	.30	0	2700	9.0	19.0	18.0	20	8.7	99

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L CACU3)	HARD- NESS, NONCAR- BONATE (MG/L CACU3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT 20...	1.4	74	0	20	5.9	460	23	12	740
NOV 06...	1.4	63	0	15	6.3	530	29	4.1	860
MAR 20...	6.4	26	0	7.3	2.0	67	5.7	2.8	100
APR 06...	2.0	170	20	39	17	120	4.0	5.6	180
MAY 22...	2.7	120	0	20	16	520	21	6.0	710
JUN 06...	4.2	280	0	55	35	360	9.3	9.8	380
JUL 13...	3.3	180	0	36	21	460	15	8.7	650
AUG 09...	3.2	73	0	19	6.3	420	21	8.2	610
SEP 07...	--	23	0	8.4	.5	670	61	7.2	1000

06327850 GLENDIVE CREEK NEAR GLENDIVE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
UCT 20...	45	680	1.7	370	7.1	.8	8.7	1290	*1.75
NOV 08...	63	810	2.0	420	7.7	.9	4.8	1480	2.01
MAR 20...	--	82	1.6	95	2.0	.1	6.4	232	.32
APR 06...	0	150	2.9	260	2.5	.2	6.7	540	.73
MAY 22...	64	690	2.1	530	13	.8	7.1	1530	2.08
JUN 06...	17	340	1.3	660	4.9	.4	9.0	1340	1.82
JUL 13...	30	580	1.8	600	7.3	.7	9.3	1490	2.03
AUG 09...	47	580	1.4	390	7.1	.8	15	1220	1.66
SEP 07...	74	950	1.9	510	10	1.2	5.7	1790	2.43

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	SOLIDS, DIS- SOLVED (MG/L AS B)	IRON, DIS- SOLVED (MG/L AS FE)
UCT 20...	4.88	.33	.10	.53	.63	.96	.13	450	60
NOV 08...	6.79	.03	.03	.19	.22	.25	.03	500	40
MAR 20...	714	.75	.05	3.1	3.1	3.9	1.0	70	50
APR 06...	146	.33	.04	1.7	1.7	2.0	.59	170	90
MAY 22...	.83	.00	.03	.77	.80	.80	.08	600	70
JUN 06...	23.2	.00	.01	1.3	1.3	1.3	.06	450	50
JUL 13...	5.23	.33	.03	2.2	2.2	2.5	.17	520	110
AUG 09...	.82	.03	.02	1.1	1.1	1.1	.13	550	550
SEP 07...	1.45	.02	.01	.87	.88	.90	.08	850	110

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CK)
MAR 20...	1530	4600	30	5	0	10	0	2	2	90
JUN 06...	1600	--	10	--	2	--	0	--	2	--
SEP 07...	0830	--	220	--	3	--	0	--	9	--

YELLOWSTONE RIVER BASIN

06327850 GLENDIVE CREEK NEAR GLENDIVE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECUM- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECUM- ERABLE (UG/L AS FE)	LEAD, TOTAL RECUM- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECUM- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECUM- ERABLE (UG/L AS HG)
MAR 20...	0	210	6	93000	59	16	20	1800	0	.0
JUN 06...	0	--	6	--	--	2	60	--	10	--
SEP 07...	10	--	7	--	--	6	100	--	10	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU)	NICKEL, TOTAL RECUM- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECUM- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECUM- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 20...	.0	0	200	3	1	0	1.0	380	10
JUN 06...	.0	4	--	4	--	2	1.0	--	10
SEP 07...	.2	7	--	4	--	1	1.5	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FIVER THAN .062 MM
OCT 20...	1045	8.0	1.4	364	1.4	98
NOV 08...	1615	4.0	1.7	89	.41	98
MAR 20...	1530	1.0	1140	11700	36000	72
APR 06...	1445	13.5	100	1780	481	87
MAY 22...	1400	31.0	.20	131	.07	97
JUN 06...	1600	28.5	6.4	167	2.9	95
JUL 13...	0900	18.0	1.3	448	1.6	100
AUG 09...	1330	30.0	.25	307	.21	98
SEP 07...	0830	18.0	.30	160	.13	98

YELLOWSTONE RIVER BASIN

583

06328000 DEER CREEK NEAR GLENDEIVE, MT

LOCATION.--Lat 47°09'44", long 104°42'08", in NE¼NW¼ sec.12, T.16 N., R.55 E., Dawson County,
Hydrologic Unit 10100004, at Montana Highway 16 bridge, 4.0 mi (6.4 km) north of Glendive,
and 3.8 mi (6.1 km) northeast of Interstate Highway 94.

DRAINAGE AREA.--197.5 mi² (511.5 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FFCAL, 0.7 UM-MF (COLS./ 100 ML)
MAR 21...	1410	99001	604	310	7.9	13.0	5.0	11.6	98	87
APR 13...	1600	99001	1.6	3100	8.2	10.0	11.0	10.5	103	K2
MAY 25...	1045	99001	3.1	2870	8.5	23.0	19.0	9.6	112	870
JUN 08...	0730	99001	11	2580	8.4	16.5	16.5	10.0	110	280
JUL 18...	1600	99001	15	1850	8.4	26.0	22.5	8.3	102	46

DATE	TIME	STREP- TOCUCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
MAR 21...	15000	91	0	20	10	29	1.3	6.8	190	0	
APR 13...	210	550	180	100	73	320	5.9	8.4	450	0	
MAY 25...	1900	580	170	96	83	500	9.0	11	490	5	
JUN 08...	580	610	180	110	82	430	7.6	9.8	520	5	
JUL 18...	340	490	110	89	64	290	5.7	9.6	460	2	

DATE	TIME	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
MAR 21...	3.8	70	2.3	.1	5.9	192	238	.26	313	.30	
APR 13...	4.5	890	17	.3	8.9	1680	1640	2.28	7.26	.25	
MAY 25...	2.5	1100	23	.4	7.4	2080	2070	2.83	17.4	.00	
JUN 08...	3.4	1000	16	.4	7.4	1940	1920	2.64	58.1	.01	
JUL 18...	3.0	660	12	.4	9.4	1340	1360	1.82	54.3	.01	

DATE	TIME	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (MG/L AS B)	IRON, DIS- SOLVED (MG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
MAR 21...	.17	2.2	2.4	2.7	.14	.91	60	90	9.2	9.2	
APR 13...	.03	.65	.68	.93	.00	.01	160	20	9.9	1.1	
MAY 25...	.01	.64	.65	.65	.01	.01	260	30	6.2	.4	
JUN 08...	.01	.81	.82	.83	.00	.01	250	10	12	.8	
JUL 18...	.00	.54	.54	.55	.00	.00	220	30	7.9	.7	

YELLOWSTONE RIVER BASIN

06328000 DEER CREEK NEAR GLENDIVE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
MAR 21...	1410	30	6	1	500	200	0	0	2	4	30
MAY 25...	1045	3	1	3	100	100	0	10	1	1	5

DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAR 21...	0	12	0	70	11	22	23	30	20	980	30
MAY 25...	5	0	1	7	6	5	3	60	70	30	10

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 21...	.0	.0	4	0	44	2	2	0	1.0	140	10
MAY 25...	.1	.0	4	2	2	2	1	0	.0	10	5

DATE	TIME	ARSENIC TOTAL IN BUT- TOM MA- TERIAL (UG/G AS AS)	BARIUM, TOTAL FM BUT- TOM MA- TERIAL (UG/G AS BA)	BERYL- LIUM, TOTAL FM BUT- TOM MA- TERIAL (UG/G AS BE)	CADMIUM TOTAL FM BUT- TOM MA- TERIAL (UG/G AS CD)	CHRO- MIUM, TOTAL FM BUT- TOM MA- TERIAL (UG/G AS CR)	COBALT, TOTAL FM BUT- TOM MA- TERIAL (UG/G AS CO)	COPPER, TOTAL FM BUT- TOM MA- TERIAL (UG/G AS CU)
MAR 21...	1410	8	800	0	1	50	5	6
MAY 25...	1045	12	160	1	0	9	8	250

DATE	LEAD, TOTAL FM BUT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, TOTAL FM BUT- TOM MA- TERIAL (UG/G AS MN)	MERCURY TOTAL FM BUT- TOM MA- TERIAL (UG/L AS HG)	MOLYB- DENUM, TOTAL FM BUT- TOM MA- TERIAL (UG/G AS MO)	NICKEL, TOTAL FM BUT- TOM MA- TERIAL (UG/G AS NI)	SELE- NIUM, TOTAL FM BUT- TOM MA- TERIAL (UG/G AS SE)	ZINC, TOTAL FM BUT- TOM MA- TERIAL (UG/G AS ZN)
MAR 21...	0	2900	.0	0	10	0	230
MAY 25...	20	360	.0	3	30	0	37

06328000 DEER CREEK NEAR GLENDIVE, MT--Continued

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, DIS- SOLVED (PCI/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS J-NAT)	GROSS ALPHA, SUSP. TOTAL (PCI/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)
MAR 21...	1410	4.7	5.2	67	46	9.5	41
MAY 25...	1045	<32	<22	<.4	<.3	11	2.1

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM
MAR 21...	1410	5.0	604	1660	2740	52	70	89	96	100
APR 13...	1600	11.0	1.6	17	.07	--	--	--	--	--
MAY 25...	1045	19.0	3.1	30	.25	--	--	--	--	--
JUN 08...	0730	16.5	11	93	2.8	--	--	--	--	--
JUL 06...	1500	22.0	205	1020	565	63	78	95	99	100
18...	1630	22.5	15	23	.93	--	--	--	--	--

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM
MAR 21...	1410	30	62	92	96	97	97	99	99	100

YELLOWSTONE RIVER BASIN

06328000 DEER CREEK NEAR GLENDIVE, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	MAR 21,78 1410	APR 13,78 1600	MAY 25,78 1045	JUN 8,78 0730	JUL 18,78 1600					
TOTAL CELLS/ML	17000	160	760	320	2200					
DIVERSITY: DIVISION	0.9	1.0	1.1	0.7	1.1					
..CLASS	0.9	1.2	1.1	0.7	1.2					
...ORDER	0.9	1.9	1.6	0.7	2.0					
...FAMILY	0.9	2.9	2.7	2.4	2.4					
....GENUS	0.9	2.9	2.7	2.4	2.5					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
BACILLARIOPHYTA (KARSTEN)										
..BACILLARIOPHYCEAE										
...NAVICULALES										
....CENTURIONACEAE										
....CENTURIONS	--	-	--	-	22	3	--	-	--	-
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCEALES										
...CHLOROCYSTACEAE										
....ANKISTRUMESMUS	--	-	--	-	220#	29	--	-	22	1
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	22	1
....CHLOROCYSTIS	--	-	--	-	--	-	--	-	66	3
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	59#	18	--	-
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	14000#	80	14	8	--	-	--	-	44	2
CHRYSDOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCEACEAE										
....CYCLOTILLA	--	-	41#	25	130#	18	--	-	1000#	47
...PENNIALES										
....ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	67	9	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	--	-	14	8	67	9	59#	18	220	10
...FRAGILARIACEAE										
....SYNEURA	--	-	27#	17	22	3	15	5	180	8
...GOMPHOVEMATACEAE										
....GOMPHOVEMA	--	-	14	8	--	-	15	5	--	-
...NAVICULACEAE										
....NAVICULA	1100	7	27#	17	130#	18	120#	36	22	1
...NITZSCHACEAE										
....NITZSCHIA	--	-	--	-	89	12	44	14	200	9
...SURIRELLACEAE										
....CYMATOPLEURA	--	-	--	-	--	-	15	5	--	-
CHRYSDOPHYCEAE										
...CHRYSDOMONADALES										
....CHRYSDOMONADACEAE										
....CHRYSDOMONAS	--	-	--	-	--	-	--	-	44	2
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
...CRYPTOMONODACEAE										
....CRYPTOMONAS	--	-	14	8	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROCOCCACEAE										
....CHROCOCCACEAE										
....ANACYSTIS	--	-	--	-	--	-	--	-	350#	16
...HORMODONALES										
...OSCILLATORIA										
....OSCILLATORIA	2300	13	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENIIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENACEAE										
....EUGLENA	--	-	14	8	--	-	--	-	22	1

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06329000 COTTONWOOD CREEK NEAR INTAKE, MT

LOCATION.--Lat 47°14'50", long 104°18'15", in E½ sec.14, R.58 E., T.17 N., Wibaux County, Hydrologic Unit 10100004, at road crossing 16.2 mi (26.1 km), 26 mi (41.8 km) north of Wibaux.

DRAINAGE AREA.--85.3 mi² (221 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
MAR 21...	1130	258	1	300	7.3	11.0	1.0	150	12.0	91
APR 06...	1100	8.0	1	2280	7.9	7.0	9.0	15	8.6	80
MAY 22...	1900	.50	2	5100	8.1	27.0	22.0	4	9.5	116
JUN 05...	1700	3.2	0	4300	8.5	28.0	25.0	2	10.0	130
JUL 13...	1600	1.0	0	2320	8.3	31.0	27.0	9	8.8	119
AUG 09...	1700	.10	0	3760	8.4	32.0	30.0	4	9.9	141

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
MAR 21...	6.1	110	28	25	11	17	.7	6.4	97
APR 06...	1.0	640	340	96	97	310	5.3	8.4	360
MAY 22...	2.9	1200	680	130	220	850	11	13	670
JUN 05...	2.1	1100	590	110	200	710	4.3	11	610
JUL 13...	2.4	660	260	98	100	350	5.9	10	480
AUG 09...	1.0	860	450	99	150	630	9.3	13	480

YELLOWSTONE RIVER BASIN

06329000 COTTONWOOD CREEK NEAR INTAKE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
MAR 21...	0	80	7.8	65	1.1	.1	6.7	180	.24
APR 06...	0	300	7.3	980	4.2	.2	9.0	1680	2.28
MAY 22...	0	550	8.5	2400	12	.3	2.6	3960	5.39
JUN 05...	5	510	3.1	2000	5.3	.2	39	3380	4.60
JUL 13...	0	390	3.8	980	4.4	.2	8.7	1790	2.43
AUG 09...	12	410	3.2	1800	6.0	.4	.4	2950	4.01

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
MAR 21...	125	.36	.32	.67	.99	1.4	.43	110	100
APR 06...	36.3	.08	.01	.96	.97	1.1	.05	420	80
MAY 22...	5.35	.00	.01	.98	.99	.99	.02	1000	20
JUN 05...	29.2	.01	.01	4.4	4.4	4.4	.02	1200	50
JUL 13...	4.83	.00	.03	1.1	1.1	1.1	.03	740	60
AUG 09...	.80	.01	.07	.65	.72	.73	.00	890	20

DATE	TIME	ALUM- INUM, TOTAL RECov- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, TOTAL RECov- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECov- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECov- ERABLE (UG/L AS CR)
MAR 21...	1130	2400	10	4	1	0	0	0	2	0
JUN 05...	1700	--	0	--	14	--	0	--	4	--

06329000 COTTONWOOD CREEK NEAR INTAKE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHROMIUM, TOTAL DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
MAR 21...	0	13	1	6200	1	0	9	10	210	40
JUN 05...	5	--	2	--	--	2	--	90	--	40

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENIUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL SOLVED (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR 21...	.0	.1	0	9	1	0	0	1.0	40	10
JUN 05...	--	.1	0	--	0	--	1	1.0	--	20

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLJW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
MAR 21...	1130	1.0	258	342	238	93
APR 06...	1100	9.0	8.0	20	.43	--
MAY 22...	1900	22.0	.50	68	.09	--
JUN 05...	1700	25.0	3.2	74	.64	--
JUL 13...	1600	27.0	1.0	60	.16	--
AUG 09...	1700	30.0	.10	58	.02	--

YELLOWSTONE RIVER BASIN

06329200 BURNS CREEK NEAR SAVAGE, MT

LOCATION.--Lat 47°22'20", long 104°25'46", near center of west line of sec.26, T.19 N., R.57 E., Richland County, Hydrologic Unit 10100004, on right bank 1,000 ft (305 m) upstream from bridge on State Highway 16, 1 mi (2 km) upstream from mouth, and 7 mi (11 km) southwest of Savage.

DRAINAGE AREA.--233 mi² (603 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1957 to September 1967, September 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,000 ft (610 m), from topographic map.

REMARKS.--Water-discharge records fair except those for winter period, which are poor. Minor diversions for irrigation upstream.

AVERAGE DISCHARGE.--13 years (1958-67, 1976-78), 6.34 ft³/s (0.180 m³/s), 4,600 acre-ft/yr (5.67 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,100 ft³/s (59.5 m³/s) Mar. 20, 1960, gage height, 5.31 ft (1.619 m), from floodmarks, from rating curve extended above 500 ft³/s (14.2 m³/s) on basis of slope-area measurement of peak flow; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 25 ft³/s (0.71 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 21	0045	ice jam	*5.24 1.597	June 25	1645	136 3.85	3.34 1.018
Mar. 22	0500	*789 22.3	4.59 1.399	July 5	1015	505 14.3	4.26 1.298
June 2	1915	59 1.67	2.95 0.899	July 19	0200	33 0.93	2.74 0.835
June 14	2230	33 0.93	2.77 0.844				

Minimum daily discharge, 0.01 ft³/s (0.0003 m³/s) Feb. 14-17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.6	1.1	.60	.10	.10	32	3.3	37	13	1.6	.84
2	3.8	1.4	.80	.60	.10	.10	26	2.7	50	5.3	1.6	.74
3	2.7	1.4	.80	.60	.10	.03	22	2.6	48	3.9	1.6	.64
4	2.0	1.2	.70	.60	.10	.02	17	2.9	33	10	1.6	.64
5	1.8	1.1	.40	.50	.10	.05	16	3.7	24	189	1.4	.64
6	1.7	1.1	.30	.50	.10	.10	14	5.8	19	164	1.4	.56
7	2.5	1.1	.40	.50	.10	.20	12	10	16	94	1.3	.56
8	2.5	1.1	.30	.50	.10	.40	11	18	12	56	1.2	.56
9	2.2	1.1	.20	.50	.10	1.0	10	18	10	48	1.1	.56
10	1.8	1.1	.50	.50	.10	8.0	9.0	14	8.5	34	1.1	.56
11	1.6	1.0	1.0	.40	.10	30	8.0	13	6.6	25	1.1	1.0
12	1.5	1.0	1.4	.40	.05	60	7.5	11	5.2	19	.87	6.9
13	1.4	1.0	1.2	.30	.01	50	7.4	8.6	4.6	16	.67	3.8
14	1.4	1.0	1.6	.30	.01	43	6.3	7.3	5.6	13	.64	2.4
15	1.2	.90	1.5	.20	.01	39	5.6	6.8	13	10	.64	2.0
16	1.2	.90	1.5	.10	.01	36	5.3	6.4	7.1	9.3	.73	1.8
17	1.2	.90	1.5	.10	.01	38	5.3	5.3	5.7	7.3	.73	1.6
18	1.2	.90	1.4	.20	.03	60	5.6	5.3	4.5	7.3	.73	5.9
19	1.2	.90	1.2	.20	.05	300	6.0	5.4	3.5	12	.73	8.6
20	1.2	.90	1.1	.10	.10	600	5.3	6.8	2.9	6.2	.73	9.4
21	1.2	.80	1.0	.20	.10	700	4.9	6.7	2.1	5.4	.73	15
22	1.4	.70	1.0	.30	.20	526	4.6	5.5	1.8	4.8	.80	10
23	1.4	.70	.90	.30	.30	242	4.2	5.7	1.7	4.1	1.2	20
24	1.4	.70	.90	.40	.30	129	4.2	4.8	1.6	3.4	.95	16
25	1.4	.60	.80	.30	.20	88	3.9	3.9	13	2.8	.95	12
26	1.4	.80	.80	.20	.10	91	3.6	3.2	13	2.2	.79	8.5
27	1.4	.90	.80	.20	.10	102	3.5	2.7	24	2.0	.73	6.1
28	1.4	.80	.80	.20	.10	77	3.4	2.7	14	1.8	.73	4.6
29	1.9	1.0	.70	.10	---	50	3.6	2.5	9.7	1.6	.73	3.5
30	1.8	1.2	.70	.10	---	43	3.6	6.4	7.1	1.6	.84	3.0
31	1.6	---	.70	.10	---	41	---	30	---	1.6	.84	---
TOTAL	50.40	29.80	28.00	10.10	2.78	3355.00	270.8	231.0	404.2	773.6	30.76	148.40
MEAN	1.63	.99	.90	.33	.099	108	9.03	7.45	13.5	25.0	.99	4.95
MAX	3.8	1.6	1.6	.60	.30	700	32	30	50	189	1.6	20
MIN	.00	.60	.20	.10	.01	.02	3.4	2.5	1.6	1.6	.64	.56
AC-FT	100	59	56	20	5.5	6650	537	458	802	1530	61	294
CAL YR 1977	TOTAL	466.20	MEAN	1.28	MAX	43	MIN	.00	AC-FT	925		
WTR YR 1978	TOTAL	5334.84	MEAN	14.6	MAX	700	MIN	.00	AC-FT	10580		

06329200 BURNS CREEK NEAR SAVAGE, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
12...	1430	1.3	0	1700	8.5	17.0	9.5	15	11.0	103
NOV										
21...	1430	.76	0	1920	8.0	-2.5	.0	3	12.4	92
DEC										
20...	1200	1.1	0	1680	8.1	-7.0	.0	7	12.4	92
JAN										
12...	1200	.40	0	2000	7.7	-18.0	.0	6	11.0	81
MAR										
14...	1030	43	70	375	7.5	.0	.5	20	12.6	95
27...	1630	97	1	720	8.1	15.0	11.0	95	10.2	100
APR										
05...	1550	16	1	1520	8.1	16.5	12.5	15	9.8	99
MAY										
10...	1130	14	2	2330	8.6	21.0	15.0	35	9.5	101
JUN										
06...	1330	18	0	2000	8.4	23.5	21.5	40	7.8	94
JUL										
12...	1600	19	1	1300	8.1	25.0	24.0	45	8.0	103
AUG										
09...	0900	1.2	0	1540	8.3	18.5	21.0	15	7.6	94
SEP										
06...	1300	.50	0	1630	8.6	30.0	26.0	10	9.5	127

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT									
12...	.9	490	0	64	79	230	4.5	8.2	570
NOV									
21...	2.7	550	0	73	90	260	4.8	8.4	710
DEC									
20...	--	510	0	70	81	220	4.2	7.4	620
JAN									
12...	.6	580	0	63	91	250	4.5	7.9	710
MAR									
14...	6.9	130	30	25	16	26	1.0	7.8	120
27...	1.6	270	78	44	38	50	1.3	6.4	230
APR									
05...	.9	550	190	80	85	150	2.8	8.0	440
MAY									
10...	1.1	720	230	89	120	280	4.6	11	560
JUN									
06...	1.5	660	250	84	110	230	3.9	9.5	490
JUL									
12...	1.1	490	120	69	76	120	2.4	8.6	450
AUG									
09...	.6	460	29	52	79	210	4.3	9.1	520
SEP									
06...	1.7	430	0	50	74	240	5.0	9.4	500

YELLOWSTONE RIVER BASIN

06329200 BURNS CREEK NEAR SAVAGE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)
OCT 12...	16	490	3.0	480	7.6	.6	13	1180	1.60
NOV 21...	0	580	11	470	8.4	.7	17	1280	1.74
DEC 20...	0	510	7.9	470	6.9	.6	16	1180	1.60
JAN 12...	0	580	23	540	7.8	.7	17	1350	1.84
MAR 14...	0	98	6.1	79	2.8	.2	6.1	222	.30
27...	0	190	2.9	170	3.6	.2	6.6	455	.59
APR 05...	0	360	5.6	470	5.8	.3	12	1030	1.40
MAY 10...	15	460	2.4	810	7.4	.4	9.9	1620	2.20
JUN 06...	7	410	3.2	700	5.4	.3	10	1400	1.90
JUL 12...	0	370	5.7	540	5.0	.3	14	855	1.16
AUG 09...	0	430	4.2	460	5.8	.6	12	1090	1.48
SEP 06...	14	430	2.1	490	7.0	.6	10	1140	1.55

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (MG/L AS B)	IRON, DIS- SOLVED (MG/L AS FE)
OCT 12...	4.14	.03	.04	.20	.24	.27	.06	380	50
NOV 21...	2.63	.20	.01	.14	.15	.35	.02	0	30
DEC 20...	3.50	.04	.00	.20	.20	.24	.00	340	30
JAN 12...	1.46	.06	.13	.09	.22	.28	.02	350	20
MAR 14...	25.8	.55	.10	.87	.97	1.5	.16	140	120
27...	114	.18	.06	.69	.75	.93	.13	140	50
APR 05...	44.5	.01	.03	.54	.57	.58	.03	260	30
MAY 10...	61.2	.00	.03	.84	.87	.87	.05	420	60
JUN 06...	68.0	.00	.03	.71	.74	.74	.03	450	50
JUL 12...	43.9	.00	.03	.65	.68	.68	.04	360	40
AUG 09...	3.53	.01	.00	.54	.54	.55	.01	420	10
SEP 06...	1.54	.00	.01	.50	.51	.51	.03	440	30

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
DEC 20...	1200	--	20	--	1	0	--	1	--	0
MAR 14...	1030	--	50	--	3	0	--	2	--	0
27...	1630	1700	30	2	2	0	1	4	20	0
JUN 06...	1330	--	0	--	2	0	--	6	--	10
SEP 06...	1300	--	10	--	2	0	--	0	--	0

06329200 BURNS CREEK NEAR SAVAGE, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)
DEC 20...	--	0	--	--	1	--	50	--	50	--
MAR 14...	--	4	--	--	4	--	10	--	30	--
27...	13	4	3100	13	2	20	20	80	20	.0
JUN 06...	--	2	--	--	2	--	50	--	10	--
SEP 06...	--	0	--	--	1	--	60	--	10	--

DATE	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 20...	.0	1	--	1	--	0	.0	--	10
MAR 14...	.2	0	--	0	--	0	1.0	--	30
27...	.0	2	8	1	5	3	1.0	40	10
JUN 06...	.0	3	--	0	--	1	.0	--	20
SEP 06...	.2	4	--	0	--	0	.6	--	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT CHARGE, SUS- PENDED (1/1000)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 12...	1430	9.5	1.3	113	.40	95
NOV 21...	1430	.0	.76	154	.32	--
DEC 20...	1200	.0	1.1	68	.26	--
JAN 12...	1200	.0	.40	76	.08	--
MAR 14...	1030	.5	43	34	3.9	91
27...	1630	11.0	97	149	.39	99
APR 05...	1550	12.5	16	46	2.0	96
MAY 10...	1130	15.0	14	174	6.6	97
JUN 06...	1330	21.5	18	128	6.2	99
JUL 12...	1600	24.0	19	114	5.8	--
AUG 09...	0900	21.0	1.2	78	.25	--
SEP 06...	1300	26.0	.50	46	.06	--

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT

LOCATION.--Lat 47°40'42", long 104°09'22", in SW¼NE¼SW¼ 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 (0.3 km) downstream from bridge on State Highway 23, 2.5 mi (4.0 km) south of Sidney, 3.0 mi (4.8 km) downstream from Fox Creek, and 30 mi (48 km) upstream from mouth.

DRAINAGE AREA.--69,103 mi² (178,977 km²). Area at site 4.5 mi (7.2 km) upstream, 68,812 mi² (178,223 km²).

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 (573.42 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Jan. 1, 1911, to Sept. 30, 1931, nonrecording gage at site 32 miles (51 km) upstream at different datum. Apr. 9, 1934, water-stage recorder at two sites within 500 ft (150 m) of highway bridge 0.2 mi (0.3 km) upstream and May 17, 1945, to Apr. 3, 1952, nonrecording gage on same bridge at datum 1.36 ft (0.415 m) higher. Apr. 4, 1952, to Nov. 19, 1967, water-stage recorder at site 4.5 mi (7.2 km) upstream at different datum.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Some regulation on tributary streams. Diversion for irrigation of about 1,250,000 acres (5,060 km²) above station. Lower Yellowstone Project Main Canal diverts from left bank in NW¼ sec.36, T.18 N., R.56 E., at Lower Yellowstone diversion dam at Intake about 36.6 mi (58.9 km) upstream for irrigation of about 52,000 acres (210 km²) of which about one-third lies above station (see table below).

AVERAGE DISCHARGE.--66 years, 13,160 ft³/s (372.7 m³/s), 9,534,000 acre-ft/yr (11.8 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 159,000 ft³/s (4,500 m³/s) June 2, 1921, gage height, 12.6 ft (3.84 m), site and datum then in use; maximum gage height observed, 21.85 ft (6.660 m) Mar. 22, 1947, site and datum then in use (backwater from ice); minimum discharge, 470 ft³/s (13.3 m³/s) May 17, 1961, gage height, 2.73 ft (0.832 m), site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 111,000 ft³/s (3,140 m³/s) May 23, gage height, 20.02 ft (6.102 m); minimum daily, 1,400 ft³/s (39.6 m³/s) Nov. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6680	5330	8300	5200	5400	8600	25000	12700	50700	41500	22900	10000
2	7430	5250	7200	5200	5500	8600	22100	17800	49000	44500	22600	9230
3	7900	5280	6400	5200	6000	8600	20400	15700	45700	47400	21300	8940
4	7700	5140	6000	5100	6000	8400	20000	13900	42300	48000	20200	8940
5	7630	5160	5200	4800	6100	8400	18700	13300	36300	52900	19400	6750
6	7200	5160	4500	4600	6400	8600	17200	13600	36400	50800	18400	8320
7	7070	5080	4000	4400	6800	8800	15600	15000	37400	47500	17600	8180
8	8360	5000	2900	4200	7000	9000	14500	17300	36300	45200	16700	8150
9	8250	5000	1900	4300	6900	9500	13800	18200	42200	41300	16100	8080
10	7640	4970	1700	4200	6800	9800	13600	19500	46500	40200	15400	8040
11	7460	5020	1650	4500	6800	10300	12900	21200	48700	41100	14300	8290
12	7100	5020	1650	4600	6800	11400	12400	20800	51900	42200	13700	9350
13	6970	4970	1700	4700	7000	12600	12100	19000	57800	41100	13300	9010
14	6840	4890	1750	4800	7000	14000	11900	19200	58800	40300	12900	10700
15	6740	4860	1900	4700	6600	16000	11600	20200	50900	40400	12600	14600
16	6650	4780	2100	4600	6500	15000	11600	19200	44800	38400	12400	14900
17	6430	4860	3000	5000	6400	14200	11300	17200	49300	36400	12400	13800
18	6340	4890	5200	5300	6700	13800	10700	18200	56200	35300	12200	12500
19	6370	4860	6700	5100	7200	14900	10700	30500	56800	35400	12100	13000
20	6310	3500	7200	5200	7700	19000	10600	50600	50300	37200	11900	14900
21	6280	2400	6800	5300	9000	27000	10300	74900	46000	34600	11700	21500
22	6250	2000	6400	5600	9000	37000	10100	88900	46200	33000	11900	21800
23	6220	1700	5900	5700	9000	54000	9310	104000	45700	32100	11900	17900
24	6120	1600	5500	5700	8800	64600	9090	82800	44300	31900	11700	16200
25	6090	1400	5200	6000	8600	52600	9010	51300	47300	30300	11300	14500
26	5830	1500	5200	5700	8600	47500	9010	46300	50600	28300	11100	13600
27	5920	1600	5200	5800	8600	38100	8660	46600	51800	27400	10800	12900
28	5800	2000	5200	5400	8600	35500	8650	47200	52100	26800	10800	12400
29	5560	2400	5200	5200	---	33400	8500	45100	48500	26000	10700	12200
30	5590	3600	5400	5500	---	29600	8570	43700	42800	26000	10600	12200
31	5510	---	5200	5400	---	27100	---	48700	---	24000	10600	---
TOTAL	208440	119220	142150	157000	201800	677100	388100	1072600	1427600	1167500	441500	362880
MEAN	6724	3974	4585	5065	7207	21840	12940	34600	47590	37660	14240	12100
MAX	8360	5330	8300	6000	9000	64600	25000	104000	58800	52900	22900	21800
MIN	5510	1400	1650	4200	5400	8400	8500	12700	36400	24000	10600	8040
AC-FT	413400	236500	282000	311400	406300	1343000	769800	2128000	2832000	2316000	875700	719800
(†)	0	0	0	0	0	0	0	57,290	61,240	71,950	76,180	49,450
CAL YR 1977 TOTAL	2565580		MEAN	7029	MAX	27200	MIN	1400	AC-FT	5089000	†	316,100
WTR YR 1978 TOTAL	6365890		MEAN	17440	MAX	104000	MIN	1400	AC-FT	12630000		

† Diversions, in acre-feet, by Lower Yellowstone Canal, furnished by Bureau of Reclamation.

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1948 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1951 to current year.

WATER TEMPERATURES: January 1951 to current year.

SUSPENDED SEDIMENT DISCHARGE: July 1972 to current year.

INSTRUMENTATION.--Temperature recorder April to November 1974, May to September 1975, July 1977 to current year.

REMARKS.--Prior to July 1972, sediment sampling and record computation under supervision of Corps of Engineers, U.S. Army. Flow affected by ice during most of winter months. Many reservoirs and diversions for irrigation upstream from station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,780 micromhos Jan. 14, 1951; minimum daily, 193 micromhos Aug. 15, 1964.

WATER TEMPERATURES: Maximum daily, 29.0°C July 23, 1960, minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily, 26,800 mg/L May 8, 1975; minimum daily, 8 mg/L Jan. 9, 1973.

SEDIMENT LOADS: Maximum daily, 3,030,000 tons (2,750,000 tonnes) May 8, 1975; minimum daily, 130 tons (118 tonnes) Jan. 9, 1975.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,160 micromhos May 24, 25; minimum daily, 422 micromhos July 4.

WATER TEMPERATURES: Maximum, 26.0°C Aug. 13; minimum, 0.0°C on many days during November to March.

SEDIMENT CONCENTRATIONS: Maximum daily, 8,300 mg/L May 20; minimum daily, 59 mg/L Dec. 30, Jan 8-10.

SEDIMENT LOADS: Maximum daily, 1,440,000 tons (1,306,000 tonnes) May 21; minimum daily, 283 tons (257 tonnes) Nov. 25.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLJW, INSTAN- TANEOUS (CFS)	WEATHER (AMU CODE NUMBER)	SPE- CIFIC CON- DUCTI- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTJ)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)
OCT												
13...	1100	6760	1	1140	8.5	16.0	7.0	600	10.9	96	46	K65
27...	0830	5880	0	750	7.4	14.0	11.0	35	9.4	92	11	K37
NOV												
08...	1130	5040	2	880	8.3	2.0	4.5	25	11.7	98	18	K4
22...	1000	2000	0	965	8.2	-15.0	.0	15	11.6	86	13	K12
DEC												
06...	1130	4800	2	880	8.1	-18.0	.0	15	13.2	98	21	K10
20...	0930	7200	0	1080	8.0	-10.0	.0	30	12.4	92	19	K10
JAN												
11...	1530	4500	0	1020	7.7	-14.0	.0	15	12.2	90	32	56
24...	1300	5800	70	956	7.9	-15.0	.0	15	11.2	83	13	46
FEB												
15...	1200	6610	1	950	7.7	-18.0	.0	20	12.6	93	18	72
MAR												
14...	1430	14000	70	860	7.9	1.0	.5	150	12.2	92	13	K54
25...	1200	49800	0	632	7.4	9.5	1.5	1000	11.8	91	110	--
APR												
05...	1130	18700	1	940	7.9	16.0	11.0	260	4.4	43	44	K40
26...	1000	9010	0	990	8.6	17.0	11.0	30	9.0	88	26	K10
MAY												
09...	2000	18400	0	908	8.3	20.0	12.0	500	9.4	94	48	1620
24...	0900	93800	1	1240	7.8	22.0	19.0	2500	7.3	80	240	--
JUN												
07...	1500	38100	0	802	8.0	21.0	19.5	280	8.0	93	44	K67
28...	1300	50800	0	443	8.1	30.0	20.5	290	7.8	93	32	K73
JUL												
12...	1200	43400	3	578	8.0	23.0	23.0	120	7.6	95	20	K120
27...	1400	28500	2	575	8.4	28.0	23.0	60	7.5	94	27	K1
AUG												
08...	1430	16500	0	681	8.5	30.0	24.0	50	8.1	104	30	K26
22...	1200	12000	3	623	8.8	24.0	20.0	30	8.8	104	13	K29
SEP												
06...	1000	8280	3	736	8.5	19.5	22.5	5	7.1	88	11	K53
19...	1300	12800	61	932	8.2	9.5	11.5	290	9.4	93	31	420

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOC FECAL, KF AGAR (COLS./ 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT											
13...	100	360	--	--	--	--	--	--	--	--	--
27...	K11	<1	250	89	57	27	68	1.9	4.2	200	0
NOV											
08...	K4	K9	--	--	--	--	--	--	--	--	--
22...	K8	K20	330	130	74	35	93	2.2	4.8	240	0
DEC											
06...	K5	30	290	100	69	29	68	1.7	4.3	230	0
20...	K11	55	--	--	--	--	--	--	--	--	--
JAN											
11...	31	37	--	--	--	--	--	--	--	--	--
24...	33	<1	340	150	82	34	87	2.0	4.5	240	0
FEB											
15...	K70	K610	330	150	61	30	81	2.0	4.2	210	0
MAR											
14...	K46	K5900	--	--	--	--	--	--	--	--	--
25...	--	--	190	82	44	19	61	1.4	5.3	130	0
APR											
05...	K32	670	--	--	--	--	--	--	--	--	--
20...	<1	K60	330	140	78	34	95	2.3	4.6	220	7
MAY											
09...	600	3450	--	--	--	--	--	--	--	--	--
24...	800	3700	400	270	95	39	140	3.1	7.8	--	--
JUN											
07...	92	880	--	--	--	--	--	--	--	--	--
28...	360	740	160	79	30	17	44	1.5	3.0	--	--
JUL											
12...	120	180	--	--	--	--	--	--	--	--	--
27...	<1	160	200	78	48	19	53	1.0	3.3	--	--
AUG											
08...	K20	58	--	--	--	--	--	--	--	--	--
22...	K10	130	200	68	48	19	53	1.6	3.3	--	--
SEP											
06...	K13	110	--	--	--	--	--	--	--	--	--
19...	820	1800	310	140	59	40	78	1.9	4.8	--	--

DATE	ALKA- LINIT (MG/L AS CAC03)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	SOLIDS, SUSP. TOTAL, RESIDUE AT 110 DEG. C (MG/L)
OCT											
13...	--	--	--	--	--	--	797	--	1.08	14500	1180
27...	160	13	230	13	.3	5.3	483	504	.66	7670	63
NOV											
08...	--	--	--	--	--	--	563	--	.77	7660	36
22...	200	2.4	280	19	.6	9.1	630	634	.86	3400	17
DEC											
06...	190	2.9	240	11	.4	14	524	550	.71	6790	26
20...	--	--	--	--	--	--	652	--	.89	12700	56
JAN											
11...	--	--	--	--	--	--	687	--	.93	8350	60
24...	200	4.8	300	18	.6	14	643	658	.87	10100	62
FEB											
15...	170	6.7	290	16	.5	13	620	619	.84	11100	59
MAR											
14...	--	--	--	--	--	--	547	--	.74	20700	272
25...	110	8.3	200	8.5	.2	6.1	387	409	.53	52000	2120
APR											
05...	--	--	--	--	--	--	619	--	.84	31300	455
20...	190	.9	290	22	.4	8.2	653	648	.89	15900	69
MAY											
09...	--	--	--	--	--	--	603	--	.82	30000	1120
24...	130	--	500	17	.4	8.0	874	863	1.19	221000	4710
JUN											
07...	--	--	--	--	--	--	543	--	.74	55900	648
28...	81	--	130	6.6	.2	10	283	296	.38	38800	360
JUL											
12...	--	--	--	--	--	--	352	--	.48	41200	266
27...	120	--	180	8.1	.3	9.8	385	394	.52	29600	110
AUG											
08...	--	--	--	--	--	--	457	--	.62	20400	60
22...	130	--	160	9.8	.4	9.6	389	381	.53	12600	77
SEP											
06...	--	--	--	--	--	--	482	--	.66	10800	51
19...	170	--	310	10	.4	12	634	616	.86	21900	920

YELLOWSTONE RIVER BASIN

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06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)
DOCT											
13...	.52	.03	1.6	1.6	2.1	.98	--	--	11	--	--
27...	.01	.00	.38	.38	.39	.05	.01	--	3.3	--	--
NOV											
08...	.03	.01	.26	.27	.30	.03	--	--	2.4	--	--
22...	.16	.03	.14	.17	.33	.04	.02	--	3.3	--	--
DEC											
06...	.60	.18	.19	.37	.97	.02	.00	20	--	4.2	.6
20...	.67	.00	.40	.40	1.1	.03	--	--	--	--	--
JAN											
11...	.74	.21	.35	.56	1.3	.04	--	--	2.7	--	--
24...	.59	.09	.14	.23	.82	.06	.03	--	2.4	--	--
FEB											
15...	.55	.07	.26	.33	.88	.06	.03	--	3.1	--	--
MAR											
14...	.65	.08	.60	.68	1.3	.21	--	--	8.5	--	--
25...	.40	.17	3.2	3.4	3.8	1.5	.01	60	--	--	--
APR											
05...	.53	.01	.88	.89	1.4	.33	--	--	22	--	--
26...	.00	.01	.73	.74	.74	.07	.00	--	3.5	--	--
MAY											
04...	.52	.05	1.6	1.6	2.1	.57	--	--	16	--	--
24...	.65	.01	8.4	8.4	9.3	2.0	.01	20	--	6.4	>7.0
JUN											
07...	.65	.01	1.2	1.2	1.9	.56	--	--	8.3	--	--
28...	.15	.01	.62	.63	.78	.43	.02	--	11	--	--
JUL											
12...	.26	.10	.51	.61	.87	.22	--	--	6.1	--	--
27...	.25	.02	.53	.55	.80	.09	.00	--	2.0	--	--
AUG											
08...	.01	.00	.97	.97	.48	.07	--	--	5.7	--	--
22...	.00	.02	.49	.51	.51	.08	.01	<10	--	4.4	.5
SEP											
06...	.04	.01	.60	.61	.65	.06	--	--	5.0	--	--
19...	.47	.05	1.2	1.2	1.7	.40	.03	--	14	--	--

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)
DEC												
05...	1130	4	3	100	--	1	2	20	4	1	0	6
MAR												
25...	1200	7	2	600	300	11	2	40	20	20	0	57
MAY												
24...	0900	14	1	1200	0	0	1	95	15	46	2	250
AUG												
22...	1200	5	4	200	--	1	1	10	0	0	<1	20

DATE	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC												
06...	1	720	4	1	20	4	.0	.0	2	1	30	20
MAR												
25...	1	46000	40	3	1200	20	.0	.0	5	0	200	10
MAY												
24...	4	110000	110	1	2700	0	.3	.0	10	4	90	10
AUG												
22...	3	3800	12	3	100	2	.1	.1	1	1	20	4

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

PESTICIDE ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	ATRA- ZINE, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)
NOV 22...	1000	ND	ND	ND	ND	ND	ND	ND	ND
FEB 15...	1200	ND	ND	ND	ND	ND	ND	ND	ND
MAY 09...	2000	ND	ND	ND	ND	ND	ND	ND	ND
AUG 08...	1430	ND	ND	ND	ND	ND	ND	ND	ND

DATE	DI- ELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)
NOV 22...	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 15...	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY 09...	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG 08...	ND	ND	ND	ND	ND	ND	ND	ND	ND

DATE	METHYL TRI- THION, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SIMA- ZINE TOTAL COUL- SON COND. (UG/L)	SILVEX, TOTAL (UG/L)
NOV 22...	ND	ND	ND	ND	ND	ND	ND	ND
FEB 15...	ND	ND	ND	ND	ND	ND	ND	ND
MAY 09...	ND	ND	ND	ND	ND	ND	ND	ND
AUG 08...	ND	ND	ND	ND	ND	ND	ND	ND

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG						
22...	1000	620	8.7	21.0	20.0	8.7
22...	1100	621	8.7	22.0	20.0	8.7
22...	1200	623	8.8	24.0	20.0	8.8
22...	1300	621	8.8	24.0	20.0	8.9
22...	1400	623	8.8	23.5	20.0	9.0
22...	1500	616	8.8	22.5	20.0	9.0
22...	1600	620	8.7	23.0	20.0	9.0
22...	1700	624	8.7	23.0	20.0	9.0
22...	1800	620	8.8	21.5	20.0	9.2
22...	1900	622	8.7	21.0	20.0	9.2
22...	2000	618	8.7	20.0	20.0	9.1
22...	2100	620	8.7	20.0	19.5	9.1
22...	2200	618	8.8	17.5	19.5	9.0
22...	2300	618	8.8	16.0	19.5	8.9
22...	2400	618	8.7	16.0	19.5	8.9
23...	0100	628	8.8	17.0	19.5	8.6
23...	0200	628	8.7	16.0	19.0	8.5
23...	0300	619	8.7	16.0	19.0	8.3
23...	0400	623	8.7	15.5	19.0	8.3
23...	0500	623	8.7	14.5	19.0	8.2
23...	0600	625	8.7	14.5	18.5	8.1
23...	0700	628	8.7	15.0	18.5	8.2
23...	0800	632	8.7	19.5	18.5	8.2
23...	0900	632	8.7	22.0	18.5	8.3
23...	1000	630	8.7	23.0	19.5	8.5

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
DAILY-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	803	761	900	967	975	977	825	950	883	486	642	672
2	791	772	941	1010	955	968	840	920	869	472	607	663
3	794	779	929	1010	935	956	855	1040	820	459	571	666
4	820	780	863	1020	940	951	879	1010	857	422	563	679
5	807	765	839	1030	952	950	890	1000	900	449	563	681
6	831	774	825	1030	966	958	904	960	887	518	580	690
7	883	799	834	1040	985	982	949	910	845	485	581	705
8	807	811	840	1030	958	991	968	880	808	453	581	706
9	812	802	843	1030	952	995	978	930	739	462	587	701
10	612	801	860	1040	957	1010	998	1000	657	465	601	708
11	849	801	874	1030	965	991	1040	1020	597	483	619	710
12	779	799	908	1020	985	937	1050	1070	561	510	622	698
13	784	811	910	1030	980	880	1060	1100	528	492	618	729
14	792	822	912	1060	955	841	1070	1100	491	500	617	742
15	784	815	931	1050	927	843	1070	1090	488	510	611	715
16	771	823	962	1040	912	812	1060	1070	521	488	612	730
17	758	820	1050	1020	918	771	1050	1060	542	483	617	699
18	769	827	1020	976	---	769	1020	1010	512	509	613	729
19	763	852	986	946	---	751	1020	924	454	508	610	765
20	768	857	984	943	941	864	1010	769	452	540	613	770
21	772	917	962	962	958	779	1010	839	491	545	618	730
22	771	942	900	975	981	705	1030	919	488	536	622	654
23	761	970	850	967	1000	638	1030	1000	482	552	633	691
24	756	982	841	953	1010	572	1030	1160	466	563	630	752
25	749	999	844	937	1010	634	1010	1160	471	560	631	740
26	746	993	861	935	989	657	1000	1080	488	565	631	731
27	749	970	867	948	975	660	987	988	468	581	640	737
28	756	954	888	962	967	652	987	874	447	639	647	732
29	761	951	899	971	---	691	983	827	438	622	650	734
30	761	947	915	978	---	730	977	796	453	617	658	730
31	771	---	939	985	---	790	---	804	---	614	662	---
MEAN	785	857	902	997	963	829	986	976	603	519	615	713
WTR YR 1978	MEAN	810	MAX	1160	MIN	422						

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.5	10.5	11.0	8.5	7.5	8.0	.0	.0	.0	.0	.0	.0
2	11.0	9.0	10.5	8.0	7.0	7.5	.0	.0	.0	.0	.0	.0
3	12.0	10.5	11.5	7.0	6.0	6.5	.0	.0	.0	.0	.0	.0
4	11.5	10.5	11.0	6.5	5.5	6.0	.0	.0	.0	.0	.0	.0
5	10.5	9.5	10.0	6.0	5.5	6.0	.0	.0	.0	.0	.0	.0
6	10.0	9.0	9.5	6.0	5.5	5.5	.0	.0	.0	.0	.0	.0
7	9.0	9.0	9.0	5.5	5.0	5.5	.0	.0	.0	.0	.0	.0
8	9.5	9.0	9.0	5.5	4.0	4.5	.0	.0	.0	.0	.0	.0
9	9.5	8.5	9.0	4.0	3.0	3.5	.0	.0	.0	.0	.0	.0
10	8.5	6.5	7.5	3.0	2.0	2.0	.0	.0	.0	.0	.0	.0
11	7.0	6.0	6.5	2.0	1.0	1.5	.0	.0	.0	.0	.0	.0
12	7.0	5.0	6.0	2.5	1.5	2.0	.0	.0	.0	.0	.0	.0
13	6.0	6.5	7.5	3.0	2.0	2.5	.0	.0	.0	.0	.0	.0
14	8.5	7.5	8.0	3.0	2.5	2.5	.0	.0	.0	.0	.0	.0
15	9.0	7.5	8.0	3.5	3.0	3.0	.0	.0	.0	.0	.0	.0
16	10.0	8.0	9.0	3.5	2.5	3.0	.0	.0	.0	.0	.0	.0
17	9.5	8.5	9.0	2.5	1.5	2.0	.0	.0	.0	.0	.0	.0
18	9.5	8.0	9.0	2.0	.5	1.0	.0	.0	.0	.0	.0	.0
19	10.5	9.0	9.5	1.0	.5	.5	.0	.0	.0	.0	.0	.0
20	10.0	9.5	10.0	.5	.0	.5	.0	.0	.0	.0	.0	.0
21	10.0	9.0	9.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	10.0	9.0	9.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	10.5	9.0	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	10.5	9.5	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	11.0	10.0	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	11.5	10.5	11.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	10.5	9.5	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	10.5	9.5	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	10.5	9.5	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	10.5	9.0	10.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	9.0	8.5	6.5	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	12.0	5.0	9.5	8.5	.0	2.5	.0	.0	.0	.0	.0	.0

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
2	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
3	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
4	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
5	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
6	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
7	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
8	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
9	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
10	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
11	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
12	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
13	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
14	.0	.0	.0	.0	.0	.0	---	---	---	---	---	---
15	.0	.0	.0	.5	.0	.0	---	---	---	---	---	---
16	.0	.0	.0	.5	.0	.0	---	---	---	---	---	---
17	.0	.0	.0	.5	.0	.0	---	---	---	---	---	---
18	.0	.0	.0	.5	.0	.5	---	---	---	---	---	---
19	.0	.0	.0	.5	.0	.5	---	---	---	---	---	---
20	.0	.0	.0	.5	.0	.5	---	---	---	---	---	---
21	.0	.0	.0	.5	.0	.5	---	---	---	---	---	---
22	.0	.0	.0	---	---	---	---	---	---	---	---	---
23	.0	.0	.0	---	---	---	---	---	---	---	---	---
24	.0	.0	.0	---	---	---	---	---	---	---	---	---
25	.0	.0	.0	---	---	---	---	---	---	---	---	---
26	.0	.0	.0	---	---	---	---	---	---	---	---	---
27	.0	.0	.0	---	---	---	---	---	---	---	---	---
28	.0	.0	.0	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	.0	.0	.0	.5	.0	.0	---	---	---	---	---	---
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	23.0	21.5	22.5	23.0	22.0	22.5	21.5	19.5	20.5
2	---	---	---	23.5	22.5	23.0	22.0	21.0	21.5	22.5	20.5	21.5
3	---	---	---	23.0	22.0	22.5	21.5	20.0	21.0	23.5	21.5	22.5
4	---	---	---	23.0	22.0	22.0	22.0	20.0	21.0	24.5	22.0	23.5
5	---	---	---	22.0	21.0	21.5	23.0	20.5	22.0	24.5	23.0	24.0
6	---	---	---	21.0	20.5	21.0	24.0	21.5	23.0	24.0	23.0	24.0
7	---	---	---	20.5	20.0	20.5	23.5	22.5	23.0	23.5	22.5	23.0
8	---	---	---	20.5	18.5	19.5	23.0	22.5	23.0	23.0	22.5	23.0
9	---	---	---	20.0	18.5	19.0	22.5	22.5	22.5	22.5	21.0	22.0
10	---	---	---	20.5	19.0	19.5	22.5	22.5	22.5	23.0	21.0	22.0
11	---	---	---	21.5	20.0	21.0	23.0	22.5	23.0	22.5	20.0	21.5
12	---	---	---	21.5	20.5	21.0	23.5	23.0	23.0	19.5	17.5	18.5
13	---	---	---	21.5	20.0	21.0	26.0	23.5	24.5	17.5	16.5	16.5
14	---	---	---	22.0	20.5	21.5	25.0	23.0	23.5	16.0	15.0	15.5
15	---	---	---	23.0	21.5	22.0	23.5	22.0	23.0	15.0	14.0	14.5
16	---	---	---	23.5	22.0	23.0	23.0	22.0	22.5	15.0	14.0	14.5
17	---	---	---	23.5	23.0	23.0	22.5	21.0	21.5	14.5	13.5	14.0
18	---	---	---	23.0	21.5	22.5	20.5	19.0	19.5	14.5	13.0	13.5
19	---	---	---	21.5	20.0	21.0	20.5	18.5	19.5	13.0	11.5	12.0
20	---	---	---	21.0	19.5	20.0	21.0	19.0	20.0	12.5	11.0	11.5
21	---	---	---	20.0	19.0	19.5	21.5	19.5	20.5	12.5	11.0	11.5
22	---	---	---	20.5	19.0	20.0	21.5	20.0	20.5	12.5	11.0	12.0
23	---	---	---	21.0	19.0	20.0	21.5	19.5	20.5	14.0	12.0	13.0
24	---	---	---	22.0	20.0	21.0	22.5	20.0	21.5	15.0	13.0	14.0
25	---	---	---	23.0	21.5	22.0	24.0	21.5	22.5	15.5	14.0	14.5
26	---	---	---	24.0	22.0	23.0	23.5	22.5	23.0	16.0	14.5	15.5
27	---	---	---	23.5	23.0	23.5	23.0	21.5	22.0	16.5	14.5	15.5
28	21.0	20.5	21.0	23.5	22.5	23.0	21.5	20.5	21.0	17.0	16.0	16.5
29	20.5	20.0	20.5	23.0	22.0	22.5	21.0	19.5	20.5	16.5	15.5	16.0
30	22.0	20.0	21.0	22.5	21.5	22.0	20.5	19.0	20.0	16.5	15.5	16.0
31	---	---	---	23.0	21.0	22.0	20.5	18.5	19.5	---	---	---
MONTH	22.0	20.0	21.0	24.0	18.5	21.5	26.0	18.5	21.5	24.5	11.0	17.5
YEAR	26.0	.0	8.5									

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)	MEAN CONCENTRATION (MG/L)	LOADS (T/DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	1170	21100	66	950	122	2730	60	842	80	1170	98	2280
2	1720	34500	77	1090	132	2570	61	856	79	1170	94	2180
3	3190	68000	87	1240	122	2110	61	856	78	1260	86	2000
4	3020	62800	85	1180	106	1720	60	826	78	1260	78	1770
5	2520	51900	82	1140	99	1390	60	778	78	1280	76	1720
6	2310	44900	74	1030	97	1180	60	745	79	1370	74	1720
7	2330	44500	66	905	96	1040	60	713	80	1470	73	1730
8	4110	92800	63	850	92	720	59	669	84	1590	75	1820
9	4720	105000	64	864	88	451	59	685	86	1600	83	2130
10	4060	85900	74	993	85	390	59	669	83	1520	101	2670
11	3040	61200	78	1060	86	383	61	741	77	1410	128	3560
12	2030	34900	72	976	85	379	97	1200	74	1360	167	5140
13	1260	23700	65	872	85	390	137	1740	77	1460	227	7850
14	857	15800	65	832	85	402	121	1570	78	1470	323	12200
15	683	12400	64	840	91	467	103	1310	75	1340	496	21400
16	535	9610	66	852	123	697	93	1160	73	1280	542	22000
17	353	6130	74	971	216	1750	92	1240	72	1240	424	16300
18	304	5200	87	1150	268	3760	93	1330	70	1270	418	15600
19	248	4270	97	1270	298	5390	94	1290	68	1320	930	37400
20	202	3440	97	917	313	6080	94	1320	66	1370	1430	73400
21	162	2750	89	577	294	5400	95	1360	68	1650	1800	131000
22	141	2380	80	432	256	4420	95	1440	78	1900	2470	247000
23	137	2300	77	353	213	3390	95	1460	93	2260	3720	542000
24	122	2020	76	328	173	2570	95	1460	102	2420	4140	722000
25	112	1840	75	263	143	2010	95	1540	104	2410	2990	425000
26	102	1610	77	312	118	1660	94	1450	103	2390	4440	569000
27	86	1370	78	337	100	1400	92	1440	102	2370	3640	374000
28	77	1210	82	443	84	1180	88	1280	99	2300	3170	312000
29	72	1080	90	583	70	983	83	1170	---	---	2530	228000
30	70	1060	102	991	59	860	82	1220	---	---	1690	151000
31	69	1030	---	---	60	842	81	1180	---	---	1540	113000
TOTAL	---	810700	---	24621	---	58714	---	35540	---	44910	---	4048870
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	1540	90500	523	20200	4660	638000	683	76500	758	46900	104	2810
2	1120	66800	2370	114000	3040	402000	688	82700	736	44900	86	2140
3	950	52300	1960	83100	2040	252000	784	100000	666	38300	85	2050
4	890	48100	1460	54800	1620	185000	1040	135000	509	27800	85	2050
5	770	38900	1160	41700	1400	145000	2730	390000	414	21700	82	1940
6	612	28400	932	34200	1150	113000	2040	280000	344	17100	75	1680
7	527	22200	740	30000	949	95800	885	114000	289	13700	72	1590
8	454	17800	770	36000	965	99800	765	93400	274	12400	71	1560
9	392	14600	1100	54100	1130	129000	680	75800	256	11100	69	1510
10	352	12900	2140	113000	1360	171000	572	62100	246	10200	67	1450
11	333	11600	2700	155000	1330	175000	583	64700	240	9270	82	1840
12	331	11100	2690	151000	1420	199000	574	65400	232	8580	496	12500
13	312	10200	2470	127000	1730	270000	453	50300	219	7850	560	13600
14	248	7970	2310	120000	1680	267000	519	56500	193	6720	812	23500
15	278	8710	2320	127000	1790	246000	597	65100	188	6400	1090	43000
16	298	9330	2690	139000	1360	165000	452	46900	180	6030	1130	45500
17	273	8330	3600	167000	1080	144000	477	46900	176	5890	1100	41000
18	210	6070	5220	257000	1480	225000	472	45000	178	5860	1070	36100
19	166	4800	7830	645000	1380	212000	571	54600	187	6110	2060	72300
20	156	4460	8300	1130000	1180	160000	1540	155000	172	5530	3670	148000
21	156	4340	7120	1440000	1040	129000	878	82000	137	4330	3800	221000
22	152	4150	5000	1200000	785	97900	712	63400	142	4560	2430	143000
23	137	3440	4140	1160000	645	79600	521	45200	190	6100	1090	52700
24	123	3020	5240	1170000	658	78700	451	38800	190	6000	878	38400
25	124	3020	3870	536000	1060	135000	422	34500	167	5100	805	31500
26	183	4450	3320	415000	1780	243000	598	45700	142	4260	642	23600
27	153	3660	2760	347000	1420	199000	498	36800	132	3850	345	12000
28	96	2240	2230	284000	1120	158000	429	31000	118	3440	240	8040
29	88	2020	2020	246000	960	126000	462	32400	104	3000	212	6980
30	102	2360	1920	227000	765	88400	854	60000	106	3030	212	6980
31	---	---	3990	525000	---	---	1030	66700	113	3230	---	---
TOTAL	---	507770	---	11149100	---	5628200	---	2596400	---	359250	---	1000320
TOTAL LOAD FOR YEAR:			26264395		TONS.							

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM
OCT , 1977							
13...	1100	7.0	6760	1210	22100	86	98
NOV							
08...	1130	4.5	5040	61	830	--	--
DEC							
06...	1130	.0	4800	98	1270	--	--
MAR , 1978							
25...	1200	1.5	49800	2670	359000	50	71
APR							
26...	1000	11.0	9010	176	4280	--	--
MAY							
09...	2000	12.0	18400	1030	51200	75	99
19...	1700	15.0	33100	8820	788000	--	--
20...	0700	14.0	43400	7980	935000	--	--
20...	1700	15.0	57200	9080	1400000	--	--
21...	0700	13.0	72100	7590	1480000	--	--
21...	1700	15.0	78700	6800	1440000	--	--
22...	0630	14.5	85600	4540	1050000	--	--
22...	1700	16.0	91900	5080	1260000	--	--
23...	0630	17.0	99600	4280	1150000	--	--
23...	1145	17.0	103000	3950	1100000	54	72
23...	1700	18.0	108000	3710	1080000	--	--
24...	0510	17.5	103000	5040	1400000	59	77
24...	0900	19.0	93800	5540	1400000	65	86
24...	1220	19.0	81900	5590	1240000	58	78
24...	1700	20.0	67200	5820	1060000	--	--
25...	0630	19.0	53000	4050	580000	--	--
25...	1700	20.0	49200	3630	482000	--	--
JUN							
07...	1500	19.5	36100	877	90200	36	54
JUL							
12...	1200	23.0	43400	539	63200	--	--
AUG							
08...	1430	24.0	16500	276	12400	--	--
22...	1200	20.0	12000	139	4500	--	--
SEP							
19...	1300	11.5	12800	1550	53600	74	89

DATE	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM	SED. SUSP. FALL DIAM. % FINER THAN 1.00 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM
OCT , 1977						
13...	100	--	--	--	--	--
NOV						
08...	--	--	--	--	--	97
DEC						
06...	--	--	--	--	--	92
MAR , 1978						
25...	86	96	100	--	--	--
APR						
26...	--	--	--	--	--	53
MAY						
09...	100	--	--	--	--	--
19...	--	--	--	--	--	90
20...	--	--	--	--	--	89
20...	--	--	--	--	--	89
21...	--	--	--	--	--	87
21...	--	--	--	--	--	87
22...	--	--	--	--	--	80
22...	--	--	--	--	--	83
23...	--	--	--	--	--	84
23...	87	96	99	100	--	--
23...	--	--	--	--	--	86
24...	86	92	96	98	100	--
24...	95	98	100	--	--	--
24...	93	98	100	--	--	--
24...	--	--	--	--	--	93
25...	--	--	--	--	--	89
25...	--	--	--	--	--	88
JUN						
07...	80	96	100	--	--	--
JUL						
12...	--	--	--	--	--	67
AUG						
08...	--	--	--	--	--	57
22...	--	--	--	--	--	60
SEP						
19...	100	--	--	--	--	--

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	BED MAT. FALL DIAM. % FINER THAN .062 MM	BED MAT. FALL DIAM. % FINER THAN .125 MM	BED MAT. FALL DIAM. % FINER THAN .250 MM	BED MAT. FALL DIAM. % FINER THAN .500 MM	BED MAT. FALL DIAM. % FINER THAN 1.00 MM	BED MAT. FALL DIAM. % FINER THAN 2.00 MM	BED MAT. FALL DIAM. % FINER THAN 4.00 MM	BED MAT. FALL DIAM. % FINER THAN 8.00 MM	BED MAT. FALL DIAM. % FINER THAN 16.0 MM	BED MAT. FALL DIAM. % FINER THAN 32.0 MM
OCT 13...	1100	3	58	100	--	--	--	--	--	--	--
JUN 07...	1500	2	4	92	100	--	--	--	--	--	--
JUL 12...	1200	0	1	2	4	7	9	12	29	65	100
AUG 05...	1430	53	93	99	100	--	--	--	--	--	--
SEP 19...	1300	1	44	98	100	--	--	--	--	--	--

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPOSURE (DAYS)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)
SEP 19...	1300	28	1.10	.945	.120	.000

PHYTOPLANKTON

DATE TIME	NOV 8,77 1130	MAR 25,78 1200	MAY 9,78 2000	MAY 24,78 0900
TOTAL CELLS/ML	900	4200	1000	170
DIVERSITY: DIVISION	1.2	0.0	0.2	0.0
..CLASS	1.2	0.0	0.2	0.0
..ORDER	1.7	0.0	0.7	0.0
...FAMILY	2.5	2.2	2.9	1.9
....GENUS	2.5	2.4	3.2	1.9

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...SCENEDESMACEAE								
....SCENEDESMUS	400#	44	--	--	--	--	--	--
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	50	6	--	--	14	1	--	--
...ZYGNEMATALES								
...DESMIDIACEAE								
....COSMARION	50	6	--	--	--	--	--	--
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINOIDISACEAE								
...CYCLOTELLA	--	--	--	--	86	6	--	--
...MELUSIRA	--	--	--	--	14	1	--	--
...PENNIALES								
...ACHNANTHACEAE								
....COCCONEIS	--	--	140	3	29	3	--	--
....RHODOSPHENIA	--	--	--	--	29	3	57#	33
...CYMBELLACEAE								
....AMPHORA	--	--	140	3	--	--	--	--
....CYMBELLA	--	--	140	3	200#	19	29#	17
....EPITHEMIA	--	--	420	10	43	4	--	--
...DIATOMACEAE								
....DIATOMA	100	11	710#	17	130	12	57#	33
....OPEPHURA	--	--	--	--	14	1	--	--
...FRAGILARIACEAE								
....SYNEDRA	--	--	--	--	14	1	--	--
...GOMPHONEMACEAE								
....GOMPHONEMA	100	11	570	13	29	3	29#	17
...NAVICULACEAE								
....NAVICULA	50	6	1800#	43	240#	23	--	--
...NITZSCHIA								
....NITZSCHIA	100	11	280	7	140	14	--	--
...SURIPELLACEAE								
....CYMATOPLEURA	--	--	--	--	*	0	--	--
....SURIPELLA	--	--	--	--	43	4	--	--
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...HORMOGONIALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	--	--	--	--	*	0	--	--
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
....EUGLENA	--	--	--	--	14	1	--	--
....TRACHELOMONAS	50	6	--	--	--	--	--	--

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued
 QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
 PHYTOPLANKTON

DATE TIME	JUN 7,78 1500	JUL 27,78 1400	AUG 22,78 1200	SEP 6,78 1000	SEP 19,78 1300					
TOTAL CELLS/ML	670	7300	28000	6400	390					
DIVERSITY: DIVISION	0.7	1.5	1.4	1.4	1.0					
..CLASS	0.7	1.5	1.6	1.4	1.0					
..ORDER	1.5	2.1	1.9	1.7	1.0					
...FAMILY	2.4	2.6	2.0	2.0	1.0					
....GENUS	2.6	3.0	2.5	2.0	1.0					
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
....CHAMACIACEAE										
....SCHROEDERIA	--	-	--	-	--	-	81	1	--	-
....COELASTRACEAE										
....COELASTRUM	--	-	180	2	--	-	--	-	--	-
....OOCYSTACEAE										
....ANKISTRODESMUS	89	13	320	4	700	2	420	7	--	-
....CHODATELLA	45	7	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	280	1	--	-	--	-
....SELENASTRUM	--	-	--	-	420	1	--	-	--	-
....SCENEDESMACEAE										
....SCENEDESMUS	--	-	1900#	26	--	-	890	14	--	-
....TETRASPORALES										
....TETRASPORA	--	-	--	-	--	-	*	0	--	-
....VOLVOCALES										
....CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	360	5	2300	8	120	2	--	-
CHRYSPHYTA										
..BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCEAE										
....CYCLOTELLA	180#	27	1200#	16	5600#	20	710	11	200#	50
....MELUSIRA	--	-	--	-	--	-	40	1	--	-
....SKELETONEMA	--	-	1100#	16	4900#	17	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....COCCONEIS	--	-	--	-	--	-	40	1	--	-
....CYMBELLACEAE										
....CYMBELLA	--	-	46	1	*	0	40	1	--	-
....DIATOMACEAE										
....DIATOMA	130#	20	46	1	--	-	--	-	--	-
....FRAGILARIACEAE										
....ASTERIONELLA	45	7	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	*	0	--	-
....GOMPHONEMACEAE										
....GOMPHONEMA	--	-	--	-	280	1	--	-	--	-
....NAVICULACEAE										
....NAVICULA	45	7	180	2	*	0	81	1	--	-
....NITZSCHACEAE										
....NITZSCHIA	130#	20	1100	15	420	1	--	-	--	-
....SURIKELLACEAE										
....SURIKELLA	--	-	--	-	--	-	*	0	--	-
....TABELLARIACEAE										
....TABELLARIA	--	-	--	-	--	-	*	0	--	-
..CHRYSPHYCEAE										
...CHRYSOMONADALES										
....CHROMONADACEAE										
....UCHROMONAS	--	-	--	-	980	3	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
..CRYPTOPHYCEAE										
...CRYPTOMONIDALES										
....CRYPTOCHRYSIDACEAE										
....CHROMONAS	--	-	--	-	--	-	*	0	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROCOCCALES										
....CHROCOCCACEAE										
....AGMENELLUM	--	-	730	10	12000#	41	3900#	60	--	-
....ANACYSTIS	--	-	--	-	560	2	--	-	--	-
....HORMOGONIALES										
....RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	40	1	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENACEAE										
....TRACHELOMONAS	--	-	46	1	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
...GYMNODINIALES										
....GYMNODINIACEAE										
....GYMNODINIUM	--	-	46	1	--	-	--	-	--	-
...PERIDINIALES										
....PERIDINIACEAE										
....PERIDINIUM	--	-	--	-	--	-	--	-	200#	50

Smaller reservoirs in Missouri River basin in Montana

- 06012000 LIMA RESERVOIR.--Lat 44°39'16", long 112°21'54", in SW¼ sec.32, T.13 S., R.6 W., Beaverhead County, Hydrologic Unit 10020001, at Lima Dam on Red Rock River, 7 mi (11 km) northwest of Monida. DRAINAGE AREA, 570 mi² (1,476 km²). 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. Nonrecording gage read twice daily. Datum of gage is at mean 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 (104 hm³) between elevation 6,537.30 ft (1,992.569 m), bottom of tunnel, and 6,582.7 ft (2,006.41 m), spillway crest. No dead storage. Figures given herein represent usable contents. Water is used for irrigation, flood control, and recreation. Records furnished by Water Users Irrigation Co. CORRECTION, In WSP 1916, the elevation of the minimum contents was listed incorrectly; it should be 6,545.98 ft (1,995.215 m).
- EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 85,220 acre-ft (105 hm³) May 13, 1952, elevation, 6,582.88 ft (2,006.462 m); minimum observed, 995 acre-ft (1.23 hm³) July 11, 1961, elevation, 6,545.98 ft (1,995.215 m).
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 75,480 acre-ft (93.1 hm³) May 3-6, elevation, 6,581.33 ft (2,005.989 m); minimum observed, 19,860 acre-ft (24.5 hm³) Sept. 13, elevation, 6,565.53 ft (2,001.174 m).
- 060205000 RUBY RIVER RESERVOIR.--Lat 45°14'21", long 112°06'35", in NE¼NE¼SE¼ sec.8, T.7 S., R.4 W., Madison County, Hydrologic Unit 10020003, at dam on Ruby River, 6 mi (10 km) south of Alder. DRAINAGE AREA, 596 mi (1,544 km²). PERIOD OF RECORD, July 1938 to April 1950, September 1954, May 1955, September to November 1955, and February to September 1960 (total contents), October 1960 to current year (usable contents). Records prior to October 1939, published only in WSP 1309, and those for September 1954, published only in WSP 1729. Elevations are determined by measuring from reference points in the middle and at or near the end of the month. Datum of gage is at mean sea level (levels by Montana Department of Natural Resources and Conservation).
- Reservoir is formed by earthfill dam with concrete spillway, completed in 1938. Usable capacity, 38,850 acre-ft (47.9 hm³) between elevation 5,300.0 ft (1,615.44 m), bottom of tunnel, and 5,392.0 ft (1,643.48 m), spillway crest. Dead storage, 100 acre-ft (123,000 m³) below elevation 5,300.0 ft (1,615.44 m). Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Montana Department of Natural Resources and Conservation. REVISED RECORDS, WSP 1729: Drainage area.
- EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 46,040 acre-ft (56.8 hm³) Aug. 25, 1975, elevation, 5,399.0 ft (1,645.62 m); no storage at times in 1938, 1955, 1961.
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 36,520 acre-ft (45.0 hm³) May 1, 2, elevation, 5,389.54 ft (1,642.732 m); minimum observed, 10,000 acre-ft (12.3 hm³) Oct. 1 (estimated).
- 06036000 WILLOW CREEK RESERVOIR.--Lat 45°42'51", long 111°41'57", in NW¼NW¼NW¼ sec.35, T.1 S., R.1 W., Madison County, Hydrologic Unit 10020005, at dam on Willow Creek, 4 mi (6 km) east of Harrison. DRAINAGE AREA, 153 mi² (396 km²). PERIOD OF RECORD, February 1938 to March 1958 (total contents), April 1958 to current year (usable contents). Records prior to October 1939, published only in WSP 1309 and November, December 1951, published only in WSP 1729. Prior to October 1949, published as Harrison Lake near Harrison. Elevations determined by measuring from reference marks in the middle and at or near the end of the month. Datum of gage is at mean sea level (levels by Montana Department of Natural Resources and Conservation).
- Reservoir is formed by earth and rockfill dam with concrete spillway completed in 1938. Usable capacity, 17,730 acre-ft (21.9 hm³) between elevation 4,666.5 ft (1,422.35 m), tunnel inlet, and 4,736.0 ft (1,443.53 m), spillway crest. Dead storage, 270 acre-ft (333,000 m³) below elevation 4,666.5 ft (1,422.35 m). Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Montana Department of Natural Resources and Conservation. REVISED RECORDS, WSP 1629: 1958. WSP 1729: 1948(M), 1951-52, 1956-57.
- EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 19,230 acre-ft (23.7 hm³) June 30, 1963, elevation, 4,736.7 ft (1,443.75 m); minimum observed, 2,270 acre-ft (2.80 hm³) Nov. 15, 1970, elevation, 4,705.0 ft (1,434.08 m).
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 17,730 acre-ft (21.9 hm³) Apr. 1, 15, May 1, July 15, elevation, 4,736.0 ft (1,443.53 m); minimum observed, 5,160 acre-ft (6.36 hm³) Oct. 1, elevation, 4,715.0 ft (1,437.13 m).
- 06038000 HEBGEN LAKE.--Lat 44°51'51", long 111°20'09", in SW¼NW¼ sec.23, T.11 S., R.3 E., Gallatin County, Hydrologic Unit 10020007, at Hebgen Dam on Madison River, 18 mi (29 km) northwest of West Yellowstone, and at mile 103 (166 km). DRAINAGE AREA, 904 mi² (2,341 km²). 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. Non-recording gage read about twice daily. Datum of gage is at mean sea level (levels by The Montana Power Co.). Prior to earthquake of Aug. 17, 1959, datum of gage was 9.74 ft (2.968 m) higher, also at mean sea level.
- Reservoir is formed by earthfill dam with concrete core and spillway completed in 1915, repaired in 1960 following severe earthquake of Aug. 7, 1959, which lowered dam 9.74 ft (2.968 m) and deformed reservoir area. Subsequent usable capacity, 377,500 acre-ft (465 hm³) between elevation 6,473.00 ft (1,972.970 m), bottom of outlet tower, and 6,534.87 ft (1,991.828 m), spillway crest. Dead storage, 7,340 acre-ft (9.05 hm³) below elevation 6,473.00 ft (1,972.970 m). Prior to Aug. 17, 1959, usable capacity, 344,700 acre-ft between 6,483.11 ft (1,976.052 m), bottom of outlet tower, and 6,544.61 ft (1,994.797 m), spillway crest. No dead storage. 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, 377,500 acre-ft (465 hm³) on many days in 1962-64, 1970, 1972, 1974-76, 1978, elevation, 6,534.87 ft (1,991.828 m); minimum monthend, 670 acre-ft (826,000 m³) Dec. 31, 1936, (by capacity table used prior to August 1959).
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 377,500 acre-ft (465 hm³) July 17, 18, elevation, 6,534.87 ft (1,991.828 m); maximum observed, 168,800 acre-ft (208 hm³) Apr. 26-May 2, elevation 6,515.20 ft (1,985.833 m).

Smaller reservoirs in Missouri River basin in Montana--Continued

06040500 ENNIS LAKE.--Lat 45°28'12", long 111°38'15", in NW¼SW¼ sec.20, T.4 S., R.1 E., Madison County, Hydrologic Unit 10020007, at Madison Dam on Madison River, 5 mi (8 km) northeast of McAllister. DRAINAGE AREA, 2,181 mi² (5,649 km²). PERIOD OF RECORD, January 1936 to September 1975 (total contents), October 1975 to current year (usable contents). Records prior to October 1939, 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. Nonrecording gage read about twice daily. Datum of gage is at mean sea level (levels by The Montana Power Co.).

Reservoir is formed by timber crib dam completed in 1900. Usable capacity, 41,020 acre-ft (50.6 hm³) between elevation 4,826.5 ft (1,471.12 m), bottom of penstock, and 4,841.5 ft (1,475.69 m), top of flashboards. Dead storage, 1,040 acre-ft (1.28 hm³) below elevation 4,826.5 ft (1,471.12 m). Not normally drawn below 4,831.0 ft (1,472.49 m), 6,810 acre-ft (8.40 hm³). Figures given herein represent usable contents. Water is used for power and recreation. Records furnished by The Montana Power Co.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 40,830 acre-ft (50.3 hm³) June 20, 1968, elevation, 4,841.45 ft (1,475.674 m); minimum observed, 2,600 acre-ft (3.21 hm³) Mar. 31, 1937, elevation, 4,828.8 ft (1,471.82 m).

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 39,200 acre-ft (48.3 hm³) Sept. 26, elevation, 4,841.29 ft (1,475.625 m); minimum observed, 33,310 acre-ft (41.1 hm³) Jan. 2, elevation, 4,839.73 ft (1,475.150 m).

06049500 MIDDLE CREEK RESERVOIR.--Lat 45°29'18", long 110°58'42", in NW¼SW¼ sec.15, T.4 S., R.6 E., Gallatin County, Hydrologic Unit 10020008, at dam on Hyalite Creek, 14 mi (23 km) south of Bozeman. DRAINAGE AREA, 27.4 mi² (71.0 km²). PERIOD OF RECORD, April 1951 to current year. Nonrecording gage read in the middle and at or near the end of month. Altitude of lake at full pond is about 6,700 ft (2,040.2 m), from topographic map.

Reservoir is formed by earthfill dam with conduit control works completed in 1951. Storage began in March 1951. Usable capacity, 8,030 acre-ft (9.90 hm³) between gage height 125 ft (38.1 m), bottom of outlet, and 200.75 ft (61.189 m), spillway crest. Dead storage, 209 acre-ft (258,000 m³) below gage height 125 ft (38.1 m). Figures given herein represent usable contents. Water is used for irrigation and municipal purposes. Records furnished by Montana Department of Natural Resources and Conservation.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 8,240 acre-ft (10.2 hm³) May 31, 1966, gage height, 201.7 ft (61.48 m); minimum observed, 120 acre-ft (148,000 m³) Oct. 18, 1965, gage height, 129.0 ft (39.32 m).

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 7,930 acre-ft (9.78 hm³) June 29, gage height, 200.3 ft (61.05 m); minimum observed, 2,840 acre-ft (3.50 hm³) Nov. 14, gage height, 167.1 ft (50.93 m).

06064500 LAKE HELENA.--Lat 46°45'58", long 111°53'10", in SE¼SW¼ sec.29, T.12 N., R.2 W., Lewis and Clark County, Hydrologic Unit 10030101, at Hauser Dam on Missouri River, 13 mi (21 km) northeast of Helena. DRAINAGE AREA, 610 mi² (1,580 km²) above dam and control works on Prickly Pear Creek. PERIOD OF RECORD, May 1945 to current year. 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. Nonrecording gage at Hauser Dam read hourly. Datum of gage is at mean 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, 10,450 acre-ft (12.9 hm³) between elevation 3,624.00 ft (1,104.595 m), bottom of control works, and 3,635.00 ft (1,107.948 m), 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 The Montana Power Co.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 11,790 acre-ft (14.5 hm³) Aug. 2, 1960, Dec. 10, 1962, July 19, 20, Sept. 4, 1963, Aug. 15, 1968, Apr. 6, 1973, elevation, 3,635.60 ft (1,108.131 m); no storage Mar. 29 to Apr. 7, 1958, Feb. 12, 20, 1962.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 11,340 acre-ft (14.0 hm³) Aug. 12, elevation, 3,635.40 ft (1,108.070 m); minimum observed, 10,030 acre-ft (12.4 hm³) Oct. 1-4, 16, 18, elevation, 3,634.80 ft (1,107.887 m).

06065000 HAUSER LAKE.--Lat 46°45'58", long 111°53'10", in SE¼SW¼ sec.29, T.12 N., R.2 W., Lewis and Clark County, Hydrologic Unit 10030101, at Hauser Dam on Missouri River, 1.6 mi (2.6 km) downstream from Prickly Pear Creek, 13 mi (21 km) northeast of Helena, and at mile 2,226.4 (3,582.3 km). DRAINAGE AREA, 16,876 mi² (43,709 km²). 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 mean 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, 51,420 acre-ft (63.4 hm³) between elevation 3,617.00 ft (1,102.462 m), bottom of tunnel, and 3,635.00 ft (1,107.948 m), top of flashboards. Dead storage, 46,810 acre-ft (57.7 hm³) below elevation 3,617.00 ft (1,102.462 m). Prior to Nov. 28, 1949, usable capacity, 52,090 acre-ft (64.2 hm³) at elevation 3,635.00 ft (1,107.948 m), decrease caused by construction of new Canyon Ferry Dam in backwater of Hauser Dam. Not normally drawn below 3,621.00 ft (1,103.681 m), 8,870 acre-ft (10.9 hm³). Figures given herein represent usable contents. Water is used for power and recreation. Records furnished by The Montana Power Co. REVISED RECORDS, WSP 1729: 1949-57.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed since May 1945, 53,630 acre-ft (66.1 hm³) Aug. 2, 1960, Dec. 10, 1961, July 19, 20, Sept. 4, 1963, Aug. 15, 1968, Apr. 6, 1973, elevation, 3,635.60 ft (1,108.131 m); no storage Jan. 31, Feb. 29, 1936.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 52,890 acre-ft (65.2 hm³) Aug. 12, elevation, 3,635.40 ft (1,108.070 m); minimum observed, 50,680 acre-ft (62.5 hm³) Oct. 1-4, 16, 18, elevation, 3,634.80 ft (1,107.887 m).

Smaller reservoirs in Missouri River basin in Montana--Continued

- 06066000 HOLTER LAKE.--Lat 46°59'28", long 112°00'17", on line between SE¼ sec.5 and NE¼ sec.8, T.14 N., R.3 W., Lewis and Clark County, Hydrologic Unit 10030101, at Holter Dam on Missouri River, 3.3 mi (5.3 km) east of Wolf Creek, and at mile 2,204 (3,546 km). DRAINAGE AREA, 17,149 mi² (44,416 km²). 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 mean sea level (levels by The Montana Power Co.).
- Reservoir is formed by concrete dam completed in 1918. Usable capacity, 81,920 acre-ft (101 hm³) between elevation 3,543.00 ft (1,079.906 m), bottom of tunnel, and 3,564.00 ft (1,086.307 m), top of flashboards. Dead storage, 158,500 acre-ft (195 hm³) below elevation 3,543.00 ft (1,079.906 m). Not normally drawn below 3,548.00 ft (1,081.430 m), 16,660 acre-ft (20.5 hm³). Figures given herein represent usable contents. Water is used for power and recreation. Records furnished by The Montana Power Co.
- EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 85,250 acre-ft (105 hm³) June 19, 1970, elevation, 3,564.70 ft (1,086.521 m); no storage Feb. 29, Dec. 31, 1936.
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 82,350 acre-ft (102 hm³) July 4, elevation, 3,564.09 ft (1,086.335 m); minimum observed, 73,600 acre-ft (90.7 hm³) June 3, elevation, 3,562.22 ft (1,085.765 m).
- 06075000 SMITH RIVER RESERVOIR.--Lat 46°37'27", long 110°44'48", near center of south line of sec.17, T.10 N., R.8 W., Meagher County, Hydrologic Unit 10030103, at dam on Smith River, 9 mi (15 km) northeast of White Sulphur Springs. DRAINAGE AREA, 72.3 mi² (187.3 km²). PERIOD OF RECORD, April 1938 to September 1950 (scattered records 1947-50) and April to October 1959 (total contents), November 1959 to current year (usable contents). Records for some periods published only in WSP 1309 and for April 1959, published only in WSP 1729. Elevations determined by measuring from reference marks at or near middle and end of month. Datum of gage is at mean sea level (levels by Montana Department of Natural Resources and Conservation).
- Reservoir is formed by earthfill dam with concrete spillway completed in 1936. Usable capacity, 10,650 acre-ft (13.1 hm³) between elevation, 5,415.0 ft (1,650.49 m), bottom of outlet, and 5,486.0 ft (1,672.13 m), spillway crest. Dead storage, 52 acre-ft (64,100 m³) below elevation 5,415.0 ft (1,650.49 m). Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Montana Department of Natural Resources and Conservation. REVISED RECORDS, WSP 1729: 1960.
- EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 11,650 acre-ft (14.4 hm³) June 1, 1978, elevation, 5,489.1 ft (1,673.08 m); minimum observed, 90 acre-ft (111,000 m³) Sept. 12, 1973, elevation, 5,423.9 ft (1,653.20 m).
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 11,650 acre-ft (14.4 hm³) June 1, elevation, 5,489.1 ft (1,673.08 m); minimum observed, 6,590 acre-ft (8.13 hm³) Oct. 1, elevation, 5,471.6 ft (1,667.74 m).
- 06079500 GIBSON RESERVOIR.--Lat 47°36'09", long 112°45'39", in NE¼NW¼SE¼ sec.4, T.21 N., R.9 W., Teton County, Hydrologic Unit 10030104, at Gibson Dam on Sun River, 19 mi (31 km) northwest of Augusta, and at mile 99.9 (160.7 km). DRAINAGE AREA, 575 mi² (1,489 km²). 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. Datum of gage is at mean sea level (levels by Bureau of Reclamation).
- Reservoir is formed by concrete dam with glory-hole type spillway completed in 1929. Usable capacity, 99,060 acre-ft (122 hm³) between elevation 4,557.5 ft (1,389.13 m), bottom of outlet, and 4,724.0 ft (1,439.88 m), top of glory-hole, by capacity table effective Aug. 1, 1975; see previous reports for superseded figures. Dead storage, 16 acre-ft (19,700 m³) below elevation 4,557.5 ft (1,389.13 m). Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Bureau of Reclamation.
- EXTREMES FOR PERIOD OF RECORD: Maximum contents, 116,400 acre-ft (144 hm³) June 8, 1964, elevation, 4,732.23 ft (1,442.384 m), from floodmark, of which 11,600 acre-ft (14.3 hm³) was uncontrolled storage, by capacity table used Oct. 1, 1965, to July 30, 1975; minimum observed, 11 acre-ft (13,600 m³) Oct. 13, 1936, elevation, 4,560.9 ft (1,390.16 m), by capacity table used prior to 1939.
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 99,040 acre-ft (122 hm³) July 17, elevation, 4,724.0 ft (1,439.88 m); minimum observed, 2,320 acre-ft (2.86 hm³) Oct. 1, elevation, 4,596.4 ft (1,400.98 m).
- 06080500 PISHKUN RESERVOIR.--Lat 47°40'36", long 112°29'48", in W¼ sec.10, T.22 N., R.7 W., Teton County, Hydrologic Unit 10030104, at dam 14 mi (23 km) northwest of Augusta. PERIOD OF RECORD, January 1936 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. Nonrecording gage read one or more times a month. Datum of gage is at mean sea level (levels by Bureau of Reclamation).
- This is an offstream reservoir formed by two earthfill dams completed in 1919. Stored water is diverted from Sun River in sec.36, T.22 N., R.9 W., 18 mi (29 km) northwest of Augusta. Usable capacity, 32,050 acre-ft (39.5 hm³) between elevation 4,342.0 ft (1,323.44 m), bottom of outlet, and 4,371.0 ft (1,332.28 m), maximum pool. Dead storage, 16,400 acre-ft (20.2 hm³) below elevation 4,342.0 ft (1,323.44 m). Prior to 1940, usable capacity varied from 3,600 to 21,750 acre-ft (4.44 to 26.8 hm³). Figures given herein represent usable contents. Water is used for irrigation, recreation, and wildlife. Records furnished by Bureau of Reclamation.
- EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 32,700 acre-ft (40.3 hm³) July 4-6, 1953, elevation, 4,371.4 ft (1,332.40 m); no storage October 1939 to March 1940, Oct. 31, 1967.
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 31,890 acre-ft (39.3 hm³) June 1, elevation, 4,370.9 ft (1,332.25 m); minimum observed, 17,100 acre-ft (21.1 hm³) Oct. 1, elevation, 4,360.4 ft (1,329.05 m).

Smaller reservoirs in the Missouri River basin in Montana--Continued

06082000 WILLOW CREEK RESERVOIR.--Lat 47°32'48", long 112°25'45", in SW¼NW¼ sec.30, T.21 N., R.6 W., Lewis and Clark County, Hydrologic Unit 10030104, at dam on Willow Creek, 4 mi (6 km) northwest of Augusta. PERIOD OF RECORD, January 1936 to September 1960 (total contents), October 1960 to current year (usable contents). Records prior to October 1940, published only in WSP 1309. April to July 1953 scattered daily elevations and contents, published in WSP 1320-B. Nonrecording gage read one or more times a month. Datum of gage is at mean sea level (levels by Bureau of Reclamation).

Reservoir is formed by earthfill dam completed in 1911. Usable capacity, 32,230 acre-ft (39.7 hm³) between elevation 4,085.28 ft (1,245.193 m), bottom of outlet, and 4,142.0 ft (1,262.48 m), maximum pool. Dead storage, 67 acre-ft (82,600 m³) below elevation 4,085.28 ft (1,245.193 m). Prior to 1941, total capacity was 16,700 acre-ft (20.6 hm³). Supplemental water diverted from Sun River in sec.36, T.22 N., R.9 W., 18 mi (29 km) northwest of Augusta. Figures given herein represent usable contents. Water is used for irrigation, recreation, and wildlife. Records furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 35,230 acre-ft (43.4 hm³) June 22, 1975, elevation, 4,144.0 ft (1,263.09 m); no storage July 31, Aug. 31, 1940.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 26,340 acre-ft (32.5 hm³) July 24, 31, elevation, 4,137.8 ft (1,261.20 m); minimum observed, 11,860 acre-ft (14.6 hm³) Oct. 1, 21, elevation, 4,125.0 ft (1,257.30 m)

06083000 NILAN RESERVOIR.--Lat 47°29'06", long 112°32'24", in S½NE¼ sec.18, T.20 N., R.7 W., Lewis and Clark County, Hydrologic Unit 10030104, at north dam, lat 47°28'18", long 112°30'54", in SE¼NE¼ sec.20, T.20 N., R.7 W., at east dam, 6 mi (10 km) west of Augusta. PERIOD OF RECORD, December 1951 to current year. April to July 1953 scattered daily contents, published in WSP 1320-B. Records for November 1958 to March 1959, published only in WSP 1729. Nonrecording gage read at middle and end of month. Datum of gage is at mean sea level (levels by Montana Department of Natural Resources and Conservation).

This is an offstream reservoir formed by two earthfill dams completed in 1951. Usable capacity, 10,090 acre-ft (12.4 hm³) between elevation 4,402.0 ft (1,341.73 m), bottom of outlet, and 4,442.5 ft (1,354.07 m), spillway crest. Dead storage, 900 acre-ft (1.11 hm³) below elevation 4,402.0 ft (1,341.73 m), not including contents of old lake. Stored water is diverted from Smith Creek in NE¼ sec.4, T.19 N., R.8 W., and from Ford Creek in SW¼ sec.26, T.20 N., R.8 W., at points 12 mi (19 km) and 10 mi (16 km), respectively, southwest of Augusta. Figures given herein represent total contents. Water is used for irrigation and recreation. Records furnished by Montana Department of Natural Resources and Conservation.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 13,520 acre-ft (16.7 hm³) May 31, 1963, elevation, 4,448.5 ft (1,355.90 m); minimum observed since first filling, 104 acre-ft (128,000 m³) Sept. 30, Oct. 1, 1973, computed on basis of canal inflow-outflow study.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 10,340 acre-ft (12.7 hm³) July 15, elevation, 4,442.9 ft (1,354.20 m); minimum observed, 130 acre-ft (160,000 m³) Oct. 15, elevation, 4,404.0 ft (1,342.34 m).

06090900 LOWER TWO MEDICINE LAKE.--Lat 48°29'39", long 113°15'49", in NE¼ sec.34, T.32 N., R.13 W., Glacier County, Hydrologic Unit 10030201, at dam on Two Medicine River, 4 mi (6 km) northwest of East Glacier. DRAINAGE AREA, 50.2 mi² (130.0 km²). PERIOD OF RECORD, September 1938 to June 1964 (dam destroyed), December 1967 to current year. Figures of no storage prior to April 1961 may be in error and should be used with caution. 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 occasional elevations and contents, published in WSP 1840-B. Prior to 1942, published as Two Medicine Lake near East Glacier. Nonrecording gage read at or near end of month. Datum of gage is at mean sea level (levels by Bureau of Reclamation) and is 8.22 ft (2.505 m) higher than datum for destroyed dam (levels by Bureau of Indian Affairs).

Reservoir is formed by earthfill dam with concrete spillway and control works; construction began in September 1965, completed in November 1967. Storage began Dec. 1, 1967. Former dam 250 ft (76.2 m) upstream completed in 1913 and destroyed by flood of June 8, 1964. Usable capacity at new dam, 11,880 acre-ft (14.6 hm³) between elevation 4,861.0 ft (1,481.63 m), bottom of outlet, and 4,882.0 ft (1,488.03 m), spillway crest. Dead storage, about 2,000 acre-ft (2.47 hm³) near upper end of reservoir below elevation 4,861.0 ft (1,481.63 m). Prior to June 8, 1964 at site and datum then in use, usable capacity was 16,620 acre-ft (20.5 hm³) between elevation 4,848.00 ft (1,477.670 m), elevation of natural outlet, and 4,878.0 ft (1,486.81 m), spillway crest. Dead storage was unknown. Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Bureau of Indian Affairs. REVISED RECORDS, WSP 1729: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 20,930 acre-ft (25.8 hm³) June 8, 1964, elevation, 4,883.8 ft (1,488.58 m), datum and capacity table then in use, dam overtopped; possibly no storage at times in some years.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 12,570 acre-ft (15.5 hm³) June 30, elevation, 4,883.1 ft (1,488.37 m); minimum observed, 5,100 acre-ft (6.29 hm³) Nov. 2, elevation, 4,872.0 ft (1,484.99 m).

06093000 FOUR HORNS LAKE.--Lat 48°20'33", long 112°41'48", in SW¼NW¼SE¼ sec.19, T.30 N., R.8 W., Glacier County, Hydrologic Unit 10030201, at dam 7 mi (11 km) northeast of Heart Butte. PERIOD OF RECORD, September 1938 to current year. Records prior to October 1940, published only in WSP 1309 and those for December 1958 to August 1959, published only in WSP 1729. April to July 1953 scattered daily elevations and contents, published in WSP 1320-B. Prior to 1950, published as Four Horns Reservoir near Heart Butte. Nonrecording gage read at or near end of month. Datum of gage is at mean sea level (levels by Bureau of Indian Affairs).

This is an offstream reservoir formed by earthfill dam completed in 1932. Stored water is diverted from Badger Creek in NE¼ sec.24, T.30 N., R.10 W., 5 mi (8 km) north of Heart Butte. Usable capacity, 19,250 acre-ft (23.7 hm³) between elevation 4,081.0 ft (1,243.89 m), gate sill, and 4,115.0 ft (1,254.25 m), maximum design level. No dead storage. 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, 16,320 acre-ft (20.1 hm³) Aug. 5, 1958, elevation, 4,111.6 ft (1,253.22 m); minimum observed, 2,840 acre-ft (3.50 hm³) July 31, 1949, elevation, 4,090.0 ft (1,246.63 m).

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 14,050 acre-ft (17.3 hm³) June 30, elevation, 4,108.8 ft (1,252.36 m); minimum observed, 11,590 acre-ft (14.3 hm³) June 1, but may have been less during winter period.

Smaller reservoirs in Missouri River basin in Montana--Continued

- 06094000 SWIFT RESERVOIR.--Lat 48°09'53", long 112°52'20", in NE¼ sec.27, T.28 N., R.10 W., Pondera County, Hydrologic Unit 10030201, at Swift Dam on Birch Creek, 17 mi (27 km) west of Dupuyer. DRAINAGE AREA, 75.3 mi² (195.0 km²). PERIOD OF RECORD, January 1936 to June 1964 (dam destroyed), June 1967 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. April to June 1964 scattered daily elevations and contents, published in WSP 1840-B. Prior to 1950, published as Birch Creek Reservoir near Dupuyer. Nonrecording gage read monthly. Datum of gage is at mean sea level (levels by Bureau of Reclamation) and is 63.7 ft (19.42 m) lower than datum for destroyed dam (levels by Pondera County Canal and Reservoir Co.).
- Reservoir is formed by concrete arch dam; construction began in 1965; completed in 1967. Storage began in June 22, 1967. Former dam, in same location, was built about 1915 and destroyed by flood of June 8, 1964. Usable capacity at new dam, 29,980 acre-ft (37.0 hm³) between elevation 4,748.0 ft (1,447.19 m), bottom of outlet, and 4,883.5 ft (1,488.49 m), spillway crest. Dead storage, 35 acre-ft (43,200 m³) below elevation 4,808.2 ft (1,465.54 m), bottom of outlet, and 4,947.0 ft (1,507.85 m), spillway crest. Dead storage was negligible. Figures given herein represent usable contents. Water is used for irrigation. Records furnished by Pondera County Canal and Reservoir Co. REVISED RECORDS, WSP 1729: Drainage area.
- EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 34,300 acre-ft (42.3 hm³) June 8, 1964, elevation, 4,956.3 ft (1,510.68 m), datum then in use; minimum observed, 20 acre-ft (24,700 m³) Sept. 30, 1952, elevation, 4,810.0 ft (1,466.09 m), datum then in use.
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 26,380 acre-ft (32.5 hm³) July 31, elevation, 4,875.2 ft (1,485.96 m); minimum contents, 1,420 acre-ft (1.75 hm³) Oct. 1, (interpolated).
- 06095500 LAKE FRANCES.--Lat 48°15'48", long 112°12'24", in NE¼NE¼ sec.23, T.29 N., R.5 W., Pondera County, Hydrologic Unit 10030203, at dam 3 mi (5 km) southeast of Valier. PERIOD OF RECORD, January 1936 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. Nonrecording gage read at or near end of month. Datum of gage is at mean sea level (levels by Pondera County Canal and Reservoir Co.).
- This is an offstream reservoir formed by earthfill dam completed about 1913. Stored water is diverted from Birch Creek in sec.28, T.29 N., R.8 W., and Dupuyer Creek in sec.28, T.29 N., R.6 W., at points 20 mi (32 km) and 6 mi (10 km), respectively, west of dam. Usable capacity, 111,900 acre-ft (138 hm³) between elevation 3,787.40 ft (1,154.400 m), outlet sill, and 3,816.00 ft (1,163.117 m), maximum design level. Dead storage is estimated at 5,000 acre-ft (6.17 hm³) below elevation 3,787.40 ft (1,154.400 m). Figures given herein represent usable contents. Water is used for irrigation. Records furnished by Pondera County Canal and Reservoir Co.
- EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 111,400 acre-ft (137 hm³) June 4, 1953, elevation, 3,815.92 ft (1,163.092 m); minimum observed, 4,560 acre-ft (5.62 hm³) Jan. 31, 1938, elevation, 3,789.36 ft (1,154.997 m).
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 93,990 acre-ft (116 hm³) Sept. 30, elevation, 3,812.60 ft (1,162.080 m); minimum observed, 27,480 acre-ft (33.9 hm³) Jan. 31, elevation, 3,797.24 ft (1,157.399 m).
- 06110500 ACKLEY LAKE.--Lat 46°57'19", long 109°55'55", in SE¼ sec.22, T.14 N., R.14 E., Judith Basin County, Hydrologic Unit 10040103, at dam 4 mi (6 km) southwest of Hobson. PERIOD OF RECORD, June 1938 to September 1960 (total contents), October 1960 to current year (usable contents). Records prior to October 1939, published only in WSP 1309. Nonrecording gage read usually at or near middle and end of month. Altitude of gage is about 4,300 ft (1,310.6 m), from topographic map.
- This is an offstream reservoir formed by earthfill dam with concrete conduits completed in 1938. Water is diverted from Judith River near center of east line of sec.14, T.14 N., R.13 E., 7.5 mi (12.1 km) west of Hobson. Usable capacity, 5,820 acre-ft (7.18 hm³) between gage height 45.0 ft (13.72 m), bottom of outlet, and 82.67 ft (25.198 m), spillway crest. Dead storage, 325 acre-ft (401,000 m³) below gage height 45.0 ft (13.72 m). Figures given herein represent usable contents. Water is used for irrigation. Records furnished by Montana Department of Natural Resources and Conservation.
- EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 6,150 acre-ft (7.58 hm³) Sept. 1, 1975, gage height, 84.0 ft (25.60 m); minimum observed, 893 acre-ft (1.10 hm³) Apr. 1, 1974, gage height, 55.0 ft (16.76 m).
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 5,780 acre-ft (7.13 hm³) June 1, 15, July 1, 15, elevation, 2,982.5 ft (909.07 m); minimum observed, 2,420 acre-ft (2.98 hm³) Jan. 15, Feb. 1, 15, Mar. 1, 15, Apr. 1, elevation 2,966.5 ft (904.19 m).
- 06116500 BAIR RESERVOIR.--Lat 46°34'47", long 110°33'24", in SE¼SE¼SW¼ sec.35, T.10 N., R.9 E., Meagher County, Hydrologic Unit 10040201, at dam on North Fork Musselshell River, 1 mi (2 km) northwest of Delpine and 14 mi (23 km) northwest of Martinsdale. DRAINAGE AREA, 48.6 mi² (125.9 km²). PERIOD OF RECORD, November, 1939 to September 1960 (total contents), winter records incomplete some years during 1951-59, October 1960 to current year (usable contents). Records for November 1939, published only WSP 1309. Prior to October 1969, published as "Durand Reservoir." Nonrecording gage read at or near middle and end of month. Datum of gage is at mean sea level (levels by Montana Department of Natural Resources and Conservation).
- Reservoir is formed by earthfill dam with concrete spillway completed in 1939. Usable capacity, 7,000 acre-ft (8.63 hm³) between elevation 5,253.2 ft (1,601.18 m), bottom of inlet, and 5,325.0 ft (1,623.06 m), spillway crest. Dead storage, 24 acre-ft (29,600 m³) below elevation 5,253.2 ft (1,601.18 m). Supplemental water can be diverted from Checkerboard Creek in S¼ sec.5, T.9 N., R.9 E., but seldom used. Figures given herein represent usable contents. Water is used for irrigation. Records furnished by Montana Department of Natural Resources and Conservation. REVISED RECORDS, WSP 1729: Drainage area.
- EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 7,150 acre-ft (8.82 hm³) June 15, 1967, June 1, 1978, elevation, 5,325.5 ft (1,623.21 m); no storage July 31, 1961.
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 7,150 acre-ft (8.82 hm³) June 1, elevation, 5,325.5 ft (1,623.21 m); minimum observed, 3,080 acre-ft (3.80 hm³) Oct. 1, elevation, 5,305.8 ft (1,617.21 m).

Smaller reservoirs in Missouri River Basin in Montana--Continued

- 06119000 MARTINDALE RESERVOIR.--Lat 46°27'17", long 110°16'02", in NE¼NW¼SE¼ sec.18, T.8 N., R.12 E., Wheatland County, Hydrologic Unit 10040201, at north dam 2 mi (3 km) east of Martinsdale, lat 46°26'33", long 110°15'30", in NE¼ sec.20, T.8 N., R.12 E., at south dam 3 mi (5 km) southeast of Martinsdale. PERIOD OF RECORD, November 1939 to September 1960 (total contents), winter records incomplete for some years during 1951-59, October 1960 to current year (usable contents). Records for November 1939, published only in WSP 1309. Nonrecording gage read at or near middle and end of month. Datum of gage is at mean sea level (levels by Montana Department of Natural Resources and Conservation).
- This is an offstream reservoir formed by two earthfill dam with concrete conduit and spillway completed in 1939. Stored water is diverted from South Fork Musselshell River in N¼ sec.15, T.8 N., R.11 E., at a point 1 mi (2 km) west of Martinsdale. Usable capacity, 23,110 acre-ft (28.5 hm³) between elevation 4,714.67 ft (1,437.031 m), bottom of outlet, and 4,779.0 ft (1,456.64 m), spillway crest. Dead storage, 73 acre-ft (90,000 m³) below elevation 4,714.67 ft (1,437.031 m). South Fork Musselshell River flow above diversion is supplemented at times with return flow from lands irrigated by water diverted from North Fork Musselshell River. Figures given herein represent usable contents. Water is used for irrigation. Records furnished by Montana Department of Natural Resources and Conservation.
- EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 23,110 acre-ft (28.5 hm³) June 15, 1974, July 5, 1975, elevation, 4,779.0 ft (1,456.64 m); no storage July 31, Aug. 31, Sept. 30, Oct. 31, 1961.
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 21,040 acre-ft (25.9 hm³) July 15, elevation, 4,776.8 ft (1,455.97 m); minimum observed, 10,410 acre-ft (12.8 hm³) Oct. 1, elevation, 4,763.0 ft (1,451.76 m).
- 06122500 DEADMAN'S BASIN RESERVOIR.--Lat 46°20'24", long 109°24'35", in NE¼ sec.25, T.7 N., R.18 E., Wheatland County, Hydrologic Unit 10040201, at dam 6 mi (10 km) east of Shawmut. PERIOD OF RECORD, June 1941 to June 1955 (some contents may be total), July 1955 to current year (usable contents), incomplete 1942, 1951-59. Nonrecording gage read at or near middle and end of month. Datum of gage is at mean sea level (levels by Montana Department of Natural Resources and Conservation).
- This is an offstream reservoir formed by earthfill dam completed in 1941. Stored water is diverted from Musselshell River in NW¼ sec.8, T.7 N., R.17 E., 6 mi (10 km) northwest of Shawmut. Usable capacity, 72,220 acre-ft (89.0 hm³) between elevation 3,872.0 ft (1,180.19 m), bottom of outlet, and 3,921.0 ft (1,195.12 m), maximum design level. Prior to 1958, usable capacity was 52,500 acre-ft (64.7 hm³) at elevation 3,911.0 ft (1,192.07 m). Dead storage, 4,600 acre-ft (5.67 hm³) below elevation 3,872.0 ft (1,180.19 m). Figures given herein represent usable contents. Water is used for irrigation. Records furnished by Montana Department of Natural Resources and Conservation.
- EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 73,240 acre-ft (90.3 hm³) June 7, 1978, elevation, 3,921.5 ft (1,195.27 m); minimum observed, 3,290 acre-ft (4.06 hm³) Oct. 31, 1961, elevation, 3,867.3 ft (1,178.75 m).
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 73,240 acre-ft (90.3 hm³) June 7, elevation, 3,921.5 ft (1,195.27 m); minimum observed, 15,120 acre-ft (18.6 hm³) Oct. 3, elevation, 3,887.5 ft (1,184.91 m).
- 06136500 FRESNO RESERVOIR.--Lat 48°36'04", long 109°56'45", in SE¼ sec.19, T.33 N., R.14 E., Hill County, Hydrologic Unit 10050002, at dam on Milk River, 13 mi (21 km) west of Havre and at mile 440 (708 km). DRAINAGE AREA, 3,766 mi² (9,754 km²) of which 670 mi² (1,735 km²) is probably noncontributing. PERIOD OF RECORD, January 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 mean sea level (levels by Bureau of Reclamation).
- Reservoir is formed by earthfill dam with concrete spillway completed in 1939. Usable capacity, 127,200 acre-ft (157 hm³) between elevation 2,530.00 ft (771.144 m), invert of tunnel inlet, and 2,575.00 ft (784.860 m), spillway crest. Elevation of maximum water surface is 2,591.00 ft (789.737 m), 243,600 acre-ft (300 hm³). Crest of dam is 2,595.00 ft (790.956 m). There are no gates in the spillway. Dead storage, 1,860 acre-ft (2.29 hm³) below elevation 2,530.00 ft (771.144 m). 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 (190 hm³) Apr. 3, 1952, elevation, 2,579.35 ft (786.186 m), of which 26,800 acre-ft (33.0 hm³) was uncontrolled storage; no storage Feb. 18 to Mar. 6, 1950.
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 140,700 acre-ft (173 hm³) Apr. 1, elevation, 2,577.25 ft (785.546 m); minimum observed, 15,690 acre-ft (19.3 hm³) Mar. 10, 14, elevation, 2,543.39 ft (775.225 m).
- 06155000 NELSON RESERVOIR.--Lat 48°31'42", long 107°31'00", in SE¼ sec.14, T.32 N., R.32 E., Phillips County, Hydrologic Unit 10050004, at dam 10 mi (16 km) northwest of Saco. PERIOD OF RECORD, March 1928 to current year. Records prior to October 1940, published only in WSP 1309. Nonrecording gage read on first and last day of month and more often during high stages. Datum of gage is at mean sea level (levels by Bureau of Reclamation).
- This is an offstream reservoir formed by earthfill dam completed in 1922. Stored water is diverted from Milk River at Dodson Dam in SE¼ sec.26, T.31 N., R.26 E., 6 mi (10 km) west of Dodson. Usable capacity, 66,800 acre-ft (82.4 hm³) between elevation 2,200.0 ft (670.56 m), gate sill, and 2,223.0 ft (677.57 m), maximum design level. Dead storage, 18,650 acre-ft (23.0 hm³) below elevation 2,200.0 ft (670.56 m). Reservoir has never been operated to maximum capacity. Figures given herein represent usable contents. Water is used for irrigation, recreation, and wildlife. Records furnished by Bureau of Reclamation.
- EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 60,570 acre-ft (74.7 hm³) July 12-14, 1965, elevation, 2,221.6 ft (677.14 m); minimum observed, 4,600 acre-ft (5.67 hm³) Mar. 31, 1937, elevation, 2,202.6 ft (671.35 m).
- EXTREMES FOR CURRENT YEAR: Maximum contents observed, 53,460 acre-ft (65.9 hm³) July 22, 24, 25, elevation, 2,219.9 ft (676.63 m); minimum observed, 6,120 acre-ft (7.55 hm³) Feb. 28, Mar. 1, elevation, 2,203.4 ft (671.60 m).

Smaller reservoirs in Missouri River Basin in Montana--continued

06204000 MYSTIC LAKE.--Lat 45°13'30", long 109°45'36", in sec.9, T.7 S., R.16 E., (unsurveyed), Stillwater County, Hydrologic Unit 10070005, at dam on West Rosebud Creek, 15 mi (24 km) southwest of Roscoe and 25 mi (40 km) southwest of Absarokee. DRAINAGE AREA, 46.9 mi² (121.5 km²). 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 mean 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 (25.9 hm³) between elevation 7,612.00 ft (2,320.138 m), minimum operating level, and 7,673.50 ft (2,338.883 m), top of 3.5 ft (1.07 m) stop logs. No dead storage. Figures given herein represent usable contents. Water is used for power development and recreation. Records furnished by The Montana Power Co. REVISED RECORDS, WSP 1916: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 21,070 acre-ft (26.0 hm³) July 31, 1947, elevation, 7,673.68 ft (2,338.938 m); minimum observed, 260 acre-ft (321,000 m³) Apr. 4, 1938, elevation, 7,612.93 ft (2,320.421 m).

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 20,690 acre-ft (25.5 hm³) July 20, elevation, 7,672.81 ft (2,338.672 m); no usable storage Apr. 5-9, 12, 13, 20-30, May 1-5.

06212000 COONEY RESERVOIR.--Lat 45°26'47", long 109°11'57", in N½NE¼ sec.36, T.4 S., R.20 E., Carbon County, Hydrologic Unit 10070006, at dam on Red Lodge Creek, 1 mi (2 km) upstream from Cottonwood Creek and 6.6 mi (10.6 km) west of Boyd. DRAINAGE AREA, 206 mi² (534 km²). PERIOD OF RECORD, May 1937 to September 1960 (total contents), incomplete 1954-60, October 1960 to current year (usable contents). Records prior to October 1939, published only in WSP 1309. Nonrecording gage read at or near middle and end of month. Datum of gage is at mean sea level.

Reservoir is formed by earthfill dam with concrete spillway completed in 1936. Usable capacity, 27,400 acre-ft (33.8 hm³) between elevation 4,175.0 ft (1,272.54 m), bottom of tunnel, and 4,250.0 ft (1,295.40 m), top of 4 ft (1.2 m) flashboards. Dead storage, 120 acre-ft (148,000 m³) below elevation 4,175.0 ft (1,272.54 m). Figures given herein represent usable contents. Water is used for irrigation. Records furnished by Montana Department of Natural Resources and Conservation. REVISED RECORDS, WSP 1729: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 26,990 acre-ft (33.3 hm³) June 15, 1967, elevation, 4,249.5 ft (1,295.25 m); minimum observed, 120 acre-ft (148,000 m³) Sept. 30, 1960, elevation, 4,175.0 ft (1,272.54 m).

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 20,160 acre-ft (24.9 hm³) July 15, elevation, 4,240.9 ft (1,292.63 m); minimum observed, 6,180 acre-ft (7.62 hm³) Oct. 12, elevation, 4,213.9 ft (1,284.40 m).

06307000 TONGUE RIVER RESERVOIR.--Lat 45°07'48", long 106°46'13", in SE¼SE¼NE¼ sec.13, T.8 W., R.40 E., Big Horn County, Hydrologic Unit 10090101, at dam on Tongue River, 4 mi (6 km) upstream from Post Creek, 7 mi (11 km) northeast of Decker, and at mile 162.8 (261.9 km). DRAINAGE AREA, 1,770 mi² (4,584 km²). PERIOD OF RECORD, December 1938 to current year. Records prior to September 1939, published only in WSP 1309 and those for January, February 1956, published only in WSP 1729. Nonrecording gage read daily but only weekly readings supplied. Datum of gage is at mean sea level (levels by Bureau of Reclamation).

Reservoir is formed by earthfill dam with concrete spillway completed in May 1939. Usable capacity, 68,040 acre-ft (83.9 hm³) between elevation 3,374.4 ft (1,028.52 m), bottom of outlet, and 3,424.4 ft (1,043.76 m), spillway crest. Prior to October 1947, usable contents was 73,950 acre-ft (91.2 hm³) at same elevations, due to sedimentation study. Dead storage, 1,400 acre-ft (1.73 hm³) below elevation 3,374.4 ft (1,028.52 m). 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, 79,600 acre-ft (98.1 hm³) May 20, 1978, elevation, 3,428.0 ft (1,044.85 m), from straight-line extension of rating curve; no storage October 1939 to February 1940.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 79,600 acre-ft (98.1 hm³) May 20, elevation, 3,428.0 ft (1,044.85 m); minimum observed, 20,080 acre-ft (24.8 hm³) Sept. 20-22, elevation, 3,403.2 ft (1,037.30 m).

Smaller reservoirs in Missouri River basin in Montana--Continued

Monthend contents, in acre-feet, water year October 1977 to September 1978

Date	Lima Reservoir	Ruby River Reservoir	Willow Creek Reservoir	Hebgen Lake	Ennis Lake	Middle Creek Reservoir	Lake Helena
Sept. 30	33,220	c 10,000	b 5,160	333,200	38,760	a 2,950	10,030
Oct. 31	36,120	-	b 6,910	299,000	38,380	2,970	10,450
Nov. 30	41,550	-	b 8,370	251,300	35,730	a 2,970	10,890
Dec. 31	a 44,060	-	b 10,080	243,200	34,870	a 3,310	10,890
Jan. 31	a 45,770	b 26,160	b 12,950	243,200	34,980	a 3,650	10,890
Feb. 28	a 47,250	a 29,400	b 15,340	243,200	35,430	a 3,930	10,890
Mar. 31	a 51,360	b 31,020	b 17,730	195,100	35,800	4,240	10,890
Apr. 30	74,880	b 36,520	b 17,730	168,800	37,240	a 4,570	10,890
May 31	70,920	a 34,570	b 16,140	226,100	37,120	7,170	10,890
June 30	49,120	a 32,560	b 14,540	343,700	37,430	a 7,920	10,890
July 31	38,140	b 30,420	b 16,140	376,800	37,880	a 7,640	10,890
Aug. 31	25,280	b 18,060	b 8,370	365,500	37,350	a 5,010	10,890
Sept. 30	b 22,440	a 13,120	b 7,790	339,700	38,080	a 4,180	10,450

Date	Hauser Lake	Holter Lake	Smith River Reservoir	Gibson Reservoir	Pishkun Reservoir	Willow Creek Reservoir	Nilan Reservoir
Sept. 30	50,680	80,450	a 6,590	2,230	16,840	11,860	a 162
Oct. 31	51,420	80,920	b 6,800	7,400	19,170	12,720	b 260
Nov. 30	52,150	80,490	a 7,530	12,070	19,170	15,680	976
Dec. 31	52,150	79,930	b 7,320	18,920	19,170	15,680	1,530
Jan. 31	52,150	80,350	b 7,350	23,210	19,170	15,770	a 2,000
Feb. 28	52,150	80,920	b 7,350	26,690	18,910	16,630	a 2,430
Mar. 31	52,150	80,780	a 9,840	33,620	18,650	18,290	b 3,190
Apr. 30	52,150	79,550	b 11,560	48,440	31,070	19,350	b 4,550
May 31	52,150	79,410	b 11,650	77,300	31,730	22,810	9,910
June 30	52,150	81,440	b 11,590	97,750	22,780	25,120	b 10,150
July 31	52,150	80,830	b 11,530	91,880	25,700	26,340	9,850
Aug. 31	52,150	76,180	b 10,360	49,190	22,780	25,930	a 7,930
Sept. 30	51,420	80,310	b 9,910	49,100	19,180	25,660	6,710

Date	Lower Two Medicine Lake	Four Horns Lake	Swift Reservoir	Lake Frances	Ackley Lake	Bair Reservoir	Martinsdale Reservoir
Sept. 30	a 3,690	a 11,410	1,380	29,770	b 2,590	b 3,080	b 10,410
Oct. 31	a 5,020	a 13,740	2,670	28,060	b 2,590	b 3,160	b 11,640
Nov. 30	-	-	4,570	27,780	b 2,510	a 3,740	a 11,920
Dec. 31	-	-	6,730	27,680	b 2,510	b 3,840	b 11,930
Jan. 31	-	-	8,350	27,480	b 2,420	d 4,080	a 11,930
Feb. 28	-	-	9,660	28,090	b 2,420	d 4,210	d 11,930
Mar. 31	c 12,000	c 13,100	12,080	32,990	b 2,420	a 5,440	a 11,770
Apr. 30	b 12,490	b 13,130	11,700	42,510	b 3,410	b 7,120	a 15,350
May 31	a 12,420	b 11,590	11,060	75,220	b 5,780	b 7,150	b 19,170
June 30	12,570	14,050	17,950	88,010	b 5,780	b 7,010	b 20,090
July 31	a 12,210	a 13,830	26,380	87,160	b 5,040	b 7,010	b 20,750
Aug. 31	b 10,990	b 13,430	19,480	83,910	b 3,390	b 5,940	b 15,890
Sept. 30	a 11,760	a 13,150	12,010	93,990	b 4,040	b 5,300	b 12,360

Date	Deadman's Basin Reservoir	Fresno Reservoir	Nelson Reservoir	Mystic Lake	Cooney Reservoir	Tongue River Reservoir
Sept. 30	a 15,180	23,370	6,510	17,900	c 3,500	20,080
Oct. 31	a 18,430	24,040	b 7,900	18,120	b 9,420	24,740
Nov. 30	a 22,090	22,310	6,900	17,270	10,100	27,570
Dec. 31	b 26,000	20,380	b 7,100	12,230	b 10,740	29,460
Jan. 31	a 29,620	18,900	b 6,510	8,590	b 12,500	29,640
Feb. 28	a 33,000	a 17,760	6,120	5,050	13,100	30,900
Mar. 31	a 41,130	b 140,700	b 9,530	280	b 16,080	43,400
Apr. 30	a 58,150	b 129,900	22,690	0	17,490	32,040
May 31	a 70,460	117,700	b 41,390	5,640	a 19,000	68,040
June 30	a 71,350	118,500	48,260	20,510	a 20,000	53,720
July 31	b 67,350	105,600	b 51,840	20,320	b 19,840	46,160
Aug. 31	b 54,220	83,140	b 47,870	19,940	16,630	22,600
Sept. 30	b 54,410	c 85,700	49,840	19,940	b 14,670	20,780

a Interpolated

b Figure of contents for first day of following month.

c Estimate

d Estimated monthend contents supplied by Montana Department of Natural Resources and Conservation.

LITTLE MISSOURI RIVER BASIN

06334500 LITTLE MISSOURI RIVER AT CAMP CROOK, SD

LOCATION.--Lat 45°32'49", long 103°58'23", in SW¼ sec.2, T.18 N., R.1 E., Harding County, Hydrologic Unit 10110201, on left bank 15 ft (5 m) upstream from bridge on State Highway 20 at east edge of Camp Crook.

DRAINAGE AREA.--1,970 mi² (5,100 km²), 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 (947.617 m), National Geodetic Vertical Datum of 1929. Sept. 2, 1903, to Nov. 30, 1906, nonrecording gage at site 0.5 mi (0.8 km) upstream at different datum. May 1956 to Oct. 8, 1957, nonrecording gage at site 15 ft (4.6 m) downstream, and Oct. 9, 1957, to Sept. 30, 1976, water-stage recorder at present site both at datum 2.00 ft (0.610 m) higher.

REMARKS.--Records good except those for winter periods, which are poor. Small diversions above station for irrigation.

AVERAGE DISCHARGE.--25 years, 146 ft³/s (4.135 m³/s), 105,800 acre-ft/yr (130 hm³/yr); median of yearly mean discharges, 108 ft³/s (3.059 m³/s), 78,200 acre-ft/yr (96.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,420 ft³/s (267 m³/s) Mar. 24, 1978, gage height, 16.90 ft (5.151 m), present datum; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1952 reached a stage of about 18 ft (5.5 m), present datum, from local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 3	2200	1760 49.8	8.00 2.438	May 9	1645	4560 129	12.32 3.755
Oct. 9	2030	3390 96.0	10.74 3.274	May 24	0145	2770 78.4	9.96 3.036
Mar. 24	0245	*9420 267	*16.90 5.151	June 1	2030	2720 77.0	9.89 3.014

Minimum daily discharge, 2.5 ft³/s (0.071 m³/s) Nov. 22-24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	16	9.5	8.0	4.5	4.5	3610	81	2560	114	106	29
2	789	16	9.5	7.8	4.8	4.5	2700	79	2500	114	96	27
3	1580	14	9.5	7.8	4.8	4.5	1860	77	2090	160	77	24
4	1180	11	9.0	7.8	4.8	4.5	1260	98	1600	130	68	23
5	702	9.8	8.5	7.5	4.8	5.0	972	726	1060	115	56	22
6	582	8.9	8.0	7.5	4.5	5.5	768	988	677	200	50	19
7	469	8.9	7.5	7.5	4.6	6.0	632	1320	497	175	41	16
8	2060	14	7.0	7.5	4.5	8.0	523	3080	386	150	40	14
9	3280	12	6.5	7.5	4.5	9.0	430	4360	321	130	39	14
10	2240	16	7.5	7.5	4.4	8.5	360	4340	269	110	36	14
11	1080	13	8.0	7.0	4.4	8.5	314	4220	228	95	35	14
12	828	13	8.5	7.0	4.4	8.5	272	4290	203	90	33	22
13	513	8.0	9.0	6.5	4.2	8.5	238	4400	177	50	30	34
14	314	8.0	9.0	6.0	4.2	8.5	216	3970	157	69	30	22
15	200	8.0	9.5	5.8	4.0	8.5	200	2930	142	64	30	19
16	149	6.5	9.5	5.5	3.5	10	194	1770	135	56	29	18
17	123	3.5	9.0	5.2	3.0	20	176	1020	142	54	29	18
18	105	3.5	9.0	5.0	4.0	45	172	687	157	52	28	16
19	89	3.0	8.5	4.5	4.4	100	172	566	153	53	26	16
20	78	3.0	8.0	4.8	4.6	200	153	982	219	54	27	17
21	65	3.0	8.5	5.0	5.0	600	135	1960	262	75	23	17
22	59	2.5	9.0	5.0	7.0	2000	123	2300	207	118	23	17
23	50	2.5	9.0	5.2	8.0	6540	115	2610	161	584	23	17
24	51	2.5	8.5	5.2	7.5	8560	113	2630	150	282	21	15
25	52	4.0	8.5	5.0	5.5	7930	103	1910	145	219	20	15
26	46	6.0	8.5	4.8	5.0	8210	94	1180	135	197	19	14
27	38	7.0	9.0	4.8	4.5	8330	86	824	130	161	21	14
28	33	8.0	9.0	4.6	4.5	7430	86	797	125	120	23	14
29	28	9.0	9.0	4.5	---	6430	88	1040	120	106	24	13
30	23	9.5	8.5	4.5	---	5090	86	1390	116	128	23	11
31	20	---	8.5	4.5	---	4170	---	2080	---	117	26	---
TOTAL	16928	252.1	266.5	186.8	134.0	65737.5	16251	58705	15224	4172	1154	545
MEAN	546	8.40	8.60	6.03	4.79	2121	542	1894	507	135	37.2	18.2
MAX	3280	18	9.5	8.0	8.0	8560	3610	4400	2560	584	106	34
MIN	20	2.5	6.5	4.5	3.0	4.5	86	77	116	52	19	11
AC-FT	33580	500	529	371	266	130400	32230	116400	30200	8280	2290	1080
CAL YR 1977 TOTAL	33148.03			MEAN 90.8	MAX 3280	MIN .00	AC-FT 65750					
WTR YR 1978 TOTAL	179555.90			MEAN 492	MAX 8560	MIN 2.5	AC-FT 356100					

06335000 LITTLE BEAVER CREEK NEAR MARMARTH, ND

LOCATION.--Lat 46°16'29", long 103°58'33", in NE¼ sec.7, T.132 N., R.106 W., Bowman County, Hydrologic Unit 10110201, on right bank 150 ft (46 m) downstream from concreted ford, 0.8 mi (1.3 km) downstream from Corral Creek, 3 mi (5 km) southwest of Marmarth, and 5 mi (8 km) upstream from mouth.

DRAINAGE AREA.--587 mi² (1,520 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1938 to current year.

REVISED RECORDS.--WSP 1279: 1939(M), 1940, 1943-44(M), 1945, 1948.

GAGE.--Water-stage recorder. Datum of gage is 2,733.14 ft (833.061 m) National Geodetic Vertical Datum of 1929. June 28, 1951 to May 17, 1968, water-stage recorder 300 ft (90 m) upstream at datum 10.00 ft (3.048 m) higher. See WSP 1729 or 1917 for history of changes prior to June 28, 1951.

REMARKS.--Records good except those for the winter period, which are fair.

AVERAGE DISCHARGE.--40 years, 44.4 ft³/s (1.257 m³/s), 32,170 acre-ft/yr (39.7 hm³/yr), median of yearly mean discharges, 30 ft³/s (0.849 m³/s), 21,700 acre-ft/yr (26.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 ft³/s (360 m³/s) Apr. 6, 1952, gage height, 13.9 ft (4.236 m), from floodmark, site and datum then in use, from rating curve extended above 4,500 ft³/s (127 m³/s) on basis of slope-area measurement of peak flow; no flow at times in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 22	----	3,500 99.1	backwater from ice	May 19	0430	5,720 162	21.12 6.437
Mar. 27	0545	*6,460 183	21.60 6.584				

Minimum daily, 0.90 ft³/s (0.025 m³/s) Nov. 25, 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	262	3.9	2.5	2.5	1.2	1.5	333	47	239	33	11	4.3
2	110	3.5	2.0	2.5	1.0	1.5	201	44	131	31	11	4.3
3	39	3.4	2.0	2.5	1.0	1.5	361	45	105	54	9.2	4.2
4	24	3.4	1.5	2.5	1.0	1.5	246	78	58	33	8.7	4.2
5	16	3.4	1.5	2.5	1.0	1.5	191	111	49	29	8.2	4.0
6	8.0	3.3	1.5	2.5	1.0	1.5	160	127	42	31	7.7	3.7
7	334	3.6	1.5	2.3	1.0	1.5	136	237	47	37	7.3	3.5
8	231	3.4	1.5	2.3	1.0	1.5	117	491	38	56	7.0	3.2
9	76	3.2	1.5	2.3	1.0	1.5	109	312	31	47	7.2	3.3
10	58	3.1	1.5	2.3	1.0	1.5	99	202	27	34	6.7	3.2
11	34	3.2	1.0	2.3	1.0	2.4	89	127	26	26	6.4	3.7
12	32	3.6	1.0	2.3	1.0	3.1	84	150	26	53	6.1	26
13	29	3.6	1.0	2.3	1.0	3.1	75	108	25	35	5.4	103
14	21	3.9	1.0	2.3	1.0	3.2	70	97	24	28	6.1	50
15	15	4.0	1.5	2.3	1.0	3.2	70	76	21	27	6.1	27
16	8.6	3.6	2.0	2.0	1.0	3.4	70	64	248	20	6.1	16
17	6.0	3.5	3.0	2.0	1.0	3.5	69	64	111	16	6.1	10
18	5.1	3.5	3.5	2.0	1.0	4.0	91	69	48	15	5.9	11
19	4.4	3.0	3.5	2.0	1.0	5.0	108	2660	36	17	5.4	24
20	3.8	2.5	4.0	2.0	1.0	20	80	448	31	29	5.2	27
21	3.0	2.5	4.0	1.7	1.0	520	69	202	24	21	5.2	17
22	3.6	2.0	4.0	1.5	1.0	2110	72	161	22	37	5.2	10
23	3.2	1.0	3.5	1.5	1.5	2260	64	131	18	46	5.2	7.8
24	2.5	1.0	3.5	1.5	1.5	1130	59	103	17	25	5.0	7.8
25	3.0	.90	3.0	1.5	1.5	1940	57	81	105	14	4.9	7.0
26	3.7	.90	3.0	1.5	1.5	4330	54	70	152	12	4.9	6.7
27	3.8	1.0	3.0	1.5	1.5	5870	51	66	136	11	4.2	6.4
28	4.2	2.0	3.0	1.5	1.5	3820	50	66	61	9.8	4.3	6.4
29	3.9	2.5	3.0	1.5	---	1830	49	62	48	9.2	4.3	6.4
30	3.6	2.5	3.0	1.5	---	1050	48	182	38	8.7	4.3	6.1
31	3.7	---	3.0	1.4	---	625	---	213	---	9.8	4.3	---
TOTAL	1355.1	84.90	74.5	62.3	31.2	25550.9	3332	6894	1984	854.5	194.6	417.2
MEAN	43.7	2.83	2.40	2.01	1.11	824	111	222	66.1	27.6	6.28	13.9
MAX	334	4.0	4.0	2.5	1.5	5870	361	2660	248	56	11	103
MIN	2.5	.90	1.0	1.4	1.0	1.5	48	44	17	8.7	4.2	3.2
AC-FT	2690	168	148	124	62	50680	6610	13670	3940	1690	386	828
CAL YR 1977 TOTAL	5886.31			MEAN 16.1	MAX 334	MIN .00	AC-FT 11680					
WTR YR 1978 TOTAL	40835.20			MEAN 112	MAX 5870	MIN .90	AC-FT 81000					

LITTLE MISSOURI RIVER BASIN

06335000 LITTLE BEAVER CREEK NEAR MARMARTH, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
APR 10...	1505	97	1120	8.2	8.0	250	45	53	29
AUG 03...	1100	9.6	2000	8.2	17.0	280	0	60	32

DATE	TIME	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)
APR 10...	160		57	4.4	4.7	252	0	207	2.5	390
AUG 03...	300		69	7.8	5.5	432	0	354	4.4	570

DATE	TIME	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
APR 10...	3.6		.1	9.3	774	1.10	212	390	60	60
AUG 03...	10		.4	8.5	1200	1.60	30	230	360	20

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)
OCT 06...	1040	8.0	890	6.0	MAR 29...	1155	1580	322	5.0
NOV 02...	1050	3.7	1270	5.0	APR 10...	1505	97	1120	8.0
DEC 08...	1215	2.0	1890	.0	MAY 04...	1105	70	1500	11.0
JAN 11...	1220	2.3	1600	.0	JUN 01...	1140	220	1550	11.0
FEB 01...	1220	1.2	1700	.0	28...	1310	59	2000	24.0
MAR 01...	1335	1.4	1640	.0	AUG 03...	1100	9.6	2000	17.0
22...	1155	1450	437	.0	SEP 07...	1035	3.5	1640	21.0
24...	1435	979	275	.5					
27...	1850	5290	261	4.0					

LITTLE MISSOURI RIVER BASIN

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06336515 LOWER HAY CREEK TRIBUTARY NEAR WIBAUX, MT

LOCATION.--Lat 47°02'26", long 104°08'04", in NW¼SW¼SW¼ sec.21, T.15 N., R.60 E., Wibaux County, Hydrologic Unit 10110204, on left bank, and 5.5 mi (8.8 km) northeast of Wibaux.

DRAINAGE AREA.--10 mi² (26 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March to September 1978.

GAGE.--Water-stage recorder.

REMARKS.--Water-discharge records fair.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 10 ft³/s (0.28 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 19	----	*50 1.42	*6.67 2.033	June 29	1645	16 0.45	2.23 0.680

No flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						.00	1.6	.31	3.5	3.6	.04	.03
2						.00	1.1	.29	2.3	1.2	.04	.03
3						.00	1.7	.27	1.5	.44	.04	.03
4						.00	1.5	.37	1.0	.93	.04	.03
5						.00	1.3	.58	.64	3.3	.04	.03
6						.00	.84	.83	.44	1.8	.06	.03
7						.00	.52	.75	.39	1.3	.04	.03
8						.00	.43	1.0	.39	.52	.04	.03
9						.10	.40	.97	.34	.39	.04	.03
10						.20	.41	.60	.29	.27	.04	.03
11						.50	.40	.50	.22	.20	.04	.03
12						2.5	.43	.99	.20	.17	.04	.04
13						10	.41	.77	.18	.13	.04	.04
14						12	.43	.53	.17	.10	.03	.04
15						13	.41	.39	.30	.06	.03	.04
16						11	.41	.33	.28	.06	.03	.04
17						13	.41	.34	.28	.05	.03	.04
18						25	.47	.33	.32	.17	.03	.05
19						40	.58	.33	.32	.70	.03	.05
20						36	.58	.37	.30	.44	.04	.05
21						34	.52	.39	.28	.39	.03	.05
22						24	.43	.31	.26	.25	.03	.05
23						19	.40	.21	.24	.19	.03	.04
24						16	.36	.19	.30	.15	.03	.04
25						14	.32	.16	.35	.10	.03	.04
26						13	.29	.15	.31	.06	.03	.04
27						13	.29	.15	.27	.05	.03	.04
28						8.3	.29	.14	.22	.04	.03	.04
29						3.5	.31	.15	.5.6	.04	.03	.04
30						3.0	.31	.39	8.2	.04	.03	.04
31						2.4	---	3.5	---	.04	.03	---
TOTAL						313.50	17.85	16.59	29.39	17.18	1.09	1.14
MEAN						10.1	.60	.54	.98	.55	.035	.038
MAX						40	1.7	3.5	8.2	3.6	.06	.05
MIN						.00	.29	.14	.17	.04	.03	.03
1C=FT						622	35	33	58	34	2.2	2.3

LITTLE MISSOURI RIVER BASIN

06336515 LOWER HAY CREEK TRIBUTARY NEAR WIBAUX, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1977 to July 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT
NOV 18...	1350	.02	3610	7.8	2.5	1800	1400	240	290	270	25
MAR 13...	1630	--	740	7.3	.5	350	230	60	48	39	19
15...	1130	--	495	7.6	1.0	220	120	44	26	19	15
23...	1040	--	580	7.8	.5	250	140	49	51	23	16

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINEITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CU2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
NOV 18...	2.8	11	530	0	430	13	1800	25	.1	6.2
MAR 13...	.9	14	150	0	120	12	270	5.8	.1	7.1
15...	.6	12	120	0	98	4.8	140	3.8	.1	7.6
23...	.6	9.7	140	0	110	3.6	180	4.0	.1	8.4

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FI)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MU)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)
NOV 18...	2910	3.96	.16	.58	10	1	30	40	0	2200
MAR 13...	519	.71	--	1.3	10	170	300	230	0	450
15...	312	.42	--	1.5	10	160	160	120	0	290
23...	375	.51	--	.97	0	170	90	100	2	320

SUSPENDED SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)
MAR					
13...	1720	--	15	35	1.5
15...	1120	.5	11	41	1.2
15...	1535	.5	15	32	1.3
16...	0830	--	--	18	--
16...	1630	--	--	21	--
17...	1625	.0	8.9	31	.75
18...	1050	.0	22	39	2.4
21...	1100	.5	33	163	15
22...	1200	1.0	26	231	17
23...	1115	.5	10	54	1.5
24...	0900	.5	--	30	--
28...	1330	5.0	2.9	54	.42
JUN					
29...	1300	--	3.2	596	5.3
JUL					
07...	0915	--	1.5	6	.03

LITTLE MISSOURI RIVER BASIN

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06336600 BEAVER CREEK NEAR TROTTERS, ND

LOCATION.--Lat 47°09'47", long 103°59'32", in SW¼SW¼NE¼ sec.33, T.143 N., R.105 W., Golden Valley County, Hydrologic Unit 10110204, on left bank 100 ft (30 m) upstream from bridge on county road, 2.4 mi (3.9 km) west of Montana-North Dakota State line, 13 mi (21 km) southwest of Trotters, 17 mi (27 km) north of Beach, 20 mi (32 km) upstream from Elk Creek, and 27 mi (43 km) above mouth.

DRAINAGE AREA.--485 mi² (1,260 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to September 1978.

GAGE.--Water-stage recorder. Altitude of gage is 2,370 ft (722 m), from topographic map.

REMARKS.--Water-discharge records good except those for periods from October to March and July to September, which are poor.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.66 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)				
Mar. 22	----	2,500	70.8	a*19.27	5.874	June 29	----	1,140	32.3	b12.65	3.856
Mar. 29	0900	*2,720	77.0	18.61	5.672						

a - Backwater from ice.

b - From floodmark.

Minimum daily, 0.04 ft³/s (0.001 m³/s) Oct. 3-7, 10-15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.28	.28	1.7	2.0	1.0	1.7	1010	42	61	80	11	2.1
2	.12	.36	2.0	2.0	1.0	1.7	681	39	96	70	11	1.4
3	.04	.36	2.2	2.0	1.0	1.7	405	37	134	90	11	1.1
4	.04	.32	2.3	2.0	1.1	1.7	296	40	132	100	11	.98
5	.04	.36	2.2	2.0	1.2	1.8	290	39	109	80	11	.91
6	.04	.40	2.1	2.0	1.3	2.0	321	41	86	70	9.9	.54
7	.04	.40	2.0	1.9	1.5	2.2	271	42	69	90	9.1	.46
8	.12	.49	1.8	1.9	1.6	2.5	224	46	57	120	8.5	.48
9	.12	.40	1.4	1.9	1.6	4.0	178	50	49	100	8.3	.45
10	.04	.70	1.6	1.8	1.6	6.0	147	50	42	80	10	.33
11	.04	.49	1.9	1.7	1.6	7.0	127	51	37	60	11	.43
12	.04	.59	2.0	1.6	1.6	6.0	114	79	33	50	11	2.1
13	.04	.62	2.0	1.5	1.6	9.0	105	76	33	36	11	6.0
14	.04	1.1	2.0	1.4	1.5	12	96	64	33	31	9.9	4.1
15	.04	1.1	2.0	1.3	1.5	14	89	55	34	28	10	2.5
16	.12	1.3	2.0	1.1	1.5	16	82	51	30	36	9.6	1.7
17	.16	1.0	2.0	1.0	1.4	30	77	49	27	45	9.3	.89
18	.12	.90	2.0	1.1	1.4	50	74	44	25	36	8.4	.99
19	.16	.80	2.0	1.2	1.4	100	73	41	23	47	7.5	3.1
20	.16	.80	2.0	1.2	1.7	600	69	39	22	55	6.8	3.9
21	.20	.80	2.0	1.2	2.1	1600	66	36	21	33	6.9	4.0
22	.28	.80	2.0	1.2	2.3	2500	64	34	20	27	7.3	2.5
23	.32	.60	2.0	1.3	2.6	1800	61	32	19	23	8.1	1.8
24	.32	.80	2.0	1.4	2.1	1200	59	29	21	20	6.2	1.4
25	.32	.80	2.0	1.8	2.0	950	54	28	35	18	5.6	1.1
26	.24	.90	2.0	1.9	2.0	1130	50	26	32	16	4.2	.68
27	.28	1.0	2.0	1.7	1.9	1760	48	24	27	15	3.9	.40
28	.32	1.1	2.0	1.3	1.8	2210	46	24	23	13	3.2	.63
29	.28	1.3	2.0	1.1	---	2440	44	23	212	12	2.6	.54
30	.32	1.5	2.0	1.0	---	1320	43	26	117	12	2.4	.79
31	.32	---	2.0	1.0	---	1090	---	41	---	12	2.3	---
TOTAL	5.00	22.77	61.2	47.5	44.9	18869.3	5264	1298	1659	1505	248.0	48.30
MEAN	.16	.76	1.97	1.53	1.60	609	175	41.9	55.3	48.5	8.00	1.61
MAX	.32	1.5	2.3	2.0	2.6	2500	1010	79	212	120	11	6.0
MIN	.04	.28	1.4	1.0	1.0	1.7	43	23	19	12	2.3	.33
AC-FT	9.9	45	121	94	89	37430	10440	2570	3290	2990	492	96

WTR YR 1978 TOTAL 29072.97 MEAN 79.7 MAX 2500 MIN .04 AC-FT 57670

LITTLE MISSOURI RIVER BASIN
06336600 BEAVER-CREEK NEAR TROTTERS, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1977 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION	COLI- FORM, FECAL, 0.7 JM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)
OCT 14...	0930	.04	2300	8.4	10.0	7.5	9.4	86	K10	28	650
NOV 11...	1100	.42	2850	8.1	5.5	2.0	11.4	88	<1	170	620
DEC 08...	1330	1.8	3100	--	-15.5	.0	--	--	K4	100	750
JAN 06...	1220	2.0	2930	7.8	.5	.0	14.0	105	K12	K66	750
FEB 16...	1200	1.5	2890	8.0	-18.5	.0	12.4	93	K2	K36	840
MAR 16...	1215	16	1200	8.2	-1.5	.0	12.1	90	21	--	310
APR 05...	1230	293	905	8.1	9.0	7.5	10.1	91	77	--	270
MAY 02...	1200	39	1950	8.3	15.5	12.5	9.4	96	K4	50	560
JUN 20...	1645	22	1810	8.3	12.0	11.0	9.2	107	60	30	330
JUL 13...	1030	38	1630	8.2	22.0	21.0	7.7	94	250	410	500
AUG 03...	1030	11	1930	8.4	18.0	18.0	8.5	98	77	110	520
SEP 15...	1125	2.6	2430	8.3	19.0	13.0	9.1	95	45	68	630

DATE	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LITY (MG/L AS CACO3)
OCT 14...	210	94	100	310	51	5.3	10	511	11	437
NOV 11...	170	85	100	460	61	8.0	12	560	0	459
DEC 08...	--	120	110	440	56	7.0	12	--	--	--
JAN 06...	260	120	110	420	54	6.7	11	600	0	490
FEB 16...	300	140	120	450	53	6.7	11	659	0	540
MAR 16...	120	57	40	140	49	3.5	10	237	0	190
APR 05...	100	51	35	100	44	2.6	8.2	205	0	170
MAY 02...	230	110	73	260	49	4.7	10	422	0	350
JUN 20...	0	67	39	340	64	8.2	8.0	466	0	380
JUL 13...	220	89	68	210	47	4.1	11	344	0	280
AUG 03...	120	110	60	300	55	5.7	11	470	6	395
SEP 15...	200	110	87	360	55	6.2	12	521	0	430

06336600 BEAVER CREEK NEAR TROTTERS, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 14...	3.4	850	8.5	.3	6.4	1680	1640	2.28	.18	.00
NOV 11...	7.4	1100	9.9	.3	4.3	2090	2050	2.84	2.37	.03
DEC 08...	--	1100	10	.0	8.4	2170	--	2.95	10.5	.09
JAN 06...	15	1100	15	.3	11	2150	2080	2.92	11.6	.35
FEB 16...	11	1200	16	.2	13	2240	2280	3.05	9.07	.50
MAR 16...	2.4	390	5.0	.1	7.9	780	767	1.06	33.7	.62
APR 05...	2.6	320	3.5	.2	7.6	617	627	.84	488	.45
MAY 02...	3.4	750	7.1	.2	5.7	1430	1420	1.94	152	.00
JUN 20...	3.7	520	5.3	.4	7.7	1270	1220	1.73	76.5	.01
JUL 13...	3.5	620	5.5	.2	9.4	1220	1180	1.66	126	.09
AUG 03...	3.0	810	7.6	.3	10	1590	1550	2.16	47.2	.00
SEP 15...	4.2	900	8.9	.2	8.5	1800	1740	2.45	12.6	.02

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT 14...	.03	.57	.60	.60	.06	.01	750	50	13	1.0
NOV 11...	.05	.81	.86	.89	.06	.02	730	40	12	.9
DEC 08...	.22	.38	.60	.69	.03	.00	660	30	8.0	.7
JAN 06...	.28	.18	.46	.81	.03	.01	630	30	6.7	.6
FEB 16...	.04	.22	.26	.76	.03	.01	650	20	13	.5
MAR 16...	.18	1.1	1.3	1.9	.12	.04	290	100	13	.4
APR 05...	.25	1.1	1.3	1.8	.22	.02	230	30	18	3.9
MAY 02...	.03	.84	.87	.87	.08	.00	490	20	8.0	2.8
JUN 20...	.01	.71	.72	.73	.08	.01	340	20	11	2.0
JUL 13...	.07	1.3	1.4	1.5	.10	.01	540	50	8.4	2.2
AUG 03...	.00	.94	.94	.94	.04	.00	700	20	8.2	1.2
SEP 15...	.01	.57	.58	.60	.02	.01	700	20	8.1	.5

LITTLE MISSOURI RIVER BASIN

06336600 BEAVER CREEK NEAR TROTTERS, ND--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
NOV 11...	1100	0	--	1	--	300	--	0	--	0	--
APR 05...	1230	0	3	3	100	0	0	0	0	1	10
JUN 20...	1645	0	2	2	200	300	10	5	0	0	10
AUG 03...	1030	0	--	2	--	200	--	0	--	0	--

DATE	CHRU- MIUM, DIS- SOLVED (UG/L AS CR)	COBAL- T, TOTAL RECOV- ERABLE (UG/L AS CO)	COBAL- T, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PD)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
NOV 11...	0	--	0	--	2	--	1	--	70	--	50
APR 05...	0	4	1	11	2	10	3	20	20	330	80
JUN 20...	0	0	0	9	7	--	--	40	40	200	10
AUG 03...	10	--	0	--	9	--	0	--	60	--	20

DATE	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MD)	VICKEL, TOTAL RECOV- ERABLE (UG/L AS NI)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 11...	--	.0	--	3	--	2	--	0	.7	--	20
APR 05...	.0	.0	--	2	12	0	0	0	1.0	20	0
JUN 20...	.0	.0	3	2	5	2	1	0	1.6	20	20
AUG 03...	--	.0	--	3	--	4	--	0	.0	--	10

DATE	TIME	ARSENIC TOTAL IN BOT- TOM MA- TERIAL (UG/G AS AS)	BARIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS BA)	BERYL- LIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	CADMIUM RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CD)	CHRU- MIUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	COBAL- T, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CO)	COPPER, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS CU)
APR 05...	1230	170	2300	1	1	30	10	4
JUN 20...	1645	17	150	0	0	40	8	8

DATE	LEAD, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS PB)	MANGA- NESE, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	MERCURY RECOV. FM BOT- TOM MA- TERIAL (UG/L AS HG)	MOLYB- DENUM, RECOV. FM BOT- TOM MA- TERIAL (UG/G)	NICKEL, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS NI)	SELE- NIUM, TOTAL IN BOT- TOM MA- TERIAL (UG/G)	ZINC, RECOV. FM BOT- TOM MA- TERIAL (UG/G AS ZN)
APR 05...	20	3500	.02	0	5	0	100
JUN 20...	20	560	.06	3	12	0	17

06336600 BEAVER CREEK NEAR TROTTERS, ND--Continued

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)
APR 05...	1230	<6.8	21	14	15
SEP 15...	1125	19	.6	13	1.4

SUSPENDED SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)
OCT 14...	0930	7.5	.04	52	.01
NOV 11...	1100	2.0	.42	108	.12
DEC 08...	1330	.0	1.8	79	.38
JAN 06...	1220	.0	2.0	26	.14
FEB 16...	1200	.0	1.5	100	.40
MAR 16...	1215	.0	16	69	3.0
28...	1430	3.0	2350	2560	16200
APR 07...	1000	7.5	286	286	2170
MAY 02...	1200	12.5	39	144	15
JUN 20...	1645	11.0	22	140	8.3
27...	1215	--	27	190	14
JUL 13...	1030	21.0	38	175	18
AUG 03...	1030	18.0	11	124	3.7
SEP 15...	1125	13.0	2.6	35	.25

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

		BED MAT. FALL DIAM.	BED MAT. FALL DIAM.	BED MAT. FALL DIAM.	BED MAT. FALL DIAM.	BED MAT. FALL DIAM.	
DATE	TIME	TEMPER- ATURE (DEG C)	% FINER THAN .125 MM	% FINER THAN .250 MM	% FINER THAN .500 MM	% FINER THAN 1.00 MM	% FINER THAN 2.00 MM
APR 07...	1000	7.5	22	39	64	75	81
MAY 02...	1200	12.5	4	7	11	12	21
JUN 20...	1645	11.0	22	39	64	75	81
		BED MAT. SIEVE DIAM.	BED MAT. SIEVE DIAM.	BED MAT. SIEVE DIAM.	BED MAT. SIEVE DIAM.	BED MAT. SIEVE DIAM.	BED MAT. SIEVE DIAM.
DATE		% FINER THAN 4.00 MM	% FINER THAN 8.00 MM	% FINER THAN 16.0 MM	% FINER THAN 32.0 MM	% FINER THAN 64.0 MM	% FINER THAN 128 MM
APR 07...	87	94	96	98	100	--	
MAY 02...	34	55	75	87	97	100	
JUN 20...	87	94	96	98	100	--	

LITTLE MISSOURI RIVER BASIN

06336600 BEAVER CREEK NEAR TROTTERS, ND--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON								
DATE	OCT 14, 77		NOV 11, 77		DEC 8, 77		JAN 6, 78	
TIME	0930		1100		1330		1220	
TOTAL CELLS/ML	10000		2000		170		130	
DIVERSITY: DIVISION	2.0		1.2		1.0		1.5	
...CLASS	2.2		1.2		1.5		1.5	
...ORDER	2.4		1.3		1.9		1.5	
...FAMILY	2.8		1.6		2.7		2.6	
...GENUS	3.3		1.7		2.9		2.8	
ORGANISM	CELLS	PER-	CELLS	PER-	CELLS	PER-	CELLS	PER-
	/ML	CENT	/ML	CENT	/ML	CENT	/ML	CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...CHARACIACEAE								
...SCHROEDERIA	--	-	40	2	--	-	25#	20
...OOCYSTACEAE								
...ANKISTRODESMUS	420	4	180	9	7	4	6	5
...CLOSTERIOPSIS	--	-	--	-	28#	17	--	-
...SCENEDESMACEAE								
...CRUCIGENIA	560	5	--	-	--	-	25#	20
...SCENEDESMUS	1100	11	40	2	--	-	--	-
...TETRASTRUM	--	-	160	8	--	-	--	-
..TETRASPORALES								
...PALMELLACEAE								
...GLOEOPHYTIIS	280	3	--	-	--	-	--	-
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
...CHLAMYDOMONAS	--	-	--	-	35#	21	--	-
..ZYGNEMATALES								
...DESMIDIACEAE								
...COSMARUM	--	-	20	1	--	-	--	-
...ZYGNEMATAACEAE								
...MOUGEOTIA	210	2	--	-	--	-	--	-
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
...CYCLOTELLA	140	1	--	-	--	-	--	-
..PENNALES								
...ACHNANTHACEAE								
...COCCONEIS	--	-	--	-	--	-	6	5
...DIATOMACEAE								
...DIATOMA	--	-	--	-	21	13	--	-
...GOMPHONEMACEAE								
...GOMPHONEMA	--	-	--	-	7	4	--	-
...NAVICULACEAE								
...CALONEIS	--	-	--	-	7	4	--	-
...NAVICULA	140	1	20	1	7	4	19	15
...NITZSCHIA								
...NITZSCHIA	350	3	--	-	28#	17	13	10
..CHRYSOPHYCEAE								
...CHRYSDOMONADALES								
...CHROMULINACEAE								
...CHRYSUCCOCCUS	--	-	--	-	28#	17	--	-
...KEPHYRIUM	910	9	--	-	--	-	--	-
...OCHROMONADACEAE								
...DINOBYRON	910	9	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
...CRYPTOMONADALES								
...CRYPTOCHRYSIDACEAE								
...RHODOMONAS	70	1	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROOCOCCALES								
...CHROOCOCCACEAE								
...AGMENELLUM	1100	11	--	-	--	-	--	-
...ANACYSTIS	--	-	79	4	--	-	--	-
...HORMOGONALES								
...OSCILLATORIACEAE								
...SPIRULINA	--	-	20	1	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
...EUGLENA	560	5	20	1	--	-	6	5
...PHACUS	140	1	--	-	--	-	--	-
...TRACHELIDOMONAS	3200#	32	1400#	70	--	-	25#	20
PYRRHOPHYTA (FIRE ALGAE)								
..PYRRHOPHYCEAE								
...PERIDINIALES								
...PERIDINIACEAE								
...PERIDINIUM	70	1	20	1	--	-	--	-

06336600 BEAVER CREEK NEAR TROTTERS, ND--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	FEB 16,78 1200	MAR 16,78 1215	APR 5,78 1230	MAY 2,78 1200				
TOTAL CELLS/ML	160	1000	260	13000				
DIVERSITY: DIVISION	1.6	1.5	1.4	0.8				
..CLASS	1.6	1.5	1.4	0.8				
..ORDER	1.6	1.6	0.0	1.0				
...FAMILY	2.3	2.4	0.0	1.0				
....GENUS	2.6	2.4	0.0	1.1				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...CHARACIACEAE								
....SCHROEDERIA	21	14	--	-	--	-	--	-
...COELASTRACEAE								
...COELASTRUM	--	-	61	6	--	-	--	-
...ODCYSTACEAE								
....ANKISTRODES MUS	--	-	--	-	--	-	330	3
...ODCYSTIS	--	-	--	-	--	-	430	3
...SELENASTRUM	--	-	--	-	--	-	220	2
...TREUBARIA	--	-	10	1	--	-	--	-
...SCENEDESMACEAE								
....CRUCIGENIA	28#	18	--	-	--	-	--	-
...SCENEDES MUS	*	0	20	2	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE	--	-	--	-	20	8	--	-
...CHLAMYDOMONAS	--	-	10	1	--	-	330	3
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
..PENNALES								
...NAVICULACEAE								
...ENTOMONEIS	--	-	--	-	--	-	*	0
..CENTRALES								
...COSCINODISACEAE								
...CYCLOTELLA	--	-	--	-	20	8	11000#	82
..PENNALES								
...ACHNANTHACEAE								
...ACHNANTHES	--	-	--	-	--	-	110	1
...CYMBELLACEAE								
...CYMBELLA	7	5	20	2	--	-	--	-
...FRAGILARIACEAE								
...SYNEDRA	7	5	100	10	--	-	--	-
...GOMPHONEMACEAE								
....GOMPHONEMA	--	-	10	1	--	-	--	-
...NAVICULACEAE								
...NAVICULA	35#	23	110	11	--	-	--	-
...NITZSCHIACEAE								
...NITZSCHIA	--	-	91	9	--	-	220	2
...SURIRELLACEAE								
...SURIRELLA	--	-	10	1	--	-	*	0
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...HORMOGONALES								
...OSCILLATORIACEAE								
...OSCILLATORIA	--	-	540#	52	--	-	--	-
...HORMOGONALES	--	-	--	-	180#	69	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....EUGLENA	21	14	--	-	--	-	--	-
....PHACUS	--	-	10	1	--	-	--	-
...TRACHELOMONAS	35#	23	30	3	--	-	650	5
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE	--	-	--	-	40#	15	--	-

LITTLE MISSOURI RIVER BASIN

06336600 BEAVER CREEK NEAR TROTTERS, ND--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE TIME	PHYTOPLANKTON							
	JUN 20, 78		JUL 13, 78		AUG 3, 78		SEP 15, 78	
	1645		1030		1030		1125	
TOTAL CELLS/ML	1400		59000		110000		3200	
DIVERSITY: DIVISION	1.4		1.6		0.5		1.6	
..CLASS	1.4		1.7		0.5		1.7	
..ORDER	1.5		1.9		1.3		1.9	
...FAMILY	2.3		2.4		1.3		2.2	
....GENUS	2.7		3.5		1.9		2.4	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....MICRACTINIACEAE								
....MICRACTINIUM	--	-	930	2	--	-	--	-
....JOCYSTACEAE								
....ANKISTRODESMUS	44	3	1600	3	900	1	210	7
....CHODATELLA	--	-	*	0	--	-	--	-
....DICTYOSPHAERIUM	--	-	6500	11	--	-	--	-
....KIRCHNERIELLA	--	-	1900	3	--	-	--	-
....JOCYSTIS	180	13	2300	4	600	1	--	-
....SELENASTRUM	--	-	--	-	--	-	28	1
....TREUBARIA	--	-	*	0	--	-	--	-
....SCENEDESMACEAE								
....ACTINASTRUM	--	-	2800	5	2400	2	--	-
....CRUCIGENIA	59	4	930	2	1500	1	610#	19
....SCENEDESMUS	620#	44	4900	8	2600	2	170	5
....TETRASTRUM	--	-	1600	3	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
...CHLAMYDOMONAS	--	-	1600	3	--	-	--	-
..ZYGEMATALES								
...DESMIDIACEAE								
....CLOSTERIUM	--	-	--	-	*	0	--	-
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINUODISCACEAE								
....CYCLOTELLA	44	3	9800#	17	*	0	56	2
....SKELETONEMA	--	-	3000	5	--	-	--	-
..PENNALES								
...FRAGILARIACEAE								
....FRAGILARIA	130	9	--	-	*	0	--	-
...NAVICULACEAE								
....GYRUSIGMA	29	2	--	-	--	-	--	-
....NAVICULA	29	2	--	-	--	-	42	1
....PINNULARIA	15	1	--	-	--	-	--	-
...NITZSCHACEAE								
....NITZSCHIA	44	3	700	1	--	-	97	3
..CHRYSOPHYCEAE								
...CHRYSONOMADALES								
...CHROMULINACEAE								
....CHRYSOCOCCLUS	--	-	--	-	--	-	97	3
..XANTHOPHYCEAE								
...HETEROCOCCALES								
....CHLOROTHECIACEAE								
....OPHIUCYTUM	--	-	*	0	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
...CRYPTOMONADALES								
....CRYPTOCHRYSIDACEAE								
....RHODOMONAS	--	-	*	0	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCALES								
....CHROCOCCACEAE								
....AGMENELLUM	--	-	--	-	4200	4	--	-
....ANACYSTIS	180	13	3700	6	19000#	16	1500#	49
...HORMOGONALES								
....OSCILLATORIACEAE								
....LYNGBYA	--	-	--	-	4100	4	110	4
....OSCILLATORIA	--	-	--	-	68000#	62	--	-
...CHROCOCCALES								
....CHROCOCCACEAE								
....GOMPHOSPHAERIA	--	-	15000#	26	4400	4	--	-
EUGLENOPHYTA (EUGLENUIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
....EUGLENA	15	1	*	0	*	0	*	0
....PHACUS	29	2	--	-	--	-	--	-
....TRACHELIDOMONAS	--	-	470	1	*	0	180	6

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06336600 BEAVER CREEK NEAR TROTTERS, ND--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPO- SURE (DAYS)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- FLUOROM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- FLUOROM (MG/M2)
JUN 20...	1645	49	6.06	1.24	.604	.039
AUG 03...	1030	21	3.78	2.76	1.22	.000

PART 12. UPPER COLUMBIA RIVER BASIN

KOOTENAI RIVER BASIN

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY

LOCATION.--Lat 48°59'44", long 115°10'43", in NE¼SW¼SE¼ sec.1, T.37 N., R.28 W., Lincoln County, Hydrologic Unit 17010101, 0.3 mi (0.5 km) south of international boundary, in middle of old channel 1.9 mi (3.1 km) upstream from Young Creek, and 6.4 mi (10.3 km) north of Rexford.

PERIOD OF RECORD.--Water years 1972 to current year.

REMARKS.--Vertical profiles for temperature, specific conductance, dissolved oxygen, pH, transmissibility, and natural light penetration are available in files in Helena district office.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	SAMP- LING DEPTH (FT)	ELEV- ATION ABOVE NGVD (FEET)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHDS)	PH (UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	ALKA- LITY (MG/L AS CAC03)	SILICA, DIS- SOLVED (MG/L AS SiO2)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
JUN											
29...	1030	10	2442.00	0	215	8.4	16.3	9.1	90	4.6	.03
29...	1100	115	2442.00	0	215	8.2	9.8	9.8	90	5.2	.12
29...	1130	1.5	2442.00	0	220	8.4	16.8	9.1	82	4.6	.04
29...	1200	40	2442.00	0	200	8.3	14.0	9.7	96	--	--
JUL											
13...	1030	10	2453.00	0	220	8.4	17.2	9.0	89	4.4	.05
13...	1100	125	2453.00	0	220	8.1	8.8	9.7	94	5.3	.14
13...	1130	1.5	2453.00	0	215	8.4	17.8	9.0	89	4.5	.04
13...	1200	35	2453.00	0	200	8.2	15.3	9.2	86	--	--
27...	1030	10	2458.00	1	210	8.5	19.7	8.8	89	3.8	.02
27...	1130	130	2458.00	1	215	8.0	9.3	9.0	100	5.0	.15
27...	1200	1.5	2458.00	1	210	8.5	20.1	8.8	88	3.8	.02
27...	1230	50	2458.00	1	200	8.1	15.3	8.5	86	--	--
AUG											
10...	1000	10	2458.00	--	215	8.6	21.7	8.9	87	--	.02
10...	1030	128	2458.00	--	225	8.0	9.2	9.2	97	5.6	.18
10...	1100	1.5	2458.00	--	210	8.6	22.4	8.6	89	4.1	.02
10...	1130	45	2458.00	--	235	8.0	16.3	8.1	93	--	--
31...	1030	10	2458.00	3	220	8.5	18.2	8.6	90	3.8	.00
31...	1100	127	2458.00	3	225	8.0	9.3	9.0	97	5.5	.17
31...	1130	1.5	2458.00	3	225	8.5	18.4	8.7	90	3.7	.00
31...	1200	60	2458.00	3	250	8.1	14.5	7.4	96	--	--
SEP											
14...	1030	10	2458.00	2	215	8.5	16.0	8.5	90	3.7	.01
14...	1100	127	2458.00	2	210	7.9	9.0	8.2	97	5.6	.19
14...	1130	1.5	2458.00	2	215	8.5	16.1	8.5	96	3.7	.01
14...	1200	55	2458.00	2	235	8.2	14.9	8.2	93	--	--
28...	1030	10	2456.00	3	235	8.5	15.2	9.0	96	.0	.02
28...	1100	127	2456.00	3	240	8.0	8.8	8.6	103	.1	.22
28...	1130	1.5	2456.00	3	235	8.5	15.2	9.0	95	.1	.02
28...	1200	45	2456.00	3	235	8.4	15.1	9.0	97	--	--

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, TOTAL ORGANIC (MG/L AS C)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)
JUN											
29...	.06	.00	.43	.43	.46	.004	.002	.001	1.6	.386	.000
29...	.14	.00	.29	.29	.41	.013	.005	.005	2.7	--	--
29...	.06	.01	.00	.00	.04	.023	.001	.001	4.6	.193	.000
29...	--	--	--	--	--	--	--	--	--	.251	.000
JUL											
13...	--	.00	.22	.22	.27	.003	.001	.000	2.3	.831	.037
13...	--	.00	.24	.24	.38	.013	.008	.006	2.1	--	--
13...	--	.00	.26	.26	.30	.004	.000	.000	2.3	.787	.037
13...	--	--	--	--	--	--	--	--	--	.372	.000
27...	--	.01	.10	.11	.13	.002	.000	.000	4.9	1.14	.042
27...	--	.01	.11	.12	.27	.012	.009	.009	1.7	--	--
27...	--	.01	.10	.11	.13	.003	.000	.000	2.1	.819	.000
27...	--	--	--	--	--	--	--	--	--	.546	.000
AUG											
10...	--	.02	.13	.15	.17	.001	.001	.000	1.7	.889	.000
10...	--	.02	.13	.15	.33	.009	.008	.008	1.8	--	--
10...	--	.02	.14	.16	.18	.001	.000	.000	1.5	.566	.000
10...	--	--	--	--	--	--	--	--	--	.808	.018
31...	--	.01	.05	.06	.06	.006	.001	.000	1.6	.698	.041
31...	--	.01	.05	.06	.23	.010	.010	.004	1.8	--	--
31...	--	.01	.12	.13	.13	.001	.000	.000	1.5	.679	.041
31...	--	--	--	--	--	--	--	--	--	1.01	.000
SEP											
14...	--	.00	.14	.14	.15	.006	.000	.000	2.1	1.25	.036
14...	--	.00	.11	.11	.30	.014	.013	.010	2.3	--	--
14...	--	.00	.16	.16	.17	.003	.003	.000	1.4	.706	.019
14...	--	--	--	--	--	--	--	--	--	--	--
28...	--	.00	1.4	1.4	1.4	.002	.00	.000	1.5	1.17	.021
28...	--	.00	.22	.22	.44	.015	.01	.010	1.8	--	--
28...	--	.01	1.5	1.5	1.5	.002	.00	.000	1.4	1.25	.000
28...	--	--	--	--	--	--	--	--	--	.910	.000

DATE	TIME	SAMP- LING DEPTH (FT)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L AS C03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HC03)	CAR- BONATE (MG/L AS C03)
JUN											
29...	1030	10	110	17	30	7.8	1.8	.1	.4	110	0
29...	1100	115	110	20	31	7.9	1.8	.1	.4	110	0
29...	1130	1.5	110	25	30	7.9	1.8	.1	.5	100	0

DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS C02)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLOR- IDE, DIS- SOLVED (MG/L AS CL)	FLUOR- IDE, DIS- SOLVED (MG/L AS F)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)
JUN										
29...	.7	15	1.7	.1	116	.16	40	10	0	0
29...	1.1	15	1.6	.1	118	.16	110	0	0	0
29...	.6	15	1.7	.1	111	.15	40	20	0	1

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
JUN										
29...	170	20	3	2	0	0	4	0	60	0
29...	340	30	6	5	0	0	5	0	40	0
29...	130	20	20	1	10	0	4	0	10	0

KOOTENAI RIVER BASIN

12300110 LAKE KOOCANUSA AT INTERNATIONAL BOUNDARY--Continued

SELECTED VERTICAL PROFILES

JUNE 29						AUG. 31					
DEPTH (FT)	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	DIS- SOLVED OXYGEN (MG/L)	PH (UNITS)	TRANS- MISS- IBILITY (PER- CENT)	DEPTH (FT)	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	DIS- SOLVED OXYGEN (MG/L)	PH (UNITS)	TRANS- MISS- IBILITY (PER- CENT)
0	17.3	215	9.1	8.4		0	18.4	225	8.7	8.5	
1	17.2	220	9.1	8.4	35	1	18.4	225	8.7	8.5	25
3	17.0	220	9.1	8.4	35	3	18.4	225	8.7	8.5	24
5	16.8	215	9.1	8.4	35	5	18.4	225	8.6	8.5	24
10	16.3	215	9.1	8.4	28	10	18.2	220	8.6	8.5	24
15	16.0	210	9.2	8.4	27	15	18.0	220	8.5	8.4	21
20	14.9	210	9.3	8.4	23	20	17.9	215	8.3	8.4	21
25	14.6	210	9.4	8.4	27	25	17.7	215	8.2	8.4	16
30	14.3	205	9.5	8.3	24	30	17.7	215	8.2	8.4	16
35	14.3	205	9.6	8.3	18	35	17.5	215	8.0	8.4	16
40	14.0	200	9.7	8.3	13	40	17.1	230	7.9	8.3	18
45	13.7	195	9.7	8.3	5.3	45	16.3	240	7.7	8.2	18
50	13.1	200	9.7	8.2	2.6	50	15.3	245	7.5	8.2	20
55	12.4	195	9.8	8.2	0.2	55	14.8	245	7.4	8.1	16
65	11.9	190	9.9	8.2	0.0	60	14.5	250	7.4	8.1	13
75	11.6	190	9.9	8.2	0.0	65	13.8	240	7.4	8.1	13
85	11.3	195	9.9	8.2	0.0	70	13.2	215	8.0	8.0	17
95	11.0	205	9.9	8.2	0.0	75	12.1	200	8.3	8.1	21
105	10.8	205	9.8	8.2	0.1	85	11.3	205	8.4	8.1	23
115	9.8	215	9.8	8.2	0.1	95	10.8	205	8.4	8.1	20
125	8.8	220	9.8	8.1	0.0	105	10.4	215	8.5	8.1	18
						115	9.8	215	8.9	8.1	13
						127	9.3	225	9.0	8.0	11
						137	9.3	225	9.2	8.0	11

PRIMARY PRODUCTIVITY IN THE EUPHOTIC ZONE

DATE	PRIMARY PRODUCTIVITY (MG C/M ² /DAY)
JUNE	
29...	84
JULY	
13...	94
27...	160
AUG.	
10...	220
31...	120
SEPT.	
14...	110
28...	85

(carbon - 14, light and dark bottle method)

12301300 TOBACCO RIVER NEAR EUREKA, MT

LOCATION.--Lat 48°53'37", long 115°05'13", in NW¼SE¼SE¼ sec.9, T.36 N., R.27 W., Lincoln County, Hydrologic Unit 17010101, on right bank 0.2 mi (0.3 km) upstream from Indian Creek, 1.8 mi (2.9 km) northwest of Eureka, and 2.8 mi (4.5 km) upstream from Lake Koocanusa flow line.

DRAINAGE AREA.--440 mi² (1,140 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,518.85 ft (767.745 m), National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Diversions for irrigation of about 4,500 acres (18 km²) above station.

AVERAGE DISCHARGE.--20 years, 277 ft³/s (7.845 m³/s), 8.55 in/yr (217 mm/yr), 200,700 acre-ft/yr (247 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,470 ft³/s (70.0 m³/s) June 18, 1974, gage height, 6.86 ft (2.091 m); maximum gage height, 7.12 ft (2.170 m) May 27, 1961; minimum daily discharge, 20 ft³/s (0.57 m³/s) Jan. 11, 1963.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about May 22, 1948, reached a discharge of 2,810 ft³/s (79.6 m³/s), from slope-area measurement of peak flow at site 1.5 mi (2.4 km) downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,360 ft³/s (38.5 m³/s) June 7, gage height, 5.08 ft (1.548 m); minimum daily, 40 ft³/s (1.13 m³/s) Nov. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	79	95	50	70	64	831	845	702	621	183	141
2	63	70	94	52	72	62	651	901	721	579	172	132
3	60	96	112	55	74	60	529	933	791	556	163	126
4	58	94	109	65	75	62	457	868	943	544	155	120
5	57	88	108	75	76	64	429	757	1110	547	150	117
6	57	85	112	80	77	66	406	667	1290	503	144	120
7	58	86	116	75	77	69	365	617	1290	471	138	127
8	63	80	97	72	78	72	339	587	1250	450	132	140
9	65	79	84	68	78	83	324	615	1250	476	126	138
10	61	81	75	65	76	63	318	804	1090	474	124	134
11	59	82	90	66	74	84	342	945	956	455	119	139
12	58	80	100	68	70	82	368	848	862	424	117	156
13	61	81	124	70	65	77	346	728	846	388	122	153
14	79	86	144	70	68	75	331	751	869	361	125	151
15	79	87	144	72	70	72	317	1040	843	337	136	148
16	79	85	136	74	72	75	319	1250	779	533	155	151
17	78	85	119	77	74	73	375	1140	709	339	170	147
18	77	81	114	76	73	94	372	1070	693	335	166	143
19	76	60	108	74	72	103	352	1050	720	348	158	142
20	75	50	104	74	72	118	376	1050	696	320	169	141
21	74	40	70	73	72	143	486	1090	706	301	160	137
22	74	50	75	74	72	159	509	1200	724	284	154	140
23	74	65	80	72	75	176	452	1180	744	267	162	143
24	74	80	70	70	76	244	414	1050	749	251	155	146
25	78	90	65	72	70	275	393	970	737	236	149	140
26	78	122	60	72	72	301	428	850	699	233	159	133
27	79	118	62	72	69	337	564	752	665	217	156	131
28	77	111	62	71	69	393	751	740	644	208	153	133
29	77	115	65	71	---	433	852	762	643	198	148	131
30	78	103	70	70	---	526	856	755	650	190	128	129
31	60	---	60	68	---	717	---	717	---	184	130	---
TOTAL	2173	2531	2924	2163	2038	5247	13852	27536	25393	11430	4580	4129
MEAN	70.1	84.4	94.3	69.8	72.8	169	462	888	846	369	148	138
MAX	80	122	144	80	78	717	856	1250	1290	621	183	156
MIN	57	40	60	50	65	60	317	587	643	184	117	117
CFSM	.16	.19	.21	.16	.17	.38	1.05	2.02	1.92	.84	.34	.31
IN.	.18	.21	.25	.18	.17	.44	1.17	2.33	2.15	.97	.39	.35
AC-FT	4310	5020	5800	4290	4040	10410	27480	54620	50370	22670	9080	8190
CAL YR 1977 TOTAL	44007			MEAN 121	MAX 575	MIN 40	CFSM .28	IN 3.72	AC-FT 87290			
WTR YR 1978 TOTAL	103996			MEAN 285	MAX 1290	MIN 40	CFSM .65	IN 8.79	AC-FT 206300			

KOOTENAI RIVER BASIN

12301300 TOBACCO RIVER NEAR EUREKA, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: December 1970 to current year.

INSTRUMENTATION.--Temperature recorder since December 8, 1970.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 25.0°C July 23, Aug. 2, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 21.0°C Aug. 8; minimum, 0.0°C on many days during January and February.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	12.0	11.0	5.5	5.0	1.5	1.5	.5	.5	.0	.0	2.0	1.5
2	12.5	11.0	5.0	4.5	2.0	1.5	.5	.5	.0	.0	1.5	1.0
3	12.0	10.0	5.0	4.0	2.0	2.0	.5	.5	.0	.0	1.0	1.0
4	11.0	9.5	4.5	4.0	2.0	2.0	.5	.5	.0	.0	1.5	1.0
5	10.5	9.0	4.0	4.0	2.0	1.5	.5	.5	.0	.0	1.0	1.0
6	10.0	8.5	4.5	4.0	1.5	1.5	.5	.0	.0	.0	1.0	1.0
7	9.5	9.5	4.5	4.0	1.5	1.5	.0	.0	.0	.0	2.0	1.0
8	9.5	8.5	4.0	3.0	1.5	1.5	.0	.0	.0	.0	3.5	2.0
9	9.5	8.5	3.0	2.5	1.5	1.5	.0	.0	.0	.0	3.5	1.5
10	8.5	7.0	3.5	3.0	1.5	1.5	.0	.0	.0	.0	3.5	1.5
11	8.0	6.0	4.5	3.5	1.5	1.0	.0	.0	.0	.0	3.5	2.5
12	8.5	6.5	5.0	4.5	1.5	1.0	.0	.0	.0	.0	3.0	2.5
13	10.0	8.0	5.0	5.0	1.5	1.0	.0	.0	.0	.0	3.0	2.5
14	9.0	7.5	5.0	4.5	1.5	1.0	.0	.0	.0	.0	4.5	2.5
15	8.0	6.5	4.5	4.0	1.5	1.5	.0	.0	.0	.0	5.0	2.0
16	8.5	7.0	4.0	3.5	1.5	1.5	.0	.0	.0	.0	4.0	3.0
17	8.0	6.5	3.5	3.0	1.5	1.0	.0	.0	.0	.0	5.0	3.0
18	7.5	6.0	3.0	2.0	1.0	.5	.0	.0	.0	.0	6.0	4.0
19	8.0	6.5	2.0	2.0	1.0	.5	.0	.0	.0	.0	5.0	3.5
20	7.5	5.5	2.0	2.0	1.0	.5	.0	.0	.5	.0	6.0	3.0
21	6.5	5.0	2.0	2.0	1.0	1.0	.0	.0	.5	.0	6.0	3.5
22	6.5	5.0	2.0	2.0	1.0	1.0	.0	.0	1.5	.5	6.0	3.5
23	6.5	5.5	2.0	2.0	1.0	1.0	.0	.0	1.5	1.0	7.0	4.0
24	6.5	5.5	2.0	2.0	1.0	.5	.0	.0	1.5	1.0	6.0	4.5
25	6.5	5.5	2.0	1.5	.5	.5	.0	.0	1.5	1.0	4.5	4.0
26	6.0	5.5	1.5	1.0	.5	.5	.0	.0	2.0	1.0	4.5	4.0
27	5.5	4.0	1.0	1.0	.5	.5	.0	.0	2.5	1.5	4.5	4.0
28	5.0	4.5	1.0	1.0	.5	.5	.0	.0	2.5	2.0	4.5	4.0
29	5.5	5.0	1.5	1.0	.5	.5	.0	.0	---	---	5.0	4.0
30	5.5	5.0	1.5	1.5	.5	.5	.0	.0	---	---	5.0	4.5
31	5.5	5.0	---	---	.5	.5	.0	.0	---	---	4.5	4.0
MONTH	12.5	4.0	5.5	1.0	2.0	.5	.5	.0	2.5	.0	7.0	1.0

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

[illegible]

KOOTENAI RIVER BASIN

12301550 PINKHAM CREEK NEAR REXFORD, MT

LOCATION.--Lat 48°49'57", long 115°13'39", in NE¼NE¼NW¼ sec.4, T.35 N., R.28 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, on right bank 200 ft (60 m) upstream from road bridge, 0.9 mi (1.4 km) upstream from Lake Koocanusa flow line, and 5.5 mi (8.8 km) southwest of present site of Rexford.

DRAINAGE AREA.--75.7 mi² (196.1 km²).

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,638.57 ft (804.236 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

REMARKS.--Records fair. No known regulations or diversions above station.

AVERAGE DISCHARGE.--6 years, 27.0 ft³/s (0.765 m³/s), 4.84 in/yr (123 mm/yr), 19,560 acre-ft/yr (24.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 689 ft³/s (19.5 m³/s) May 11, 1976, gage height, 4.26 ft (1.298 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 250 ft³/s (7.08 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 31	0700	*290 8.21	*3.10 0.945	May 15	2330	270 7.65	2.93 0.893

No flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1	.00	.00	3.2	1.7	2.0	.82	158	176	97	11	2.8	.96	
2	.00	3.0	3.6	1.7	1.7	.48	112	188	96	11	2.3	.90	
3	.00	7.7	5.3	1.7	1.8	.96	91	190	100	11	1.8	.80	
4	.00	2.5	8.0	1.7	1.9	1.3	78	152	105	10	1.6	.70	
5	.00	1.1	5.3	1.7	1.9	1.3	77	128	112	14	1.3	.60	
6	.00	.73	3.9	1.8	2.0	1.0	68	116	108	17	.96	.60	
7	.00	.60	3.9	1.9	1.9	1.0	59	114	97	20	.82	.90	
8	.00	.45	2.0	1.9	1.9	1.0	54	118	84	22	.64	.90	
9	.00	.29	1.6	1.9	1.8	1.3	53	138	75	34	.50	.90	
10	.00	.26	1.9	1.8	2.1	1.7	57	188	70	28	.46	.80	
11	.00	.26	4.3	1.7	1.7	2.3	77	180	65	25	.40	.70	
12	.00	.26	5.3	1.7	1.3	2.0	68	146	56	21	.33	.60	
13	.00	.26	6.2	1.7	.78	1.7	60	128	49	18	.45	1.0	
14	.00	.26	6.5	1.7	1.4	1.7	56	170	49	14	.60	1.0	
15	.00	.27	7.4	1.7	1.8	1.0	52	245	42	12	.78	1.0	
16	.00	.29	8.4	1.7	1.4	1.9	56	228	41	11	1.4	1.1	
17	.00	.27	8.0	1.7	1.4	1.9	64	205	38	13	3.1	1.0	
18	.00	.21	7.4	1.7	1.3	2.5	57	195	35	15	3.2	.90	
19	.00	.17	4.8	1.7	1.3	4.1	60	190	31	19	2.8	.80	
20	.00	.06	4.5	1.8	1.3	5.3	75	184	30	15	2.7	.75	
21	.00	.00	4.5	1.7	1.3	7.4	96	195	27	11	2.5	.73	
22	.00	.00	4.3	1.7	1.3	9.4	83	195	24	9.4	2.3	.73	
23	.00	.00	4.1	1.5	1.6	16	68	164	22	8.0	1.7	.69	
24	.00	.00	1.8	1.7	1.8	27	62	140	21	6.8	1.5	.50	
25	.00	.00	1.4	2.0	1.9	48	62	144	19	5.9	1.3	.48	
26	.00	.80	1.7	1.9	2.1	48	92	128	20	4.8	1.1	.55	
27	.00	15	1.8	1.9	1.9	65	146	108	19	4.5	.91	.73	
28	.00	15	1.3	1.9	1.7	86	184	108	16	4.5	.73	.78	
29	.00	11	1.3	1.9	---	104	182	114	14	3.7	.60	.69	
30	.00	5.0	1.6	1.9	---	166	186	122	13	3.1	.50	.69	
31	.00	---	1.9	1.5	---	240	---	108	---	2.7	.69	---	
TOTAL	.00	65.74	127.2	54.5	46.28	852.06	2593	4905	1575	405.4	42.79	23.68	
MEAN	.000	2.19	4.10	1.76	1.65	27.5	86.4	158	52.5	13.1	1.38	.79	
MAX	.00	15	8.4	2.0	2.1	240	186	245	112	34	3.2	1.1	
MIN	.00	.00	1.3	1.5	.78	.48	52	108	13	2.7	.33	.48	
CFSM	.000	.03	.05	.02	.02	.36	1.14	2.09	.69	.17	.02	.01	
IN.	.00	.03	.06	.03	.02	.42	1.27	2.41	.77	.20	.02	.01	
AC-FT	.00	130	252	108	92	1690	5140	9730	3120	804	85	47	
CAL YR 1977 TOTAL	2050.54	MEAN	5.62	MAX	71	MIN	.00	CFSM	.07	IN	1.01	AC-FT	4070
WTR YR 1978 TOTAL	10690.65	MEAN	29.3	MAX	245	MIN	.00	CFSM	.39	IN	5.25	AC-FT	21200

12301810 BIG CREEK NEAR REXFORD, MT

LOCATION.--Lat 48°44'53", long 115°21'09", in SE½SW¼SE¼ sec.33, T.35 N., R.29 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, on left bank 500 ft (150 m) downstream from highway bridge, 0.3 mi (0.5 km) upstream from Lake Koocanusa flow line, and 13.6 mi (21.9 km) southwest of present site of Rexford.

DRAINAGE AREA.--139 mi² (360 km²).

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,500.43 ft (762.131 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

REMARKS.--Records fair. No known regulation or diversions above station.

AVERAGE DISCHARGE.--6 years, 127 ft³/s (3.597 m³/s) 12.41 in/yr (315 mm/yr), 92,010 acre-ft/yr (113 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,680 ft³/s (75.9 m³/s) May 11, 1976; maximum gage height, 6.78 ft (2.067 m) May 11, 1976; minimum daily discharge, 5.0 ft (0.14 m³/s) Dec. 9, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,940 ft³/s (54.9 m³/s) May 15, gage height, 5.90 ft (1.798 m), only peak above base of 1,000 ft³/s (28.3 m³/s); minimum daily, 8.0 ft³/s (0.23 m³/s) Nov. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	14	15	27	20	16	16	422	737	421	65	36	22		
2	13	28	27	21	16	14	328	761	426	60	34	22		
3	13	28	34	21	17	12	266	761	452	57	32	21		
4	13	24	34	21	17	15	229	663	508	59	31	20		
5	12	21	29	20	17	17	224	559	533	73	29	19		
6	12	20	27	22	17	17	204	498	513	79	27	19		
7	12	20	27	20	17	17	187	484	443	80	26	22		
8	12	18	25	20	17	17	176	498	391	90	25	22		
9	13	18	24	19	17	19	170	607	347	166	24	22		
10	13	17	26	19	17	19	162	907	304	147	22	21		
11	13	17	28	19	16	20	225	900	264	135	21	20		
12	13	17	30	19	15	21	223	792	231	117	21	21		
13	13	17	32	18	13	21	211	696	213	100	22	22		
14	13	19	32	18	14	20	203	938	193	87	21	22		
15	13	20	37	18	15	19	190	1770	177	79	22	22		
16	13	18	39	18	16	20	209	1450	168	73	27	24		
17	13	17	36	18	16	20	222	1040	153	71	30	22		
18	13	16	34	17	16	23	207	1260	141	76	31	21		
19	12	13	31	17	16	30	220	1010	129	95	29	21		
20	12	10	30	17	16	36	267	1000	122	86	31	20		
21	12	8.0	29	17	16	46	307	1050	111	74	31	20		
22	12	10	27	17	16	59	276	1020	103	67	28	19		
23	12	15	25	17	16	68	250	792	95	62	27	21		
24	12	20	20	17	17	130	228	725	87	56	25	22		
25	15	23	21	17	17	131	236	685	87	52	25	21		
26	15	26	22	17	17	131	339	613	90	48	24	20		
27	15	30	21	17	17	168	533	533	83	48	22	19		
28	14	33	18	17	17	206	668	523	74	46	22	19		
29	14	34	16	17	---	244	696	513	70	42	21	19		
30	14	32	16	17	---	349	708	479	69	39	20	19		
31	14	---	18	15	---	501	---	448	---	38	20	---		
TOTAL	404	604.0	842	567	454	2426	8806	24762	6998	2367	806	624		
MEAN	13.0	20.1	27.2	18.3	16.2	78.3	294	799	233	76.4	26.0	20.8		
MAX	15	34	39	22	17	501	708	1770	533	166	36	24		
MIN	12	8.0	16	15	13	12	170	448	69	38	20	19		
CFSM	.09	.15	.20	.13	.12	.56	2.12	5.75	1.68	.55	.19	.15		
IN.	.11	.16	.23	.15	.12	.65	2.36	6.63	1.87	.63	.22	.17		
AC-FT	801	1200	1670	1120	901	4810	17470	49120	13880	4690	1600	1240		
CAL YR 1977	TOTAL	13127.2	MEAN	36.0	MAX	278	MIN	6.0	CFSM	.26	IN	3.51	AC-FT	26040
WTR YR 1978	TOTAL	49660.0	MEAN	136	MAX	1770	MIN	8.0	CFSM	.98	IN	13.29	AC-FT	98500

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT

LOCATION.--Lat 48°35'06", long 115°13'52", in NW¼NE¼NW¼ 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 (32.3 km) northeast of Libby.

PERIOD OF RECORD.--Water years 1972 to current year.

REMARKS.--Additional vertical profiles for temperature, specific conductance, dissolved oxygen, pH, transmissibility, and natural light penetration are available in files in Helena district office.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	SAMP- LING DEPTH (FT)	ELEV- ATION ABOVE NGVD (FEET)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	ALKA- LINITY (MG/L AS CaCO3)	SILICA, DIS- SOLVED (MG/L AS SiO2)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
OCT												
11...	1200	10	2408.00	0	235	8.5	13.4	9.0	98	3.3	.08	.03
11...	1300	207	2408.00	0	250	7.9	6.0	7.8	110	4.7	.20	.18
11...	1330	1.5	2408.00	0	235	8.5	13.4	9.0	98	3.3	.11	.05
11...	1400	50	2408.00	0	235	8.5	13.3	8.9	100	--	--	--
25...	1100	10	2403.00	1	240	8.5	12.2	9.2	100	3.8	.01	--
25...	1300	203	2403.00	1	250	7.8	6.0	7.2	112	5.8	.13	--
25...	1330	1.5	2403.00	1	240	8.5	12.2	9.2	100	3.8	.01	--
25...	1400	45	2403.00	1	240	8.5	12.2	9.2	100	--	--	--
MAY												
08...	1300	158	2357.00	0	312	8.1	4.4	10.5	126	6.3	.15	--
08...	1315	10	2357.00	0	285	8.2	7.8	11.3	111	6.4	.09	--
08...	1330	1.5	2357.00	0	285	8.1	8.2	11.3	111	6.7	.09	--
08...	1345	25	2357.00	0	285	8.2	7.6	11.2	111	--	--	--
25...	1130	10	2386.00	2	250	8.4	9.6	10.7	101	5.0	.06	--
25...	1200	187	2386.00	2	275	8.1	4.8	10.7	122	5.0	.10	--
25...	1230	1.5	2386.00	2	250	8.4	10.0	10.7	100	4.8	.05	--
25...	1300	25	2386.00	2	235	8.2	8.6	10.6	98	--	--	--
JUN												
15...	1100	10	2421.00	1	190	8.6	13.6	10.2	100	4.2	.08	--
15...	1130	220	2421.00	61	275	8.1	4.9	11.2	120	6.1	.18	--
15...	1200	1.5	2421.00	61	240	8.7	14.0	10.2	96	4.1	.05	--
15...	1230	25	2421.00	61	225	8.5	12.0	10.2	96	--	--	--
27...	1100	10	2440.00	0	225	8.6	14.0	10.1	90	4.1	.10	.07
27...	1130	235	2440.00	0	270	8.1	5.0	11.3	120	6.0	.20	.18
27...	1200	1.5	2440.00	0	230	8.6	14.4	10.1	95	4.3	.10	.08
27...	1230	30	2440.00	0	205	8.4	11.4	10.2	91	--	--	--
JUL												
11...	1130	10	2451.00	2	225	8.5	16.0	9.1	93	4.0	.03	--
11...	1200	250	2451.00	2	270	8.0	5.0	10.7	120	6.0	.15	--
11...	1230	1.5	2451.00	2	190	8.5	17.2	9.2	93	4.0	.03	--
11...	1300	40	2451.00	2	200	8.3	12.6	9.5	87	--	--	--
24...	1030	10	2457.00	0	210	8.6	17.8	9.5	88	3.6	.01	--
24...	1100	253	2457.00	0	270	8.0	5.1	11.0	120	5.7	.14	--
24...	1130	1.5	2457.00	0	215	8.6	18.0	9.5	98	3.6	.00	--
24...	1200	45	2457.00	0	200	8.3	13.2	9.6	85	--	--	--
AUG												
08...	1100	10	2459.00	0	215	8.7	20.9	9.0	90	3.2	.01	--
08...	1130	258	2459.00	0	270	8.0	5.1	10.5	120	5.5	.16	--
08...	1200	1.5	2459.00	0	210	8.7	21.9	9.0	87	3.1	.01	--
08...	1230	50	2459.00	0	200	8.2	13.1	9.2	84	--	--	--
29...	1130	10	2459.00	0	215	8.6	17.7	9.3	87	3.0	.00	--
29...	1200	258	2459.00	0	270	8.0	5.2	11.0	119	6.0	.17	--
29...	1230	1.5	2459.00	0	215	8.6	17.9	9.2	90	3.1	.00	--
29...	1300	55	2459.00	0	210	8.0	14.6	8.8	90	--	--	--
SEP												
12...	1130	10	2458.00	2	205	8.4	17.2	9.0	86	3.0	.01	--
12...	1200	255	2458.00	2	265	7.8	5.2	10.3	120	6.2	.17	--
12...	1230	1.5	2458.00	2	205	8.4	17.2	9.0	88	3.1	.00	--
12...	1300	55	2458.00	2	210	7.8	13.7	8.8	91	--	--	--
26...	1030	10	2456.00	0	205	8.4	14.2	9.1	92	3.0	.01	--
26...	1100	255	2456.00	0	265	7.8	5.2	9.7	121	6.0	.17	--
26...	1130	1.5	2456.00	0	205	8.5	14.5	9.1	92	2.9	.00	--
26...	1200	55	2456.00	0	210	7.9	13.3	8.8	92	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHOPHOS- PHATE, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLORO- PHYLL A PHYTO- PLANK- TON, UNCORR. (UG/L)	CHLORO- PHYLL B PHYTO- PLANK- TON, UNCORR. (UG/L)	CHLORO-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLORO-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	
OCT													
11...	.02	.03	.05	.13	.01	.00	.02	5.4	.953	.000	--	--	
11...	.02	.67	.69	.89	.02	.01	.01	.9	--	--	--	--	
11...	.01	.16	.17	.28	.00	.00	.01	--	1.41	.317	--	--	
11...	--	--	--	--	--	--	--	--	2.16	.597	--	--	
25...	.00	.05	.05	.06	.01	.00	.01	1.0	.445	.016	--	--	
25...	.00	.23	.23	.36	.02	.00	.02	2.2	--	--	--	--	
25...	.00	.05	.05	.06	.01	.00	.01	.5	1.22	.123	--	--	
25...	--	--	--	--	--	--	--	--	1.03	.000	--	--	
MAY													
08...	.03	.16	.19	.34	.005	.005	.004	1.5	3.48	.000	--	--	
08...	.05	.29	.34	.43	.005	.003	.002	2.4	1.20	.296	--	--	
08...	.01	.28	.29	.38	.004	.002	.001	2.7	4.10	.273	--	--	
08...	--	--	--	--	--	--	--	--	--	--	--	--	
25...	.01	.47	.48	.54	.01	.00	.00	2.4	--	--	1.47	<.129	
25...	.00	.21	.21	.31	.01	.00	.00	1.6	--	--	--	--	
25...	.00	.14	.14	.19	.00	.00	.00	2.2	--	--	1.15	<.129	
25...	--	--	--	--	--	--	--	--	--	--	.622	<.132	
JUN													
15...	.03	.15	.18	.26	.013	.013	.002	2.5	--	--	3.29	<.199	
13...	.01	.07	.08	.26	.016	.023	.004	1.6	--	--	--	--	
15...	.01	.20	.21	.26	.013	.016	.002	2.5	--	--	2.73	<.199	
13...	--	--	--	--	--	--	--	--	--	--	2.38	<.199	
27...	.03	.14	.17	.27	.007	.000	.000	1.9	--	--	--	--	
27...	.03	.57	.60	.80	.009	.004	.003	1.2	--	--	--	--	
27...	.01	.14	.15	.25	.004	.001	.000	1.9	--	--	.695	.036	
27...	--	--	--	--	--	--	--	--	--	--	.483	.036	
JUL													
11...	.00	.16	.16	.19	.002	.001	.001	2.5	--	--	.887	.039	
11...	.00	.36	.36	.51	.006	.005	.005	2.0	--	--	--	--	
11...	.00	.33	.33	.36	.001	.000	.000	2.2	--	--	.784	.000	
11...	--	--	--	--	--	--	--	--	--	--	.144	.000	
24...	.00	.07	.07	.08	.002	.000	.000	1.8	--	--	1.04	.042	
24...	.00	.28	.28	.42	.006	.006	.006	1.6	--	--	--	--	
24...	.00	.09	.09	.09	.000	.000	.000	1.5	--	--	.794	.000	
24...	--	--	--	--	--	--	--	--	--	--	.596	.021	
AUG													
08...	.00	.11	.11	.12	.00	.00	.00	1.7	--	--	1.23	.000	
08...	.00	.12	.12	.28	.00	.00	.00	1.3	--	--	--	--	
08...	.00	.12	.12	.13	.00	.00	.00	1.5	--	--	.592	.000	
08...	--	--	--	--	--	--	--	--	--	--	.567	.000	
29...	.01	.29	.30	.30	.00	.00	.00	1.7	--	--	.698	.000	
29...	.01	.49	.50	.67	.00	.00	.00	1.4	--	--	--	--	
29...	.01	.11	.12	.12	.00	.00	.00	1.7	--	--	.744	.000	
29...	--	--	--	--	--	--	--	--	--	--	1.39	.000	
SEP													
12...	.00	.26	.26	.27	.002	.000	.000	1.8	--	--	.646	.019	
12...	.00	.22	.22	.39	.010	.009	.007	1.6	--	--	--	--	
12...	.00	.24	.24	.24	.001	.001	.000	1.8	--	--	.726	.019	
12...	--	--	--	--	--	--	--	--	--	--	.666	.000	
26...	.00	.24	.24	.25	.001	.000	.000	1.8	--	--	1.83	.000	
26...	.00	.14	.14	.31	.010	.010	.005	1.7	--	--	--	--	
26...	.00	.16	.16	.16	.000	.000	.000	--	--	--	.965	.000	
26...	--	--	--	--	--	--	--	--	--	--	1.78	.000	

KOOTENAI RIVER BASIN

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	SAMP- LING DEPTH (FT)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT											
11...	1200	10	120	24	34	9.1	2.4	.1	.5	120	0
11...	1300	207	150	30	40	11	3.3	.1	.7	140	0
11...	1330	1.5	120	21	33	9.0	2.5	.1	.5	120	0
JUN											
27...	1100	10	110	21	30	8.8	2.3	.1	.5	110	0
27...	1130	235	160	36	44	12	3.9	.1	.7	150	0
27...	1200	1.5	120	23	32	9.4	2.3	.1	.5	110	3

DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLOR- IDE, DIS- SOLVED (MG/L AS CL)	FLUOR- IDE, DIS- SOLVED (MG/L AS F)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT										
11...	.6	20	2.4	.1	131	.18	40	20	0	0
11...	2.8	23	3.3	.1	156	.21	40	20	0	0
11...	.6	20	2.4	.1	130	.18	30	40	0	0
JUN										
27...	.4	17	2.4	.1	120	.16	9	20	1	1
27...	1.9	28	3.5	.2	173	.24	7	0	1	1
27...	.5	18	2.0	.1	126	.17	100	20	1	1

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT										
11...	0	10	<100	0	8	10	9	1	0	0
11...	90	10	<100	0	40	0	7	1	0	10
11...	0	10	<100	0	4	0	8	1	0	0
JUN										
27...	150	50	4	1	0	0	4	2	10	10
27...	180	50	5	0	30	0	3	2	10	10
27...	200	110	6	2	0	0	6	1	10	10

12301830 LAKE KOOCANUSA AT TENMILE CREEK, NEAR LIBBY, MT--Continued

SELECTED VERTICAL PROFILES

MAY 25						AUG. 29					
DEPTH (FT)	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	DIS- SOLVED OXYGEN (MG/L)	PH (UNITS)	TRANS- MISS- IBILITY (PER- CENT)	DEPTH (FT)	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	DIS- SOLVED OXYGEN (MG/L)	PH (UNITS)	TRANS- MISS- IBILITY (PER- CENT)
0	10.0	250	10.3	8.4		0	17.9	215	9.2	8.6	
1	10.0	250	10.3	8.4	11	1	17.9	215	9.2	8.6	41
3	10.0	250	10.4	8.4	9.8	3	17.9	215	9.3	8.6	41
5	9.8	250	10.5	8.4	9.8	5	17.9	215	9.3	8.6	41
10	9.6	250	10.6	8.4	9.2	10	17.7	215	9.3	8.6	41
15	9.2	240	10.6	8.4	8.5	15	17.3	210	9.3	8.6	39
20	9.0	235	10.6	8.3	7.9	20	17.2	215	9.3	8.6	39
25	8.6	235	10.6	8.2	6.3	25	17.2	215	9.2	8.6	37
30	8.2	235	10.5	8.2	5.3	30	17.0	215	9.2	8.6	37
40	8.0	245	10.4	8.2	6.3	35	17.0	215	9.2	8.6	37
50	7.8	245	10.4	8.2	8.5	40	16.5	215	9.0	8.3	35
60	7.2	255	10.4	8.2	9.8	45	15.6	215	8.9	8.2	41
70	7.2	270	10.3	8.2	14	50	15.1	210	8.8	8.0	41
80	6.6	270	10.3	8.2	19	55	14.6	210	8.8	8.0	41
90	5.8	275	10.3	8.2	24	60	14.0	200	8.6	8.0	43
100	5.0	270	10.2	8.2	28	70	13.2	200	8.5	8.0	43
115	4.8	270	10.2	8.2	19	80	12.2	195	8.6	8.1	43
130	4.8	270	10.2	8.1	14	90	11.2	200	8.7	8.1	43
145	4.8	275	10.2	8.1	8.5	100	10.4	200	8.8	8.1	33
160	4.8	275	10.2	8.1	5.3	110	9.9	210	9.0	8.1	28
175	4.8	275	10.2	8.1	4.9	120	9.5	210	9.0	8.1	24
187	4.8	275	10.7	8.1	2.6	130	8.9	225	9.2	8.1	20
197	5.0	275	10.6	8.1	0.4	140	8.3	230	9.3	8.1	23
						150	8.0	235	9.5	8.0	25
						160	7.4	245	9.6	8.0	27
						170	6.8	245	9.9	8.0	27
						185	5.9	265	10.4	8.0	32
						200	5.4	270	10.8	8.0	25
						215	5.2	270	10.8	8.0	28
						230	5.2	270	10.9	8.0	21
						245	5.2	270	11.0	8.0	20
						258	5.2	270	11.0	8.0	16
						268	5.2	270	11.2	8.0	14

PRIMARY PRODUCTIVITY IN THE EUPHOTIC ZONE

DATE	PRIMARY PRODUCTIVITY (MG C/M ² /DAY)
OCT.	
11...	160
25...	88
MAY	
08...	160
25...	80
JUNE	
13...	120
27...	140
JULY	
11...	85
24...	150
AUG.	
09...	220
30...	180
SEPT.	
12...	160
26...	230

(carbon-14, light and dark bottle method)

KOOTENAI RIVER BASIN

12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT

LOCATION.--Lat 48°24'43", long 115°18'33", in SW¼NW¼NE¼ sec.33, T.31 N., R.29 W., Lincoln County, Hydrologic Unit 17010101, in middle of old channel 0.2 mi (0.3 km) upstream from Libby Dam, and 11.6 mi (18.7 km) east of Libby.

PERIOD OF RECORD.--Water years 1972 to current year.

REMARKS.--Additional vertical profiles for temperature, specific conductance, dissolved oxygen, pH, transmissibility, and natural light penetration are available in files in Helena district office.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	SAMP- LING DEPTH (FT)	ELEV- ATION ABOVE NGVD (FEET)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	pH (UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	ALKA- LINITY (MG/L AS CaCO3)	SILICA, DIS- SOLVED (MG/L AS SiO2)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DISE- SOLVED (MG/L AS N)
OCT												
12...	1030	10	2408.00	0	235	8.5	13.3	8.8	98	3.3	.03	.08
12...	1200	255	2408.00	0	245	7.8	5.3	7.7	110	4.9	.20	.19
12...	1230	1.5	2408.00	0	235	8.5	13.3	8.8	98	3.2	.05	.07
12...	1300	45	2408.00	0	235	8.5	13.3	8.8	98	--	--	--
26...	1030	10	2402.00	0	235	8.4	12.0	9.0	98	3.9	.03	--
26...	1130	254	2402.00	0	245	7.9	5.6	7.8	113	5.4	.16	--
26...	1200	1.5	2402.00	0	235	8.4	12.0	9.0	101	3.8	.03	--
26...	1230	45	2402.00	0	235	8.4	12.0	9.0	98	--	--	--
MAY												
09...	1230	214	2358.00	61	300	8.1	4.9	9.9	--	6.0	.15	--
09...	1245	10	2358.00	61	272	8.4	7.0	12.2	127	4.5	.01	--
09...	1300	1.5	2358.00	61	272	8.5	7.5	12.2	127	4.5	.04	--
09...	1315	40	2358.00	61	272	8.3	6.1	11.5	127	--	--	--
26...	1100	10	2388.00	1	270	8.4	8.2	11.3	110	4.0	.04	--
26...	1130	245	2388.00	1	280	8.1	4.2	11.6	120	6.0	.15	--
26...	1200	1.5	2388.00	1	270	8.5	8.6	11.3	108	3.9	.02	--
26...	1230	40	2388.00	1	270	8.3	8.0	11.2	110	--	--	--
JUN												
14...	1030	10	2423.00	1	260	8.6	12.5	10.9	100	4.6	.05	--
14...	1100	277	2423.00	1	270	8.1	4.3	11.3	120	6.2	.18	--
14...	1130	1.5	2423.00	1	255	8.6	13.2	10.9	100	4.3	.05	--
14...	1200	35	2423.00	1	260	8.5	11.2	10.9	101	--	--	--
26...	1030	10	2441.00	0	225	8.5	14.2	10.0	100	4.0	.12	.09
26...	1100	290	2441.00	0	270	8.0	4.4	11.2	120	6.1	.21	.23
26...	1200	1.5	2441.00	0	235	8.5	16.1	9.8	100	4.6	.12	.09
26...	1230	35	2441.00	0	220	8.4	11.1	10.2	89	--	--	--
JUL												
12...	1130	10	2452.00	0	220	8.3	14.0	9.2	91	4.5	.04	--
12...	1200	305	2452.00	0	270	7.9	4.5	10.3	120	6.2	.17	--
12...	1230	1.5	2452.00	0	220	8.3	14.2	9.2	92	4.4	.03	--
12...	1300	40	2452.00	0	210	8.3	12.5	9.4	91	--	--	--
26...	1030	10	2458.00	0	215	8.6	17.0	9.3	90	3.6	.01	--
26...	1230	308	2458.00	0	270	8.1	4.5	10.1	120	6.1	.20	--
26...	1300	1.5	2458.00	0	220	8.6	19.5	9.4	93	3.5	.02	--
26...	1330	45	2458.00	0	200	8.3	13.0	9.5	93	--	--	--
AUG												
09...	1100	10	2459.00	0	215	8.6	22.0	8.9	93	3.3	.00	--
09...	1130	310	2459.00	0	270	7.9	4.6	10.2	127	6.2	.22	--
09...	1200	1.5	2459.00	0	215	8.6	22.8	9.1	93	3.3	.00	--
09...	1230	55	2459.00	0	200	8.2	13.2	9.3	87	--	--	--
30...	1030	10	2459.00	2	210	8.6	17.6	9.2	86	3.3	.00	--
30...	1100	310	2459.00	2	265	7.7	4.7	10.2	119	6.1	.18	--
30...	1130	1.5	2459.00	2	210	8.6	18.0	9.2	87	3.3	.01	--
30...	1200	60	2459.00	2	200	8.0	14.0	8.8	86	--	--	--
SEP												
13...	1030	10	2456.00	1	195	8.4	15.0	8.8	88	3.3	.01	--
13...	1100	307	2456.00	1	260	7.8	4.4	9.7	120	6.3	.21	--
13...	1130	1.5	2456.00	1	195	8.4	15.0	8.8	88	3.4	.00	--
13...	1200	55	2456.00	1	190	7.9	12.9	8.4	84	--	--	--
27...	1030	10	2456.00	1	210	8.5	14.9	9.2	90	3.2	.01	--
27...	1100	303	2456.00	1	255	7.9	4.8	9.2	123	6.0	.19	--
27...	1130	1.5	2456.00	1	210	8.5	15.0	9.1	91	3.2	.01	--
27...	1200	50	2456.00	1	200	8.4	14.2	9.1	92	--	--	--

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WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLORO- PHYLL A PHYTO- PLANK- TON, UNCORR. (UG/L)	CHLORO- PHYLL B PHYTO- PLANK- TON, UNCORR. (UG/L)	CHLOR-A PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)
OCT												
12...	.00	.09	.09	.12	.04	.00	.01	1.9	1.16	.000	--	--
12...	.00	.07	.07	.27	.04	.01	.01	.9	--	--	--	--
12...	.00	.07	.07	.12	.01	.02	.00	1.1	2.11	.787	--	--
12...	--	--	--	--	--	--	--	--	1.10	.089	--	--
26...	.00	.26	.26	.29	.01	.00	.00	.9	.540	.186	--	--
26...	.03	.20	.23	.39	.02	.02	.01	.8	--	--	--	--
26...	.00	.24	.24	.27	.01	.00	.00	.4	.445	.016	--	--
26...	--	--	--	--	--	--	--	--	.541	.149	--	--
MAY												
09...	.01	.22	.23	.38	.010	.008	.006	2.0	--	--	--	--
09...	.01	.33	.34	.35	.006	.000	.000	1.5	3.25	.000	--	--
09...	.01	.58	.59	.63	.004	.000	.000	1.7	2.24	.000	--	--
09...	--	--	--	--	--	--	--	--	1.80	.000	--	--
26...	.01	.17	.18	.22	.00	.00	.00	2.0	--	--	--	--
26...	.00	.32	.32	.47	.025	.018	.005	.8	--	--	--	--
26...	.00	.73	.73	.75	.00	.00	.00	2.1	--	--	2.28	<.132
26...	--	--	--	--	--	--	--	--	--	--	1.45	<.132
JUN												
14...	.01	.16	.17	.22	.012	.012	.002	2.6	--	--	2.61	<.199
14...	.01	.19	.20	.38	.015	.015	.007	1.3	--	--	--	--
14...	.01	.24	.25	.30	.013	.012	.000	2.8	--	--	1.14	<.199
14...	--	--	--	--	--	--	--	--	--	--	1.82	<.199
28...	.01	.17	.18	.30	.003	.001	.001	2.0	--	--	.309	.000
28...	.01	.18	.19	.40	.013	.008	.005	1.2	--	--	--	--
28...	.01	.18	.19	.31	.002	.002	.001	1.8	--	--	.405	.000
28...	--	--	--	--	--	--	--	--	--	--	.367	.036
JUL												
12...	.00	.24	.24	.28	.008	.001	.000	2.3	--	--	1.01	.037
12...	.00	.25	.25	.42	.014	.009	.009	1.7	--	--	--	--
12...	.03	.24	.27	.30	.001	.001	.000	2.0	--	--	.474	.039
12...	--	--	--	--	--	--	--	--	--	--	.394	.037
26...	.00	.18	.18	.19	.002	.000	.000	1.6	--	--	.968	.021
26...	.00	.39	.39	.59	.014	.010	.010	.9	--	--	--	--
26...	.00	.14	.14	.16	.002	.000	.000	1.5	--	--	.546	.000
26...	--	--	--	--	--	--	--	--	--	--	1.24	.021
AUG												
09...	.01	.21	.22	.22	.003	.000	.000	2.8	--	--	.485	.000
09...	.00	.25	.25	.47	.012	.012	.009	1.4	--	--	--	--
09...	.01	.18	.19	.19	.003	.000	.000	2.3	--	--	.504	.000
09...	--	--	--	--	--	--	--	--	--	--	.912	.000
30...	.01	.16	.17	.17	.002	.001	.001	1.7	--	--	.563	.000</

KOOTENAI RIVER BASIN

12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	SAMP- LING DEPTH (FT)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)
OCT											
12...	1030	10	120	21	33	9.0	2.0	.1	.5	120	0
12...	1200	255	140	25	38	11	2.8	.1	.7	140	0
12...	1230	1.5	120	24	34	9.2	2.0	.1	.5	120	0
JUN											
28...	1030	10	120	19	33	9.0	2.4	.1	.5	120	1
28...	1100	290	160	35	42	13	4.2	.1	.7	150	0
28...	1200	1.5	120	19	33	8.9	2.3	.1	.5	120	1

DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SOLIDS, SUM OF CONSTIT- UENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FI)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT										
12...	.6	21	2.3	.1	131	.18	80	20	--	1
12...	3.6	24	3.2	.1	155	.21	120	10	--	1
12...	.6	23	2.4	.1	134	.18	40	20	--	0
JUN										
28...	.6	18	2.0	.1	130	.18	80	20	1	1
28...	2.4	29	3.6	.2	174	.24	100	0	1	1
28...	.6	19	2.0	.1	131	.18	150	20	1	1

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MJ)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MJ)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT										
12...	40	40	<100	0	0	0	4	0	0	10
12...	190	40	<100	0	120	40	4	0	0	10
12...	40	50	<100	0	10	0	3	0	10	8
JUN										
28...	130	60	4	0	0	0	6	3	10	10
28...	200	50	5	1	30	30	6	2	10	10
28...	240	70	12	5	20	0	6	2	20	10

12301919 LAKE KOOCANUSA AT FOREBAY, NEAR LIBBY, MT--Continued

SELECTED VERTICAL PROFILES

MAY 26						AUG. 30					
DEPTH (FT)	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	DIS- SOLVED OXYGEN (MG/L)	PH (UNITS)	TRANS- MISS- IBILITY (PER- CENT)	DEPTH (FT)	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	DIS- SOLVED OXYGEN (MG/L)	PH (UNITS)	TRANS- MISS- IBILITY (PER- CENT)
0	8.6	270	11.3	8.5		0	18.0	210	9.2	8.6	
1	8.6	270	11.3	8.5	11	1	18.0	210	9.2	8.6	45
3	8.6	270	11.3	8.5	11	3	18.0	210	9.2	8.6	43
5	8.4	270	11.3	8.5	11	5	18.0	210	9.2	8.6	41
10	8.2	270	11.3	8.4	9.8	10	17.8	210	9.2	8.6	41
15	8.2	270	11.2	8.4	9.8	15	17.8	205	9.1	8.6	41
20	8.0	270	11.2	8.4	11	20	17.3	205	8.9	8.6	39
25	8.0	270	11.2	8.4	11	25	17.1	205	8.8	8.6	39
30	8.0	270	11.2	8.3	14	30	16.9	205	8.7	8.6	37
35	8.0	270	11.2	8.3	15	35	16.8	200	8.6	8.6	37
40	8.0	270	11.2	8.3	14	40	16.6	205	8.6	8.5	37
45	8.0	270	11.2	8.3	15	45	16.0	205	8.6	8.2	37
50	7.8	270	11.4	8.3	16	50	14.8	205	8.6	8.0	43
60	7.2	270	11.4	8.3	20	55	14.2	200	8.8	8.0	43
70	7.0	270	11.4	8.3	21	60	14.0	200	8.8	8.0	43
80	6.6	265	11.2	8.3	21	65	13.2	190	8.3	7.8	45
90	5.2	265	11.4	8.2	21	70	12.7	195	8.4	7.8	48
100	4.8	265	11.4	8.2	24	80	12.1	190	8.4	7.8	48
110	4.6	265	11.4	8.2	24	90	11.5	195	8.5	7.8	45
125	4.2	265	11.4	8.2	25	100	10.9	200	8.6	7.8	41
140	4.2	265	11.4	8.2	21	110	10.2	200	8.8	7.8	37
155	4.2	275	11.4	8.1	20	120	9.6	215	9.0	7.8	32
170	4.2	275	11.4	8.1	17	130	8.8	225	9.0	7.8	32
185	4.2	275	11.4	8.1	15	145	7.9	235	9.2	7.8	32
200	4.2	280	11.6	8.1	11	160	7.2	245	9.5	7.8	37
215	4.2	280	11.6	8.1	11	175	6.4	250	9.6	7.8	39
230	4.2	280	11.6	8.1	8.5	190	5.4	255	9.8	7.7	43
245	4.2	280	11.6	8.1	4.5	205	5.0	255	9.8	7.7	39
255	4.2	280	11.6	8.1	3.4	220	4.8	255	9.8	7.7	35
						235	4.8	255	9.8	7.7	30
						250	4.7	260	9.9	7.7	30
						265	4.7	260	9.9	7.7	30
						280	4.7	260	10.0	7.7	30
						295	4.7	265	10.1	7.7	30
						310	4.7	265	10.2	7.7	30
						320	4.7	265	10.4	7.7	30

PRIMARY PRODUCTIVITY IN THE EUPHOTIC ZONE

DATE	PRIMARY PRODUCTIVITY (MG C/M ² /DAY)
OCT.	
12...	230
26...	110
MAY	
05...	140
26...	120
JUNE	
14...	190
28...	96
JULY	
12...	99
26...	190
AUG.	
09...	220
30...	160
SEPT.	
13...	190
27...	120

(carbon-14, light and dark bottle method)

KOOTENAI RIVER BASIN

12301920 LAKE KOOCANUSA NEAR LIBBY, MT

LOCATION.--Lat 48°24'38", long 115°18'47", in NW¼ 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 (18 km) east of Libby, and at mile 221.9 (357.0 km).

DRAINAGE AREA.--8,985 mi² (23,271 km²), approximately.

PERIOD OF RECORD.--March 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by 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 tainter gated spillway; construction began in 1967; completed in 1973. Storage began Mar. 21, 1972. Usable capacity, 5,694,000 acre-ft (7.02 km³) between elevation 2,202.0 ft (671.17 m), bottom of sluice gate, and 2,459 ft (749.5 m), controlled spillway elevation. Dead storage, 115,400 acre-ft (142 hm³) below elevation 2,202.0 ft (671.17 m). Minimum operating level, 760,100 acre-ft (937 hm³), elevation 2,287.0 (697.08 m) for on-site power generation. Figures given herein represent usable contents. Water is used for power production, flood control, irrigation, and recreation.

COOPERATION.--Capacity table and elevations furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 5,698,000 acre-ft (7.03 km³) Aug. 6, 1976, elevation, 2,459.10 ft (749.534 m); minimum observed since normal low operating level reached in May 1972, 131,900 acre-ft (163 hm³) Dec. 16-21, 1972, elevation, 2,226.5 ft (678.64 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 5,684,000 acre-ft (7.01 km³) Aug. 1, elevation, 2,458.78 ft (749.436 m); minimum, 1,500,000 acre-ft (1.85 km³) Mar 20, elevation, 2,329.59 ft (710.059 m).

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

2,320	1,313,000	2,400	3,353,000
2,340	1,718,000	2,420	4,059,000
2,360	2,185,000	2,440	4,853,000
2,380	2,729,000	2,460	5,740,000

ELEVATION, IN FEET NGVD, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2410.95	2400.23	2376.08	2367.22	2346.16	2332.33	2333.53	2348.06	2396.51	2444.84	2458.78	2456.17
2	2410.90	2399.47	2375.34	2366.41	2347.29	2331.90	2334.10	2349.66	2397.49	2445.70	2458.71	2458.34
3	2410.37	2398.55	2375.37	2365.61	2346.38	2331.60	2334.53	2351.36	2396.70	2446.41	2458.69	2458.52
4	2409.96	2397.63	2375.33	2364.71	2346.31	2331.45	2334.93	2352.96	2400.49	2447.02	2458.65	2458.66
5	2409.56	2397.10	2375.01	2363.84	2346.20	2331.28	2335.29	2354.28	2403.05	2447.57	2458.60	2458.63
6	2409.05	2396.10	2374.69	2363.24	2345.50	2331.11	2335.68	2355.36	2406.15	2448.08	2458.54	2458.41
7	2408.48	2395.20	2374.68	2363.22	2344.82	2330.97	2335.95	2356.36	2404.12	2448.57	2458.49	2458.12
8	2408.34	2394.57	2373.96	2363.19	2344.16	2330.82	2336.21	2357.25	2411.85	2449.32	2458.48	2457.93
9	2408.44	2393.56	2372.81	2362.38	2343.51	2330.68	2336.51	2358.26	2414.39	2450.39	2458.33	2457.71
10	2408.27	2392.56	2372.58	2361.57	2342.85	2330.56	2336.76	2359.49	2417.03	2451.17	2458.00	2457.55
11	2407.95	2391.51	2372.50	2360.72	2342.69	2330.46	2337.07	2360.92	2419.29	2451.87	2457.79	2457.66
12	2407.26	2391.49	2372.21	2359.89	2342.56	2330.31	2337.47	2362.34	2420.86	2452.38	2457.67	2457.04
13	2406.73	2391.44	2371.92	2359.20	2341.81	2330.20	2337.84	2363.55	2422.07	2452.77	2457.89	2457.65
14	2406.23	2390.99	2371.98	2359.14	2341.27	2330.06	2338.16	2364.96	2423.26	2453.12	2457.95	2457.62
15	2406.22	2390.46	2372.00	2359.00	2340.51	2329.94	2338.55	2366.62	2424.50	2453.56	2458.00	2457.53
16	2406.25	2389.95	2371.72	2358.22	2339.78	2329.80	2338.83	2368.47	2425.65	2454.11	2458.25	2457.72
17	2405.94	2389.23	2371.77	2357.46	2339.20	2329.65	2339.09	2370.19	2426.81	2454.44	2458.23	2457.91
18	2405.93	2388.21	2371.74	2356.67	2339.09	2329.61	2339.42	2371.87	2428.05	2454.86	2458.25	2457.98
19	2405.33	2387.12	2371.74	2355.82	2338.95	2329.63	2339.73	2373.56	2429.06	2455.11	2458.49	2457.87
20	2404.45	2385.96	2371.52	2355.01	2338.23	2329.59	2340.02	2375.42	2430.29	2455.57	2458.68	2457.79
21	2404.22	2384.83	2371.52	2354.88	2337.48	2329.64	2340.41	2377.69	2431.63	2456.15	2458.71	2457.57
22	2403.57	2383.62	2371.40	2354.83	2336.73	2329.72	2340.79	2380.45	2433.13	2456.66	2458.65	2457.26
23	2403.53	2382.51	2371.31	2354.07	2335.99	2329.74	2341.21	2383.36	2434.78	2457.17	2458.63	2457.02
24	2402.87	2381.25	2371.19	2353.31	2335.20	2330.02	2341.56	2385.76	2436.43	2457.57	2458.55	2456.76
25	2402.51	2380.06	2371.07	2352.50	2335.06	2330.23	2341.95	2387.76	2437.95	2457.92	2458.54	2456.49
26	2402.34	2379.21	2370.87	2351.68	2334.95	2330.48	2342.32	2389.37	2439.27	2458.14	2458.59	2456.29
27	2402.12	2379.20	2369.99	2350.91	2334.11	2330.81	2342.84	2390.72	2440.59	2458.32	2458.74	2456.04
28	2401.85	2378.52	2369.17	2350.80	2333.24	2331.25	2343.79	2391.98	2441.58	2458.36	2458.76	2455.77
29	2401.81	2377.64	2368.38	2350.71	---	2331.57	2345.18	2393.19	2442.64	2458.46	2458.60	2455.59
30	2401.76	2376.93	2367.50	2349.91	---	2332.23	2346.61	2394.49	2443.84	2458.68	2458.40	2455.44
31	2401.15	---	2367.39	2349.04	---	2332.88	---	2395.51	---	2458.69	2458.27	---
MAX	2410.95	2400.23	2376.08	2367.22	2348.18	2332.88	2346.61	2395.51	2443.84	2458.69	2458.78	2458.68
MIN	2401.15	2376.93	2367.39	2349.04	2333.24	2329.59	2333.53	2348.06	2396.51	2444.84	2457.67	2455.44
(†)	3,391	2,640	2,377	1,920	1,575	1,567	1,865	3,206	5,016	5,679	5,660	5,530
(††)	-342	-751	-263	-457	-345	-8	+298	+1,341	+1,810	+663	-19	-130
CAL YR 1977	...	...	...	...	...	...	...	...	...	...	...	...
WTR YR 1978	...	...	...	...	...	...	...	...	...	...	...	...

(†) Contents in thousands of acre-feet, at end of month.
(††) Change in contents, in thousands of acre-feet.

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT

LOCATION.--Lat 48°24'03", long 115°19'11", in SW¼SW¼SW¼ sec.33, T.31 N., R.29 W., Lincoln County, Hydrologic Unit 17010101, Kootenai National Forest, on right bank 0.7 mi (1.1 km) downstream from Libby Dam, 2.8 mi (4.5 km) upstream from Fisher River, 11 mi (18 km) east of Libby, and at mile 221.0 (335.6 km).

DRAINAGE AREA.--8,985 mi² (23,271 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,100.00 ft (640.080 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to Feb. 13, 1974, nonrecording gage at site 0.4 mi (0.6 km) upstream at same datum.

REMARKS.--Water-discharge records excellent. Flow completely regulated by Lake Koocanusa since Mar. 21, 1972 (see preceding page). Diversions for irrigation of about 14,000 acres (57 km²) from tributaries above station in Canada and the United States.

AVERAGE DISCHARGE.--7 years, 11,830 ft³/s (335.0 m³/s), 17.88 in/yr (454 mm/yr), 8,571,000 acre-ft/yr (10.6 km³/yr), adjusted for change in contents in Lake Koocanusa since Mar. 21, 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,200 ft³/s (1,340 m³/s) Aug. 5, 1974, gage height, 27.50 ft (8.382 m); minimum daily, 1,900 ft³/s (53.8 m³/s) Jan. 29, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20,700 ft³/s (586 m³/s) Nov. 11, gage height, 22.91 ft (6.983 m); minimum daily, 3,020 ft³/s (85.5 m³/s) May 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7790	18800	15000	4100	12900	12600	3150	3520	3880	16800	11100	10400
2	7030	18900	13900	14000	12900	6980	3140	3560	4550	15600	11000	3910
3	14700	19700	4020	13900	12900	5290	3130	3620	5070	17300	10900	3850
4	12800	19700	4050	13800	4140	4170	3130	3620	5090	17700	11200	3800
5	11800	11900	8930	13900	3950	4110	3160	3590	5140	17700	10900	9450
6	14600	19500	6830	11300	11200	4140	3080	3590	7170	18700	11100	13600
7	14200	18500	4080	4000	10800	4140	3080	3580	8020	18600	10900	13600
8	6770	13900	12200	4000	10700	4250	3070	3500	10300	14400	10500	13700
9	4090	19300	17200	14300	10800	4240	3080	3490	12400	8460	12700	13700
10	7190	19400	4450	14200	10800	4160	3060	3570	9720	14300	14200	13600
11	11100	19200	4080	13700	4410	4150	3080	3620	6840	14300	14600	7460
12	15000	4560	8000	13500	4050	4160	3050	3350	7940	14400	10000	9140
13	14900	4170	7820	12900	11100	4150	3050	3120	12800	14400	9350	9130
14	13400	12000	4170	5690	8900	4150	3040	3100	11500	14400	6350	9290
15	4030	11300	3960	5770	10900	4140	3080	3040	12600	11700	8570	9870
16	3970	11900	8180	13800	11000	4140	3140	3020	10000	8100	3800	3810
17	10000	15200	4030	14400	6990	4140	3140	3090	4030	14300	9040	3750
18	4040	19200	3990	14800	4280	3140	3130	3130	4400	14600	9110	6760
19	14800	18700	4030	13600	4150	3120	3120	3090	9840	14700	3810	9380
20	19400	19100	6120	13500	10800	3130	3120	3090	8140	8840	3770	9320
21	7360	19100	4080	4600	11000	3140	3130	3070	4730	4170	9140	11700
22	15200	19100	4000	4570	11000	3130	3130	3040	4000	3790	9600	13700
23	4340	19000	4000	13200	11200	3130	3120	3040	3990	3790	9680	13600
24	15200	18900	3990	12100	11900	3100	3140	3900	3990	5110	9800	13700
25	10800	19000	3970	12700	4330	3080	3150	3910	3980	7630	8980	13700
26	6950	16000	4010	12900	4030	3080	3130	3890	8900	9460	7150	13700
27	8240	4400	13600	12800	11900	3070	3100	3960	10700	11000	4610	13600
28	8170	12700	14000	4150	12400	3090	3090	3950	8500	13800	7960	13700
29	4340	16600	14000	4060	---	3140	3060	3890	13200	11800	11200	13600
30	4060	13500	14000	12700	---	3160	3050	3880	13400	12000	11100	13600
31	14000	---	4200	12700	---	3330	---	5060	---	11400	9780	---
TOTAL	310270	473230	228890	335640	257430	126930	93130	108880	234820	383450	296480	312100
MEAN	19010	15770	7384	10830	9194	4095	3104	3512	7927	12370	9241	10400
MAX	19400	19700	17200	14800	12900	12600	3160	5060	13400	18700	14600	13700
MIN	3970	4170	3960	4000	3950	3070	3040	3020	3880	3790	3770	3750
CFSM	1.11	1.76	.82	1.21	1.02	.46	.35	.39	.87	1.38	1.03	1.16
IN	1.28	1.96	.95	1.39	1.07	.53	.39	.45	.97	1.59	1.14	1.29
AC-FT	615400	938700	454000	665700	510600	251800	184700	216000	465800	760600	568200	619100
MEAN †	4,446	3,154	3,106	3,394	2,982	3,965	8,112	25,320	38,250	23,150	8,932	8,219
CFSM †	.49	.35	.35	.38	.33	.44	.90	2.82	4.26	2.58	.99	.91
IN †	.57	.39	.40	.44	.35	.51	1.01	3.25	4.75	2.97	1.15	1.02
AC-FT †	273,400	187,700	191,000	208,700	165,600	243,800	482,700	1,557,000	2,275,800	1,423,600	549,200	489,100
OBSERVED												
CAL YR 1977	TOTAL	3,222,720		MEAN	8,829	MAX	19,800	MIN	2,940	AC-FT	6,392,300	
WTR YR 1978	TOTAL	3,151,250		MEAN	8,634	MAX	19,700	MIN	3,020	AC-FT	6,250,600	
ADJUSTED												
CAL YR 1977	TOTAL	2,537,586		MEAN	6,952	CFSM	0.77	IN	10.50	AC-FT	5,033,300	
WTR YR 1978	TOTAL	4,057,272		MEAN	11,120	CFSM	1.24	IN	16.79	AC-FT	8,047,600	

† Adjusted for change in contents in Lake Koocanusa.

KOOTENAI RIVER BASIN

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967 to current year.

REMARKS.--"Prior to March 25, 1974, at site, 3.2 mi (5.1 km) downstream." Water temperature records discontinued September 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLJN, INSTAN- TANEOUS (CFS)	WEATHER (NMJ CJDE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)
OCT								
14...	1030	19500	40	243	8.1	6.5	10.1	8.6
28...	1045	4110	1	248	8.2	10.0	8.2	8.8
NOV								
08...	1000	17700	0	258	8.0	-1.0	8.9	8.2
21...	1145	19200	0	260	8.1	-10.0	8.4	8.2
DEC								
05...	1100	18400	0	257	7.9	-2.0	7.2	9.2
21...	1400	4040	2	250	8.1	-5.0	5.5	10.4
JAN								
10...	1000	18000	0	251	8.3	-4.0	2.7	11.5
23...	1045	17200	0	248	8.2	2.0	2.4	9.9
FEB								
07...	0900	13100	2	255	8.1	.5	1.6	12.3
23...	0900	13800	2	254	8.1	.5	1.6	12.6
MAR								
07...	1000	4150	2	262	8.4	1.5	1.6	13.0
21...	1130	3090	0	260	8.5	10.0	2.6	13.0
APR								
06...	1045	3090	3	257	8.3	8.0	2.6	12.6
27...	1030	3120	60	258	8.1	10.5	4.2	13.0
MAY								
19...	1130	3090	1	270	8.3	16.5	7.5	13.4
31...	1130	7350	2	273	8.4	16.0	8.0	11.5
JUN								
16...	0900	9410	0	265	8.4	13.0	9.6	10.9
30...	0815	13100	0	230	8.3	15.0	10.8	10.4
JUL								
07...	1120	19200	0	227	8.3	24.0	13.0	10.1
31...	1135	13100	0	213	8.3	24.0	13.4	9.3
AUG								
09...	1500	18700	--	204	8.4	32.0	14.0	9.2
22...	0805	7640	2	205	9.4	16.0	13.6	9.2
SEP								
05...	1400	13700	2	205	8.1	20.0	13.8	8.9
20...	0820	9350	0	208	7.6	3.5	12.4	9.2

KOOTENAI RIVER BASIN

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12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	ALKA- LITY (MG/L AS CACO3)	SILICA, DIS- SOLVED (MG/L AS SiO2)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)
OCT									
14...	81	110	3.8	.11	.11	.01	.09	.10	.21
28...	81	114	4.2	.07	--	.01	.19	.20	.27
NOV									
08...	76	110	4.3	.07	--	.00	.03	.03	.10
21...	75	106	4.0	.10	--	.00	.09	.09	.19
DEC									
05...	83	106	3.8	.09	--	.00	.21	.21	.30
21...	89	110	3.8	.07	--	.00	.10	.10	.17
JAN									
10...	91	108	3.8	.11	--	.06	.00	.00	.11
23...	79	100	3.8	.06	--	.00	.00	.00	.06
FEB									
07...	95	108	3.0	.06	--	.01	.23	.24	.30
23...	97	109	3.8	.07	--	.00	.10	.10	.17
MAR									
07...	100	111	3.9	.04	--	.00	.01	.01	.05
21...	103	120	4.2	.06	--	.00	.13	.13	.19
APR									
06...	100	115	5.6	.15	--	.00	.12	.12	.27
27...	107	122	5.0	.08	--	.03	.21	.24	.32
MAY									
19...	120	113	4.1	.04	--	.01	.27	.28	.32
31...	105	120	4.6	.05	--	.00	.24	.24	.29
JUN									
16...	103	111	5.5	.06	--	.01	.17	.18	.26
30...	102	90	5.1	.08	.10	.00	.18	.18	.26
JUL									
07...	103	100	4.7	.15	--	.00	.09	.09	.24
31...	96	95	4.2	.08	--	.01	.19	.20	.28
AUG									
09...	96	110	--	.06	--	.00	.67	.67	.73
22...	95	97	4.6	.05	--	.00	.06	.06	.11
SEP									
05...	93	89	4.2	.08	--	.01	.33	.34	.42
20...	92	92	4.4	.05	--	.01	.30	.31	.36

DATE	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLORO- PHYLL A PHYTO- PLANK- TON, UNCORR. (UG/L)	CHLORO- PHYLL B PHYTO- PLANK- TON, UNCORR. (UG/L)	CHLOR-A PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO- PLANK- TON CHROMO FLUOROM (UG/L)
OCT								
14...	.01	.01	.00	.9	1.10	.125	--	--
28...	.00	.00	.01	1.2	--	--	--	--
NOV								
08...	.00	.01	.00	2.0	1.90	.000	--	--
21...	.02	.01	.01	1.5	.423	.225	--	--
DEC								
05...	.02	.08	.00	1.3	.000	.000	--	--
21...	.02	.00	.00	.9	--	--	--	--
JAN								
10...	.02	.01	.01	.7	.423	.225	--	--
23...	.02	.02	.01	.9	.137	.000	--	--
FEB								
07...	.01	.01	.01	8.6	1.66	.101	--	--
23...	.02	.01	.01	1.0	.870	.168	--	--
MAR								
07...	.02	.01	.00	1.4	.519	.359	--	--
21...	.08	.07	.00	1.0	.182	.000	--	--
APR								
06...	.03	.01	.01	1.0	.987	.128	--	--
27...	.00	.00	.01	1.1	1.72	.000	--	--
MAY								
19...	.020	.016	.008	1.9	--	--	4.99	<.129
31...	.033	.013	.000	2.3	--	--	2.75	<.129
JUN								
16...	.013	.006	.001	2.2	--	--	.958	<.190
30...	.003	.000	.000	3.6	--	--	.503	.000
JUL								
07...	.002	.001	.001	.8	--	--	.371	.000
31...	.004	.003	.001	1.5	--	--	.962	.000
AUG								
09...	.004	.001	.001	1.9	--	--	.916	.018
22...	.003	.002	.000	1.6	--	--	.618	.000
SEP								
05...	.004	.003	.000	1.8	--	--	1.03	.000
20...	.004	.002	.001	7.9	--	--	1.80	.000

12301933 KOOTENAI RIVER BELOW LIBBY DAM, NEAR LIBBY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)
OCT 14...	1030	120	18	34	9.7	2.8	.1	.6	130	0	1.7
JUN 30...	0815	120	28	32	9.2	2.6	.1	.6	110	0	.9

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT 14...	20	2.9	.2	139	.19	7320	40	10	--	1
JUN 30...	23	2.5	.1	130	.18	4600	70	20	1	2

DATE	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MV)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 14...	1200	70	<100	0	4	0	3	0	0	0
JUN 30...	90	40	5	5	10	0	5	3	10	0

12302055 FISHER RIVER NEAR LIBBY, MT

LOCATION.--Lat 48°21'20", long 115°18'50", in NW¼NE¼NW¼ sec.21, T.30 N., R.29 W., Lincoln County, Hydrologic Unit 17010102, on left bank 0.8 mi (1.3 km) upstream from mouth and 11.4 mi (18.3 km) east of Libby.

DRAINAGE AREA.--838 mi² (2,170 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,134.10 ft (650.474 m) above mean sea level (Corps of Engineers bench mark).

REMARKS.--Water-discharge records good except those for winter period, which are poor. Diversions of about 700 acres (2.8 km²) above station.

AVERAGE DISCHARGE.--11 years, 522 ft³/s (14.78 m³/s), 8.46 in/yr (215 mm/yr), 378,200 acre-ft/yr (466 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,720 ft³/s (247 m³/s) Jan. 16, 1974, gage height, 9.29 ft (2.832 m); minimum, 29 ft³/s (0.82 m³/s) Jan. 2, 1977, gage height, 2.37 ft (0.722 m), result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about May 22, 1948, reached a discharge of 6,560 ft³/s (186 m³/s), by slope-area measurement at site 0.5 mi (0.8 km) upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,660 ft³/s (75.3 m³/s) Mar. 31, gage height, 6.29 ft (1.917 m); minimum daily, 45 ft³/s (1.27 m³/s) Nov. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	104	216	175	120	158	2520	1330	966	427	163	145
2	107	135	227	120	125	131	2120	1400	1020	404	157	143
3	103	170	529	140	130	110	1780	1460	1100	394	156	137
4	99	145	516	160	140	150	1520	1360	1200	408	153	132
5	97	131	416	190	150	150	1360	1190	1270	412	148	130
6	96	124	361	220	152	158	1230	1050	1330	383	141	135
7	94	123	334	250	151	154	1080	957	1270	350	138	149
8	94	124	269	230	152	155	978	902	1170	351	135	155
9	100	117	233	210	150	168	898	915	1110	366	132	150
10	105	115	217	190	149	179	839	1460	981	377	132	147
11	102	113	271	170	147	187	856	1690	840	369	128	144
12	97	110	368	175	130	193	873	1450	768	351	127	153
13	98	110	412	180	111	197	843	1270	727	343	143	164
14	95	117	536	185	105	198	815	1480	717	328	145	158
15	93	134	633	190	120	193	779	1980	682	308	149	152
16	91	132	644	195	130	195	767	2040	629	290	201	159
17	90	129	565	198	140	201	784	1820	606	279	195	159
18	89	124	499	198	143	238	768	1750	600	279	177	152
19	88	111	430	190	141	341	737	1660	606	269	170	148
20	86	70	332	183	139	443	745	1640	564	254	169	144
21	86	45	293	166	139	536	822	1690	541	240	175	142
22	86	70	325	161	140	646	833	1830	533	230	170	142
23	84	120	312	153	142	794	802	1590	546	221	169	138
24	84	192	262	145	152	1130	764	1420	533	211	163	135
25	88	201	214	135	154	1330	733	1320	503	202	157	135
26	95	240	221	140	155	1320	783	1210	482	194	153	132
27	93	374	221	147	156	1450	1070	1110	468	193	148	129
28	92	304	214	151	163	1680	1340	1130	442	187	143	127
29	91	257	227	144	---	1850	1390	1200	463	180	139	126
30	96	249	240	130	---	2010	1360	1100	455	174	135	125
31	102	---	223	125	---	2520	---	1030	---	168	138	---
TOTAL	2934	4490	10762	5346	3926	19145	32189	43434	23142	9142	4749	4287
MEAN	94.6	150	347	172	140	618	1073	1401	771	295	153	143
MAX	113	374	644	250	163	2520	2520	2040	1330	427	201	164
MIN	84	45	214	120	105	110	733	902	442	168	127	125
CFSM	.11	.18	.41	.21	.17	.74	1.28	1.67	.92	.35	.18	.17
IN.	.13	.20	.48	.24	.17	.85	1.43	1.93	1.03	.41	.21	.19
AC-FT	5820	8910	21350	10600	7790	37970	63850	86150	45900	18130	9420	8500
CAL YR 1977	TOTAL	68647	MEAN 188	MAX	784	MIN 35	CFSM .22	IN 3.05	AC-FT	136200		
WTR YR 1978	TOTAL	163546	MEAN 448	MAX	2520	MIN 45	CFSM .54	IN 7.26	AC-FT	324400		

KOOTENAI RIVER BASIN

12302055 FISHER RIVER NEAR LIBBY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: September 1967 to current year.

INSTRUMENTATION.--Temperature recorder since September 1967.

REMARKS.--Flow affected by ice during most winter periods.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 26.0°C July 23, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum observed, 16.0°C Sept. 25, 26; minimum, 0.0°C on many days during November to March.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	9.5	8.0	5.0	4.0	.0	.0	.0	.0	.0	.0	.5	.0
2	10.5	7.5	5.0	5.0	1.0	.0	.0	.0	.0	.0	.0	.0
3	9.5	6.0	5.0	3.0	2.0	1.0	.0	.0	.0	.0	.0	.0
4	6.5	5.0	4.0	2.5	2.0	.5	.0	.0	.0	.0	.0	.0
5	7.0	5.0	4.0	3.0	.5	.0	.0	.0	.0	.0	.0	.0
6	8.5	5.5	3.5	2.5	.0	.0	.0	.0	.5	.0	2.0	.0
7	9.5	8.0	4.0	3.0	.0	.0	.0	.0	.5	.5	2.0	1.0
8	3.0	7.0	3.0	1.0	.0	.0	.0	.0	.5	.5	2.0	2.0
9	9.0	7.0	1.5	1.0	.0	.0	.0	.0	.5	.5	3.5	2.0
10	7.5	4.5	3.5	1.5	.0	.0	.0	.0	.5	.5	3.0	1.5
11	7.0	4.0	3.5	3.0	.0	.0	.0	.0	.5	.0	2.5	1.5
12	7.5	4.0	4.0	2.5	.0	.0	.0	.0	.0	.0	2.5	2.0
13	8.5	7.0	3.5	3.0	1.0	.0	.0	.0	.0	.0	3.0	2.5
14	9.0	6.5	4.0	3.0	1.5	1.0	.0	.0	.0	.0	2.5	2.0
15	8.5	5.5	3.0	2.0	2.0	1.5	.0	.0	.0	.0	3.0	.5
16	9.0	5.5	2.0	1.5	2.0	1.5	.0	.0	.0	.0	---	---
17	8.0	5.0	1.5	1.5	1.5	.5	.0	.0	.0	.0	---	---
18	7.5	4.5	1.5	.0	.5	.5	.0	.0	.5	.0	---	---
19	7.5	5.5	.0	.0	.5	.0	.0	.0	1.0	.5	---	---
20	8.0	5.0	.0	.0	.0	.0	.0	.0	1.5	.5	---	---
21	6.5	4.0	.0	.0	.0	.0	.0	.0	2.0	1.0	---	---
22	6.5	4.0	.0	.0	.0	.0	.0	.0	2.0	1.0	---	---
23	6.5	4.5	.0	.0	.0	.0	.0	.0	2.0	1.5	---	---
24	6.0	4.0	.0	.0	.0	.0	.0	.0	2.0	1.5	---	---
25	7.0	6.0	.0	.0	.0	.0	.0	.0	2.0	1.5	---	---
26	8.0	6.0	.0	.0	.0	.0	.0	.0	1.5	1.5	---	---
27	6.0	3.5	.0	.0	.0	.0	.0	.0	2.0	1.5	---	---
28	6.5	5.0	.0	.0	.0	.0	.0	.0	2.0	.5	---	---
29	6.5	6.0	.0	.0	.0	.0	.0	.0	---	---	---	---
30	6.5	5.0	.0	.0	.0	.0	.0	.0	---	---	---	---
31	6.0	4.5	---	---	.0	.0	.0	.0	---	---	---	---
MONTH	10.5	3.5	5.0	.0	2.0	.0	.0	.0	2.0	.0	3.5	.0

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TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

[illegible]

KOOTENAI RIVER BASIN

12303000 KOOTENAI RIVER AT LIBBY, MT

LOCATION.--Lat 48°24'03", long 115°33'08", in SW¼SE¼SW¼ sec.34, T.31 N., R.31 W., Lincoln County, Hydrologic Unit 17010101, on right bank 1,800 ft (550 m) downstream from highway bridge at Libby, 0.8 mi (1.3 km) downstream from Libby Creek, and at mile 204.3 (328.7 km).

DRAINAGE AREA.--10,240 mi² (26,520 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1910 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 1042: 1933. WSP 1246: 1912(M), 1915(M), 1916, 1918-19(M), 1924-27(M).

GAGE.--Water-stage recorder. Datum of gage is 2,041.54 ft (622.261 m), National Geodetic Vertical Datum of 1929. Prior to Apr. 28, 1931, nonrecording gages at site 1,800 ft (550 m) upstream at different datum.

REMARKS.--Records excellent. Flow regulated by Lake Koocanusa since Mar. 21, 1972 (see p. 644). Diversions for irrigation of about 14,500 acres (58.7 km²) from tributaries above station in Canada and the United States.

AVERAGE DISCHARGE.--68 years, 12,180 ft³/s (344.9 m³/s), 16.15 in/yr (410 mm/yr), 8,824,000 acre-ft/yr (10.9 km³/yr), adjusted for change in contents in Lake Koocanusa since Mar. 21, 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 121,000 ft³/s (3,430 m³/s) June 21, 1916, gage height, 20.7 ft (6.31 m), present datum, derived from gage-relation study; minimum observed, 895 ft³/s (25.3 m³/s) Jan. 11, 1930 (result of discharge measurement).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,400 ft³/s (606 m³/s) Nov. 26, gage height, 7.08 ft (2.158 m); minimum daily, 3,630 ft³/s (103 m³/s) Mar. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

AY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9590	19900	16200	4280	13100	12800	7430	5780	5610	18200	11700	11900
2	7470	19900	17200	12400	13200	8090	6670	6110	6240	16300	11400	4660
3	11700	20900	5680	14100	13300	5400	6050	6290	7250	18500	11400	4160
4	16800	20900	5420	14100	5810	4350	5570	6000	7670	19000	11700	4050
5	12100	12700	10000	14200	4200	4300	5280	5610	7980	19000	11400	8250
6	13200	20600	7880	12900	10100	4310	4950	5290	9710	19600	11500	14300
7	15700	19500	4890	4510	11300	4300	4690	5110	11000	20600	11400	14300
8	6000	14900	10600	4420	11000	4360	4500	4940	12000	15600	10800	14400
9	5300	20100	18400	12400	11100	4440	4390	5060	13900	10300	13500	14500
10	7080	20300	7140	14000	11100	4350	4310	6200	10000	14600	15100	14400
11	9960	20300	4760	14100	5910	4360	4380	6610	5660	15400	15100	6490
12	15000	7200	8470	13800	4240	4330	4420	5970	8430	15300	12400	9590
13	14700	4490	7830	13500	9850	4350	4360	5260	11900	15400	4620	9570
14	13900	12400	7190	5930	9000	4360	4330	5940	12100	15400	6670	9680
15	5680	11800	5420	4370	11400	4370	4290	7100	12000	12900	8660	10600
16	4250	12500	9640	11900	11300	4360	4330	6820	9690	9380	4600	4810
17	9540	13500	5310	13500	9020	4380	4320	6320	6090	14500	8570	4080
18	5190	20200	5020	13400	5990	3630	4270	6130	5550	15600	9640	6130
19	13100	19600	4850	13600	4290	3660	4210	6020	10400	15600	5220	9770
20	20300	19900	6040	13400	9740	3660	4240	6110	10400	9500	4130	9730
21	10100	19900	5540	5800	11300	4020	4340	6330	6000	5070	8580	11600
22	13800	19900	4650	4200	11400	4190	4350	6800	5430	4290	10300	14400
23	6720	19900	4620	11500	11300	4440	4290	6080	5360	4250	10200	14400
24	13800	19800	4530	12500	12100	5120	4240	6280	5240	5200	10200	14500
25	11360	20000	4450	13100	6030	5270	4210	6150	5170	8230	9670	14500
26	7470	19000	4430	13200	4210	5240	4300	5890	8790	9840	7490	14500
27	6090	5060	12400	13200	10600	5540	4800	5760	11800	10700	5540	14400
28	8660	11560	14100	5790	12600	6040	5440	5880	9660	14500	7520	14400
29	6730	18900	14200	4260	---	6310	5540	6080	14600	12200	11100	14400
30	4370	13600	14200	11600	---	6590	5440	5850	14500	9720	11600	14400
31	12400	---	6520	13000	---	7730	---	6960	---	11900	10200	---
TAL	322500	499150	257780	332960	264490	159560	143940	186730	270130	406780	301930	328870
AV	10400	16640	8315	10740	9446	5147	4798	6024	9004	13120	9740	10960
Σ	20300	20900	18400	14200	13300	12800	7430	7100	14600	20600	15100	14500
+	4250	4490	4430	4200	4200	3630	4210	4940	5170	4250	4130	4050
-FT	639700	640100	511300	660400	524600	316500	285500	370400	535800	806800	598900	652300
LAN †	4,842	4,018	4,038	3,308	3,234	5,017	9,806	27,830	39,420	23,900	9,431	8,777
FSM †	.47	.39	.39	.32	.32	.49	.96	2.72	3.85	2.33	.92	.86
+	.55	.44	.45	.37	.33	.56	1.07	3.13	4.30	2.69	1.06	.96
-FT†	297,700	239,100	248,300	203,400	179,600	308,500	563,500	1,711,400	2,345,800	1,469,800	579,900	522,300

AL YR 1977	TOTAL	3,432,200	MEAN	9,403	OBSERVED		MIN	3,200	AC-FT	6,808,000
					MAX	20,900				
IR YR 1978	TOTAL	3,474,800	MEAN	9,520	ADJUSTED		MIN	3,630	AC-FT	6,892,000
					CFSM	0.73				
AL YR 1977	TOTAL	5,448,800	MEAN	7,526	CFSM		IN	9.98	AC-FT	5,449,000
					CFSM	1.17				
IR YR 1978	TOTAL	8,689,300	MEAN	12,000	CFSM		IN	15.91	AC-FT	8,689,000
					CFSM	1.17				

† Adjusted for change in contents in Lake Koocanusa

12303000 KOOTENAI RIVER AT LIBBY, MT--Continued

WATER-QUALITY RECORDS

LOCATION.--Water samples collected at Libby on highway bridge 1800 ft (550 m) upstream from gaging station, 0.5 mi (0.8 km) downstream from Libby Creek, and at mile 204.6 (329.2 km).

PERIOD OF RECORD.--Water years 1969-73, May to September 1978.

REMARKS.--During periods of high runoff from Libby Creek samples were collected upstream from confluence of Libby Creek.

TURBIDITY (JTU), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								---	4	3	2	1
2								---	4	3	1	1
3								7	6	2	2	1
4								6	5	2	1	1
5								4	5	2	1	1
6								4	7	2	1	1
7								4	6	2	3	1
8								4	8	2	2	1
9								3	5	2	2	1
10								5	3	2	1	1
11								10	3	2	1	1
12								8	4	2	2	1
13								6	4	2	2	1
14								6	4	2	2	1
15								10	4	2	2	2
16								15	3	2	2	1
17								10	4	2	2	1
18								9	3	2	2	1
19								9	3	2	2	1
20								9	3	2	2	1
21								9	2	2	2	1
22								10	3	2	2	1
23								10	7	1	1	1
24								8	2	1	1	1
25								6	3	2	1	2
26								7	4	2	2	1
27								5	2	2	1	1
28								5	2	2	1	1
29								5	2	1	2	1
30								4	3	1	1	1
31								5	---	1	1	---
MEAN								7	4	2	2	1
WTR YR 1978	MEAN		3	MAX	15	MIN		1				

12303400 ROSS CREEK NEAR TROY, MT

LOCATION.--Lat 48°12'26", long 115°52'08", in SE¼NE¼ sec.8, T.28 N., R.33 W., Lincoln County, Hydrologic Unit 17010101, at bridge on Forest Service Road, 0.7 mi (1.1 km) upstream from mouth, 11.3 mi (18.2 km) north of Heron, 17.5 mi (28.2 km) south of Troy.

DRAINAGE AREA.--23.8 mi² (61.6 km²).

PERIOD OF RECORD.--Water years 1971 to current year (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CaCO3)
NOV 29...	1100	78	60	55	7.9	5.0	5.0	1	11.9	102	27
FEB 22...	1330	12	2	50	8.1	10.0	2.0	0	12.8	103	27
MAY 18...	0900	357	1	42	7.6	9.0	3.5	0	12.4	101	20
SEP 07...	0715	16	60	52	8.0	13.0	8.0	1	10.7	99	25

DATE	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS Cl)
NOV 29...	2	7.6	1.9	.5	.0	.3	30	0	.6	2.0	.2
FEB 22...	3	7.7	1.8	.4	.0	.2	29	0	.4	1.8	.3
MAY 18...	1	5.5	1.5	.1	.0	.1	23	0	.9	3.8	.4
SEP 07...	4	7.0	1.8	.7	.1	.2	26	0	.4	2.5	.3

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, N2+N2O3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
NOV 29...	.0	5.3	33	.04	6.95	.30	.01	.15	.16	.46	.01
FEB 22...	.0	5.4	32	.04	1.04	.18	.00	.05	.05	.23	.01
MAY 18...	.0	4.7	27	.04	26.0	.19	.00	.19	.19	.38	.00
SEP 07...	.0	5.2	31	.04	1.34	.08	.00	.17	.17	.25	.001

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BORON, DIS- SOLVED (UG/L AS B)	CALCIUM TOTAL RECOV- ERABLE (UG/L AS Ca)	CADMIUM DIS- SOLVED (UG/L AS Cd)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS Cr)	CHRO- MIUM, DIS- SOLVED (UG/L AS Cr)	COPPER, TOTAL RECOV- ERABLE (UG/L AS Cu)	COPPER, DIS- SOLVED (UG/L AS Cu)	IRON, TOTAL RECOV- ERABLE (UG/L AS Fe)	IRON, DIS- SOLVED (UG/L AS Fe)
NOV 29...	1100	1	0	10	1	1	20	0	1	1	110	0
FEB 22...	1330	0	0	10	1	1	0	0	6	0	20	20
MAY 18...	0900	0	0	4	1	0	15	0	5	0	90	20
SEP 07...	0715	1	0	4	0	0	10	0	5	0	70	50

KOOTENAI RIVER BASIN

12303400 ROSS CREEK NEAR TROY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	CYANIDE TOTAL (UG/L AS CN)
NOV 29...	5	1	20	20	.0	.0	0	0	8	8	.00
FEB 22...	2	2	0	0	.0	.0	0	0	10	0	.00
MAY 18...	0	0	0	0	.0	.0	0	0	5	5	.00
SEP 07...	5	0	10	0	.0	.0	0	0	0	0	.00

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FIVER THAN .062 MM
NOV 29...	1100	5.0	78	2	.42	--
FEB 22...	1330	2.0	12	2	.06	--
MAY 18...	0900	3.5	357	4	3.9	63
SEP 07...	0715	8.0	16	2	.09	80

12303430 STANLEY CREEK NEAR TROY, MT

LOCATION.--Lat 48°17'18", long 115°51'53", in SE¼NW¼SE¼ sec.7, T.29 N., R.33 W., Lincoln County, Hydrologic Unit 17010101, at private bridge, 0.7 mi (1.1 km) from mouth, and 12.1 mi (19.5 km) south of Troy.

DRAINAGE AREA.--12.8 mi² (33.2 km²).

PERIOD OF RECORD.--Water years 1976 to current year (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	HARD- NESS (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
NOV 28...	1200	35	2	61	7.4	1.5	5.5	1	11.7	101	33
FEB 21...	1400	53	0	69	7.5	7.0	5.5	0	11.6	100	34
MAY 19...	0800	105	0	62	7.4	9.0	5.0	0	11.6	100	28
SEP 06...	0830	65	60	69	7.4	15.5	7.5	1	10.8	99	33

DATE	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 28...	1	9.6	2.1	.6	.0	.3	38	0	2.4	2.7	.3
FEB 21...	3	10	2.3	.3	.0	.3	38	0	1.9	2.8	.2
MAY 19...	0	8.1	1.9	.3	.0	.2	34	0	2.2	3.1	.4
SEP 06...	1	9.0	2.5	1.0	.1	.2	39	0	2.5	1.4	.2

KOOTENAI RIVER BASIN

657

12303430 STANLEY CREEK NEAR TROY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
NOV 28...	.1	6.2	41	.06	3.87	.15	.01	.02	.03	.18	.01
FEB 21...	.0	6.3	41	.06	5.87	.08	.00	.05	.05	.13	.01
MAY 19...	.0	6.4	37	.05	10.5	.08	.00	.19	.19	.27	.00
SEP 06...	.0	6.1	40	.05	7.02	.08	.00	.23	.23	.31	.001

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)
NOV 28...	1200	0	0	2	0	1	20	0	1	0	60	0
FEB 21...	1400	0	0	2	0	0	0	0	2	1	20	0
MAY 19...	0800	0	0	6	1	1	20	5	6	2	20	10
SEP 06...	0830	0	1	0	0	0	10	0	3	0	60	20

DATE	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)
NOV 28...	1	2	0	8	.0	.0	0	0	0	10	.00
FEB 21...	3	4	0	0	.0	.0	0	1	0	0	.00
MAY 19...	0	0	0	0	.0	.0	0	0	5	5	.00
SEP 06...	4	0	0	0	.0	.0	0	0	0	10	.00

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 28...	1200	5.5	35	1	.09	--
FEB 21...	1400	5.5	53	1	.14	--
MAY 19...	0800	5.0	105	3	.85	70
SEP 06...	0830	7.5	65	1	.18	75

KOOTENAI RIVER BASIN

12303490 LAKE CREEK NEAR TROY, MT

LOCATION.--Lat 48°22'54", long 115°51'31", on N½ of line between sec. 7 and 8, T.30 N., R.33 W., Lincoln County, Hydrologic Unit 17010101, at bridge on Chase Cutoff Road, 0.1 mi (0.2 km) downstream from Iron Creek and 5.7 mi (9.2 km) southeast of Troy.

DRAINAGE AREA.--188.3 mi² (487.7 km²).

PERIOD OF RECORD.--Water years 1976 to current year (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (MMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)
DATE	TIME										
NOV 28...	1430	195	2	68	7.9	6.0	4.5	1	12.1	101	32
FEB 22...	0900	156	2	86	8.1	2.0	2.5	1	12.4	100	43
MAY 18...	1530	1310	1	52	7.9	23.5	10.5	3	10.6	104	23
SEP 06...	1200	250	66	83	7.7	16.5	11.5	1	10.1	102	40

DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 28...	1	9.0	2.3	.8	.1	.5	38	0	.8	2.6
FEB 22...	1	12	3.2	.7	.0	.5	51	0	.6	3.8
MAY 18...	0	6.4	1.7	.5	.0	.3	29	0	.6	3.3
SEP 06...	1	11	3.1	.8	.1	.4	48	0	1.5	3.1

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
NOV 28...	.0	6.6	41	.06	21.6	.14	.02	.16	.16	.32	.01
FEB 22...	.0	7.9	54	.07	22.7	.10	.01	.04	.05	.15	.01
MAY 18...	.0	6.6	34	.05	120	.05	.00	.40	.40	.45	.01
SEP 06...	.0	7.0	49	.07	33.1	.04	.00	.31	.31	.35	.001

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)
NOV 28...	1430	1	0	5	1	0	10	0	1	1	110	0
FEB 22...	0900	1	0	0	0	1	0	0	4	1	70	30
MAY 18...	1530	0	0	2	1	1	25	0	5	0	420	20
SEP 06...	1200	0	1	0	0	0	10	0	4	0	90	30

12303490 LAKE CREEK NEAR TROY, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL RECOVERABLE (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)
NOV 28...	2	2	8	4	.0	.0	0	0	10	10	.00
FEB 22...	1	2	10	0	.0	.0	0	0	10	0	.00
MAY 18...	3	0	10	0	.0	.0	0	0	5	5	.00
SEP 06...	5	0	10	10	.0	.0	0	0	10	10	.00

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPER- ATURE (DEG C)	STREAM- FLOW, INSTAN- TANEDUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 28...	1430	4.5	195		1 .53	--
FEB 22...	0900	2.5	155		1 .42	--
MAY 18...	1530	10.5	1310	25	88	78
SEP 06...	1200	11.5	250	2	1.4	68

KOOTENAI RIVER BASIN

12304500 YAAK RIVER NEAR TROY, MT

LOCATION.--Lat 48°33'43", long 115°58'09", in NE¼SE¼SE¼ sec.5, T.32 N., R.34 W., Lincoln County, Hydrologic Unit 17010103, Kootenai National Forest, on right bank 500 ft (150 m) upstream from bridge on U.S. Highway 2, 0.2 mi (0.3 km) upstream from mouth, and 7.7 mi (12.4 km) northwest of Troy.

DRAINAGE AREA.--766 mi² (1,984 km²).

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 (560.59 m), National Geodetic Vertical Datum of 1929. Oct. 15, 1910, to Sept. 30, 1916, nonrecording gage at several sites within 11 mi (18 km) of present site at various datums.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Diversions for irrigation of about 30 acres (0.12 km²) above station.

AVERAGE DISCHARGE.--22 years, 916 ft³/s (25.94 m³/s), 16.24 in/yr (412 mm/yr), 663,600 acre-ft/yr (818 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,100 ft³/s (343 m³/s) May 21, 1956, gage height, 9.70 ft (2.957 m), in gage well, 10.8 ft (3.29 m), from outside gage; minimum daily, 50 ft³/s (1.42 m³/s) Dec. 9, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May to June 1948 reached a stage of 11.0 ft (3.35 m) from floodmarks; discharge, 12,500 ft³/s (354 m³/s). Flood in May 1954 reached a stage of 11.4 ft (3.47 m) from floodmarks; discharge, 13,400 ft³/s (379 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,010 ft³/s (170 m³/s) May 16, gage height, 7.67 ft (2.338 m), only peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 90 ft³/s (2.55 m³/s) Nov. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	137	169	454	135	140	148	3040	3360	2540	606	311	245
2	130	366	392	130	145	132	2400	3660	2730	768	296	219
3	121	406	361	160	150	120	1990	3790	3090	722	285	199
4	115	295	314	190	160	130	1730	3460	3450	741	276	184
5	113	237	268	220	168	135	1660	2420	3720	780	267	176
6	111	211	258	260	158	145	1550	2520	3760	782	256	186
7	114	221	247	240	159	149	1400	2330	3450	799	246	227
8	117	194	192	225	165	170	1330	2330	3190	778	237	252
9	122	166	192	210	165	202	1260	2660	2910	891	229	261
10	119	155	208	200	161	199	1290	3960	2530	1030	220	236
11	113	163	276	190	150	197	1500	3930	2180	1610	211	216
12	111	180	414	195	135	198	1580	3550	1910	657	214	212
13	117	188	400	200	125	196	1450	3120	1810	757	229	220
14	121	204	430	216	130	191	1360	3670	1710	682	224	213
15	117	217	565	209	135	187	1270	5430	1620	623	235	213
16	114	192	588	199	140	182	1290	5650	1490	585	285	224
17	111	175	489	188	145	185	1360	4980	1410	588	277	212
18	109	163	426	183	149	206	1310	4600	1350	610	266	203
19	107	130	345	179	148	261	1300	4550	1330	676	274	195
20	106	115	295	179	148	306	1480	4640	1230	625	292	189
21	105	90	258	171	151	372	1680	4870	1170	554	279	188
22	105	110	307	170	153	490	1640	4990	1140	512	259	209
23	107	150	305	160	154	624	1500	4290	1080	478	244	234
24	108	250	238	150	159	1120	1370	3680	1000	447	233	262
25	126	350	180	155	157	1310	1330	3410	977	420	221	258
26	140	500	170	164	156	1410	1610	3030	1050	398	214	229
27	160	736	160	160	158	1740	2420	2710	929	390	206	210
28	144	602	150	165	160	1930	3220	2750	843	382	199	210
29	140	539	160	155	---	2130	3440	2930	832	362	190	204
30	162	516	150	150	---	2690	3380	2710	642	342	184	198
31	176	---	140	145	---	3480	---	2650	---	325	196	---
TOTAL	3798	7990	9332	5653	4224	20935	53160	113230	57273	19720	7555	6486
MEAN	123	266	301	182	151	675	1772	3653	1909	636	244	216
MAX	176	736	588	260	168	3480	3440	5650	3760	1030	311	262
MIN	105	90	140	130	125	120	1270	2330	832	325	184	176
CFSM	.16	.35	.39	.24	.20	.88	2.31	4.77	2.49	.83	.32	.28
IN.	.18	.39	.45	.27	.21	1.02	2.58	5.50	2.78	.96	.37	.31
AC-FT	7530	15850	18510	11210	8380	41520	105400	224600	113600	39110	14990	12860
CAL YR 1977	TOTAL	108538	MEAN 297	MAX 1820	MIN 55	CFSM .39	IN 5.27	AC-FI	215300			
WTR YR 1978	TOTAL	309356	MEAN 848	MAX 5650	MIN 90	CFSM 1.11	IN 15.02	AC-FT	613600			

12304500 YAAK RIVER NEAR TROY, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Seasonally (spring, summer, fall) 1963-73, March 1975 to current year.

INSTRUMENTATION.--Temperature recorder since March 1976.

REMARKS.--Prior to March 25, 1976 records furnished by Corps of Engineers, U.S. Army.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum 25.0°C Aug. 8, 1971; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum 23.5°C Aug. 8, 9; minimum, 0.0°C on many days during November to March.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.0	10.0	---	4.5	4.0	4.0	.0	.0	.0	.0	.0	.0
2	9.0	9.0	---	5.0	4.0	4.5	.0	.0	.0	.0	.0	.0
3	8.0	8.0	---	4.0	2.0	3.0	.0	.0	.0	.0	.0	.0
4	6.5	6.5	---	3.0	2.0	2.5	.0	.0	.0	.0	.0	.0
5	8.0	5.5	---	2.5	2.0	2.5	.0	.0	.0	.0	.0	.0
6	8.5	5.0	6.5	3.0	2.5	2.5	.0	.0	.0	.0	.0	.0
7	9.5	6.5	6.0	3.5	2.0	3.0	.0	.0	.0	.0	.0	.0
8	7.5	6.5	7.0	2.0	.5	1.0	.0	.0	.0	.0	.0	.0
9	8.0	6.0	6.5	1.0	.5	.5	.0	.0	.0	.0	.0	.0
10	7.0	4.0	5.5	1.5	.5	1.0	.0	.0	.0	.0	.0	.0
11	6.5	3.5	4.5	3.0	1.5	2.0	.0	.0	.0	.0	.0	.0
12	7.0	3.5	5.0	3.5	2.0	3.0	.0	.0	.0	.0	.0	.0
13	9.5	5.5	7.0	3.0	2.5	3.0	.0	.0	.0	.0	.0	.0
14	8.5	6.0	7.0	3.0	2.0	2.5	.0	.0	.0	.0	.0	.0
15	8.0	5.0	6.0	2.0	1.5	1.5	.0	.0	.0	.0	.0	.0
16	8.5	5.0	6.5	2.0	1.0	1.5	.5	.0	.5	.0	.0	.0
17	8.0	5.0	6.0	1.0	.0	.5	.0	.0	.0	.0	.0	.0
18	7.5	4.5	5.5	.5	.0	.0	.5	.0	.0	.0	.0	.0
19	7.5	4.5	5.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	8.0	5.5	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	8.0	4.0	5.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
22	6.5	4.0	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	6.0	4.0	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	6.0	4.0	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	6.5	5.5	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	7.0	5.5	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	5.0	3.5	4.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	5.0	4.0	4.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	6.0	4.5	5.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	6.0	5.0	5.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	5.0	4.0	4.5	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	10.0	3.5	5.5	5.0	.0	1.5	.5	.0	.0	.0	.0	.0

12305000 KOOTENAI RIVER AT LEONIA, ID

LOCATION.--Lat 48°37'04", long 116°02'47", in NW¼NW¼ sec.20, T.33 N., R.34 W., Principal meridian, Lincoln County, MT, Hydrologic Unit 17010104, on right bank at Leonia, 450 ft (137 m) east of Montana-Idaho State line, 0.5 mi (0.8 km) upstream from Boulder Creek, and at mile 171.6 (276.1 km).

DRAINAGE AREA.--11,740 mi² (30,407 km²), approximately.

PERIOD OF RECORD.--March 1928 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,790.25 ft (545.668 m), National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1970, at datum 90 ft (27.4 m) lower. Prior to Nov. 13, 1928, nonrecording gage on bridge 250 ft (76.2 m) upstream at datum 90.41 ft (27.557 m) lower.

REMARKS.--Water-discharge records fair. Diversions above station for irrigation of about 14,600 acres (5,900 hm²). Flow regulated by Libby Dam since Mar. 21, 1972 (see p. 644). Corps of Engineers radio telemeter at station.

AVERAGE DISCHARGE.--50 years, 14,020 ft³/s (397.0 m³/s), 16.22 in/yr (412 mm/yr), 10,160,000 acre-ft/yr (12.6 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 123,000 ft³/s (3,480 m³/s) May 28, 1948, gage height, 33.40 ft (10.180 m); minimum, 996 ft³/s (28.2 m³/s) Dec. 9, 1936; minimum gage height, 7.56 ft (2.304 m) Dec. 10, 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of June 1894 and 1916 reached stages of 34.6 ft (10.55 m) and 31.6 ft (9.63 m), respectively, present datum, from information by Great Northern Railway.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,000 ft³/s (708 m³/s) June 9, gage height, 17.41 ft (5.307 m); minimum, 4,240 ft³/s (120 m³/s) Mar. 18, gage height, 10.27 ft (3.130 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12600	20500	17500	5100	13700	13400	14200	11900	10800	19500	12500	11600
2	8170	20600	19300	9290	13900	12200	12300	12800	11300	17800	12400	10500
3	11600	21800	8290	19400	13900	6160	10800	13300	13400	20300	12300	5800
4	19500	21600	7010	14900	9900	5460	9890	12500	14700	20800	12500	5200
5	10300	15900	10300	15100	5070	5080	9390	11200	15600	20800	12200	6600
6	12900	18900	9890	15600	8080	5000	8850	10400	16900	21300	12300	12500
7	16200	20600	6410	7660	12200	4980	8290	9890	18600	22500	12100	13800
8	10400	18400	8370	5480	11900	5060	7850	9670	17300	17500	11800	14600
9	7950	17600	18900	9590	11800	5300	7570	10100	20400	14800	13000	14800
10	6040	20800	11600	14800	11900	5210	7440	13200	17400	14400	15700	15000
11	10800	20800	6020	14900	8990	5170	7710	14300	11500	17500	15700	13000
12	13000	11700	9220	14700	5060	5170	7920	13000	10900	17100	14600	9600
13	15300	5390	8100	14300	7750	5190	7660	11400	15800	17100	7710	10400
14	15100	10600	10600	10200	9520	5150	7460	12500	16200	16900	6750	10400
15	9340	12800	7710	5350	12200	5130	7280	17200	15800	15500	7950	11400
16	4770	13300	10200	9420	12000	5150	7300	17700	14200	12400	7660	7270
17	8270	13200	8850	14100	9560	5170	7440	15900	11100	13500	7080	4800
18	7530	20700	6880	14200	9580	4760	7230	15100	8850	17100	10400	5210
19	9690	20400	6430	14300	5040	4540	7120	14700	11600	17100	8440	10400
20	20600	19900	6160	14200	7710	4870	7390	15000	14500	13600	4980	10500
21	14400	20300	8050	9880	11900	5220	7830	15800	10400	7900	6900	11200
22	10400	20200	5970	5130	12000	5660	7800	16800	8770	5630	10700	14900
23	11000	20300	5930	9020	12100	6220	7550	15000	8370	5500	11000	15000
24	10400	20200	5720	13300	12600	7920	7230	13500	8170	5400	11000	15100
25	13700	20400	5440	13800	9840	8700	7150	12900	7920	8800	11500	15000
26	9390	21100	5440	13900	5020	8720	7590	11900	9370	10200	9200	15000
27	8000	8850	9570	13800	8220	9490	9290	11200	14500	11500	6300	15000
28	9340	8800	14800	9820	13300	10300	11300	11300	12700	15300	6400	15000
29	9170	20600	15000	5120	---	11000	11900	11700	15300	13200	9300	14900
30	5050	14100	15000	9030	---	12200	11800	11200	16600	12000	11800	14900
31	9320	---	10500	13700	---	15100	---	12100	---	11700	11800	---
TOTAL	340230	520340	299360	359090	284740	218680	260530	405160	398950	454630	325990	349380
MEAN	10980	17340	9657	11580	10170	7054	8684	13070	13300	14670	10520	11650
MAX	20600	21800	19300	19400	13900	15100	14200	17700	20400	22500	15700	15100
MIN	4770	5390	5440	5100	5020	4540	7120	9670	7920	5400	4980	4800
AC-FT	674800	1032000	593800	712300	564800	433800	516800	803600	791300	901800	646600	693000
CAL YR 1977 TOTAL	3764700			MEAN 10310	MAX 21800	MIN 3600	AC-FT 7467000					
WTR YR 1978 TOTAL	4217080			MEAN 11550	MAX 22500	MIN 4540	AC-FT 8365000					

12324590 LITTLE BLACKFOOT RIVER NEAR GARRISON, MT

LOCATION.--Lat 46°32'12", long 112°43'33", in SE¼NE¼ sec.16, T.9 N., R.9 W., Powell County, Hydrologic Unit 17010201, on left bank 200 ft (61 m) downstream from bridge on county road, 4 mi (6 km) east of Garrison.

DRAINAGE AREA.--398 mi² (1,031 km²).

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,430 ft (1,350 m), from topographic map.

REMARKS.--Records good except those for winter period, which are poor. A few minor irrigation holding reservoirs in upper reaches of drainage. Diversions for irrigation of about 10,500 acres (42.5 km²).

AVERAGE DISCHARGE.--6 years, 176 ft³/s (4.984 m³/s), 127,500 acre-ft/yr (157 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,650 ft³/s (103 m³/s) June 19, 1975, gage height, 7.50 ft (2.286 m); minimum, 6.0 ft³/s (0.170 m³/s) Aug. 24, 1977, gage height, 2.94 ft (0.896 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 550 ft³/s (15.6 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 27	2400	706 20.0	5.07 1.545	May 19	0200	*1,200 34.0	*5.70 1.737

Minimum daily discharge, 30 ft³/s (0.850 m³/s) Jan. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	45	46	30	54	44	527	384	682	115	85	66
2	35	45	51	35	60	43	511	396	616	132	86	64
3	37	45	84	40	63	40	421	406	565	151	84	62
4	37	45	78	45	56	43	371	401	555	199	82	62
5	38	45	59	53	54	50	384	400	572	412	77	62
6	39	45	57	54	45	56	331	429	588	402	68	62
7	42	45	55	54	43	60	300	421	636	295	68	64
8	42	45	50	56	43	60	285	396	636	282	66	68
9	41	45	47	56	40	62	267	387	620	340	64	66
10	41	45	50	58	43	63	256	493	594	260	62	66
11	43	45	53	54	42	65	286	608	571	220	58	76
12	46	45	52	52	37	68	273	614	518	217	40	155
13	46	45	52	50	35	63	251	573	469	202	42	165
14	45	45	79	50	37	60	256	588	421	182	51	129
15	45	46	95	45	40	53	247	646	402	178	58	119
16	44	46	91	50	42	53	252	749	376	193	65	113
17	43	45	67	54	40	60	282	766	360	277	68	111
18	41	43	61	50	45	108	265	945	328	224	70	114
19	40	42	53	52	50	192	256	1110	331	198	71	119
20	42	35	52	54	60	276	265	946	318	185	69	116
21	44	40	50	45	57	350	328	878	280	179	67	110
22	43	44	47	50	46	382	299	946	240	163	70	106
23	43	45	50	52	49	380	275	1060	232	149	77	103
24	44	45	50	54	53	472	261	1060	195	140	76	100
25	44	45	45	54	53	367	259	951	195	127	74	100
26	46	45	42	54	52	440	277	816	202	118	72	98
27	46	46	40	54	52	485	333	713	179	108	73	95
28	46	47	38	54	49	522	352	667	149	107	70	92
29	46	48	37	56	---	481	374	652	130	105	70	93
30	46	50	35	56	---	498	387	651	113	100	68	93
31	46	---	33	45	---	569	---	689	---	89	67	---
TOTAL	1315	1342	1699	1566	1340	6465	9431	20743	12073	6049	2118	2849
MEAN	42.4	44.7	54.8	50.5	47.9	209	314	669	402	195	68.3	95.0
MAX	46	50	95	58	63	569	527	1110	682	412	86	165
MIN	34	35	33	30	35	40	247	384	113	89	40	62
AC-FT	2610	2660	3370	3110	2660	12820	18710	41140	23950	12000	4200	5650

CAL YR 1977	TOTAL	20270.8	MEAN	55.5	MAX	228	MIN	6.5	AC-FT	40210
WTR YR 1978	TOTAL	66990.0	MEAN	184	MAX	1110	MIN	30	AC-FT	132900

PEND OREILLE RIVER BASIN

12324680 CLARK FORK AT GOLD CREEK, MT

LOCATION.--Lat 46°35'32", long 122°55'24", in SE¼NW¼SW¼ sec.25, T.10 N., R.11 W., Powell County, Hydrologic Unit 17010203, on right bank at county road bridge, 0.4 mi (0.6 km) north of the town of Gold Creek, 1.1 mi (1.8 km) downstream from Gold Creek, and at mile 436.9 (703.0 km).

DRAINAGE AREA.--1,704 mi² (4,413 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

GAGE.--Water-stage recorder. Datum of gage is 4,172.80 ft (1,271.869 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Some regulation by settling ponds on Silver Bow Creek near Anaconda. Diversions for irrigation of about 40,100 acres (162 km²) above station.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 2,230 ft³/s (63.2 m³/s) May 24; minimum daily, 191 ft³/s (5.41 m³/s) Aug. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	360	370	402	200	360	337	1120	833	1490	749	384	338
2	355	400	416	210	340	292	1090	878	1320	865	367	325
3	352	376	519	250	367	319	1010	945	1220	975	345	316
4	341	364	497	300	368	351	904	939	1210	1110	329	304
5	326	391	430	450	381	391	893	903	1330	1550	319	295
6	321	383	421	460	405	437	831	987	1590	1720	302	308
7	343	376	433	455	448	633	784	979	1950	1420	286	312
8	342	359	401	419	405	621	779	936	2110	1390	274	334
9	337	340	426	429	381	702	753	879	2180	1530	272	325
10	330	336	491	429	376	831	727	996	2180	1440	234	308
11	326	340	455	414	323	728	730	1150	2050	1240	214	361
12	333	349	437	404	300	641	661	1190	1690	1160	191	567
13	331	351	430	399	310	546	699	1140	1440	1050	192	728
14	329	357	476	399	332	476	676	1130	1360	957	238	635
15	327	351	564	404	360	419	652	1180	1290	862	264	579
16	325	365	627	361	371	397	656	1360	1220	857	299	543
17	319	358	508	380	358	486	700	1450	1090	1020	321	514
18	320	358	459	370	369	922	685	1640	983	944	352	526
19	321	290	419	366	335	1080	659	2010	991	859	347	543
20	320	280	378	404	355	1110	662	1790	999	816	336	555
21	322	270	359	389	366	996	759	1630	943	804	329	555
22	320	271	350	380	381	948	734	1760	865	749	336	546
23	327	375	330	419	424	914	660	1890	784	673	366	537
24	331	418	372	384	462	969	639	2230	784	636	356	543
25	356	384	328	384	473	869	633	2190	813	584	329	554
26	393	437	370	371	468	881	670	1880	880	535	312	564
27	391	454	327	372	431	949	765	1570	791	493	334	569
28	378	424	307	414	385	999	779	1400	681	479	334	564
29	371	418	300	387	---	987	795	1350	701	475	325	568
30	368	416	280	427	---	1010	814	1370	707	452	321	575
31	364	---	230	380	---	1100	---	1400	---	411	334	---
TOTAL	10581	10961	12742	11810	10632	22341	22919	41985	37642	28807	9546	14291
MEAN	341	365	411	381	360	721	764	1354	1255	929	308	476
MAX	393	454	627	460	473	1110	1120	2230	2180	1720	384	728
MIN	319	270	230	200	300	292	633	833	681	411	191	295
AC-FT	20990	21740	25270	23430	21090	44310	45460	83280	74660	57140	18930	28350
4TR YR 1978	TOTAL	234257	MEAN	642	MAX	2230	MIN	191	AC-FT	464600		

12325500 FLINT CREEK NEAR SOUTHERN CROSS, MT

LOCATION.--Lat 46°14'02", long 113°17'43", in SE¼NW¼ sec.36, T.6 N., R.14 W., Granite County, Hydrologic Unit 17010202, on left wing of weir 0.5 mi (0.8 km) downstream from powerplant, 2.0 mi (3.2 km) downstream from Georgetown Dam, 3.5 mi (5.6 km) northwest of Southern Cross, 6.8 mi (10.9 km) south of Philipsburg, and at mile 36.8 (59.2 km).

DRAINAGE AREA.--52.6 mi² (136.2 km²).

PERIOD OF RECORD.--October 1940 to current year.

REVISED RECORDS.--WSP 1216: 1942(M). WSP 1246: Drainage area.

GAGE.--Nonrecording gage and sharp-crested, contracted, rectangular weir. Altitude of gage is 5,630 ft (1,720 m), from topographic map. Prior to 1973 gage at same site at datum 0.20 ft (0.055 m) higher.

REMARKS.--Records good. Flow regulated by Georgetown Lake (see p.739). Flow may be augmented by transbasin diversion from Silver Lake to Georgetown Lake or reduced by pumping from Georgetown Lake to Silver Lake.

COOPERATION.--Gage-height record furnished by The Montana Power Company under general supervision of Geological Survey in connection with a Federal Power Commission project.

AVERAGE DISCHARGE.--38 years, 28.7 ft³/s (0.813 m³/s), 20,790 acre-ft/yr (25.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 174 ft³/s (4.93 m³/s) June 13, 1942, gage height, 1.86 ft (0.567 m); maximum gage height observed, 2.58 ft (0.786 m) July 6, 1975; probably no flow for parts of Aug. 20, 1943, May 23, 1942, Oct. 6, 1954, Nov. 29, Dec. 1, 1966, and no flow Nov. 30, 1966, when generator was shut down.

EXTREMES FOR CURRENT YEAR.--Maximum discharge observed, 109 ft³/s (3.09 m³/s) July 10-12, gage height, 2.00 ft (0.610 m); minimum daily, 6.5 ft³/s (0.18 m³/s) Mar. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	13	14	14	14	14	18	17	33	43	31	34
2	29	13	14	14	14	14	18	17	33	43	31	33
3	29	13	14	14	14	14	18	18	33	43	31	33
4	29	13	14	14	14	14	18	17	33	50	31	33
5	29	13	14	14	14	14	16	17	33	69	31	33
6	29	13	14	14	14	14	17	18	33	79	31	33
7	30	13	14	14	14	14	17	18	29	79	31	33
8	29	13	14	14	14	14	17	18	31	79	31	33
9	29	13	14	14	14	14	17	17	49	91	31	33
10	29	13	14	14	14	14	17	18	67	109	31	33
11	29	13	14	14	14	14	18	18	67	109	31	34
12	29	13	14	14	14	14	17	18	67	109	31	43
13	29	13	14	14	14	14	17	18	67	92	33	53
14	21	13	14	14	14	14	17	18	67	76	33	53
15	12	13	14	14	14	14	17	18	67	55	31	53
16	12	13	14	14	14	14	17	18	67	55	31	53
17	13	13	14	14	14	14	17	18	67	55	31	53
18	13	13	14	14	14	14	17	18	67	57	33	53
19	13	13	14	14	14	14	17	26	77	55	33	53
20	13	13	14	14	14	6.5	17	35	89	55	33	53
21	13	13	14	14	14	10	17	35	89	57	33	53
22	13	13	14	14	14	16	17	34	94	55	33	53
23	13	13	14	14	14	16	17	34	100	55	33	53
24	13	13	13	14	14	16	17	34	100	55	33	53
25	13	14	13	14	14	16	17	34	100	55	33	53
26	13	14	13	14	14	16	17	33	77	55	33	53
27	13	14	13	14	14	17	17	34	52	55	33	53
28	13	14	14	14	14	18	17	31	43	55	34	53
29	13	14	13	14	---	18	17	33	43	37	34	53
30	13	14	14	14	---	18	17	33	43	37	34	53
31	13	---	14	14	---	18	---	31	---	34	34	---
TOTAL	618	396	429	434	392	451.5	514	745	1817	1953	997	1362
MEAN	19.9	13.2	13.8	14.0	14.0	14.6	17.1	24.0	60.6	63.0	32.2	45.4
MAX	30	14	14	14	14	18	18	35	100	109	34	53
MIN	12	13	13	14	14	6.5	16	17	29	34	31	33
AC-FT	1230	785	851	861	778	896	1020	1480	3600	3870	1980	2700
CAL YR 1977	TOTAL	7718.0	MEAN 21.1	MAX 52	MIN 12	AC-FT 15310						
WTR YR 1978	TOTAL	10108.5	MEAN 27.7	MAX 109	MIN 6.5	AC-FT 20050						

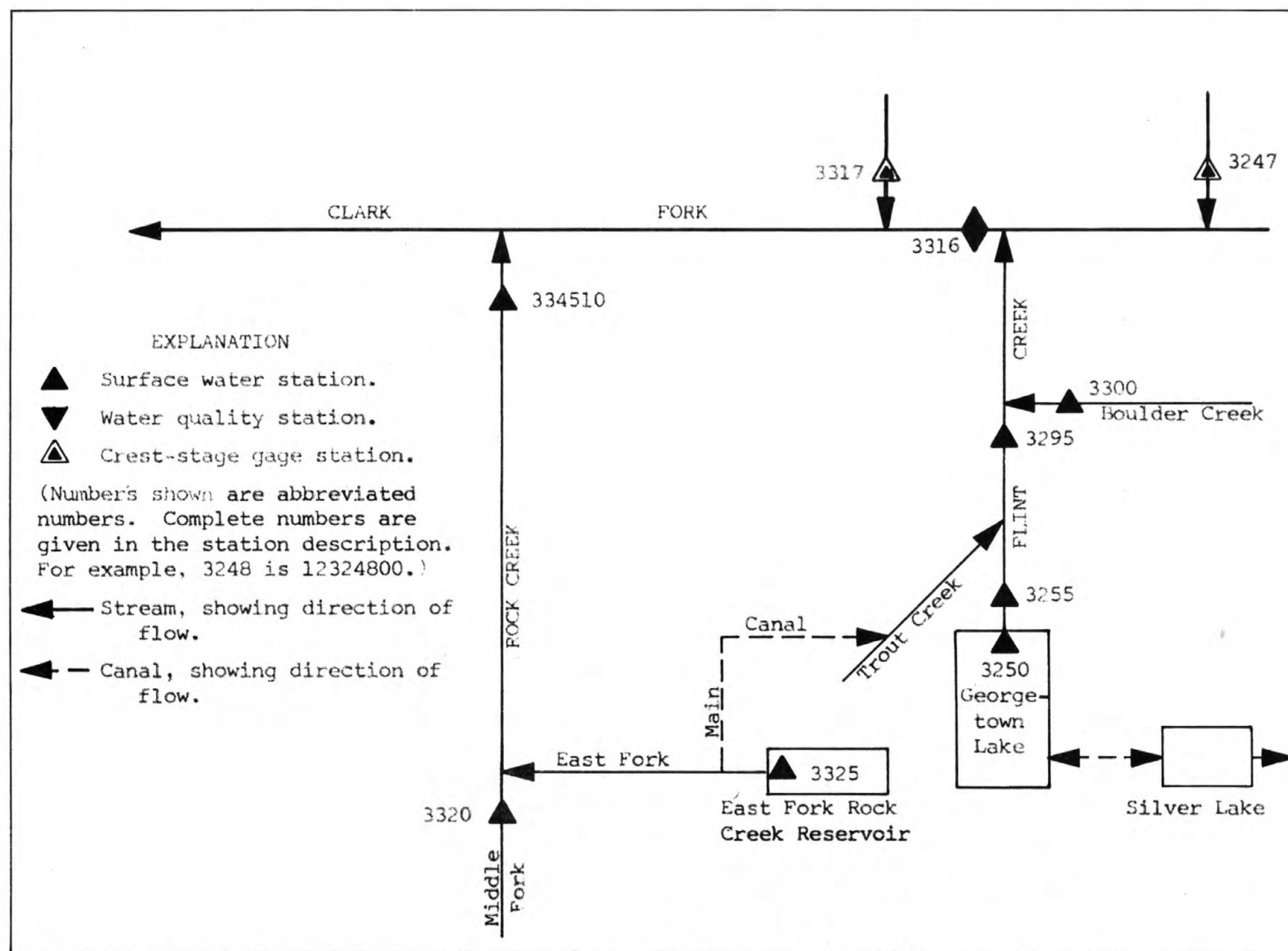


Figure 11. Schematic diagram showing diversion from Rock Creek basin to Flint Creek basin.

PEND OREILLE RIVER BASIN

669

12329500 FLINT CREEK AT MAXVILLE, MT

LOCATION.--Lat 46°27'54", long 113°14'20", in NW¼ sec.9, T.8 N., R.13 W., Granite County, Hydrologic Unit 17010202, on right bank 0.4 mi (0.6 km) west of Maxville and 1.0 mi (1.6 km) upstream from Boulder Creek.

DRAINAGE AREA.--208 mi² (539 km²).

PERIOD OF RECORD.--August 1941 to current year. April 1939 to September 1941 at site 0.5 mi (0.8 km) upstream (above Maxville siding); records not equivalent owing to diversions.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,828.38 ft (1,471.690 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for winter period which are poor. Some regulation by Georgetown Lake (see p. 739). Diversions for irrigation of about 8,200 acres (33.2 km²) above station. During irrigation season, flow is supplemented by water from East Fork Rock Creek which is diverted in sec.5, T.4 N., R.14 W., 500 ft (152 m) below Rock Creek Dam, through a canal into Trout Creek, thence into Flint Creek, (see schematic diagram, p. 668).

AVERAGE DISCHARGE.--37 years, 99.6 ft³/s (2.821 m³/s), 72,160 acre-ft/yr (89.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,680 ft³/s (47.6 m³/s) Mar. 28, 1943, gage height, 6.79 ft (2.070 m), from rating curve extended above 600 ft³/s (17.0 m³/s); maximum gage height, 8.08 ft (2.463 m) Feb. 4, 1963 (backwater from ice); minimum daily discharge, 15 ft³/s (0.42 m³/s) Feb. 25, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 400 ft³/s (11.3 m³/s) Mar. 17, gage height, 4.29 ft (1.308 m); minimum daily, 32 ft³/s (0.906 m³/s) Feb. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	73	65	40	42	50	162	97	152	170	111	114
2	89	74	110	45	45	43	155	104	140	182	116	112
3	88	72	120	49	55	40	134	105	140	172	124	108
4	87	72	82	55	53	45	119	97	163	163	120	107
5	92	71	69	54	53	55	117	94	176	203	117	108
6	93	80	73	58	54	65	108	114	194	261	118	114
7	100	75	72	61	54	66	106	103	215	219	121	122
8	99	70	66	62	55	64	101	92	208	272	126	120
9	96	67	74	65	45	91	94	89	212	253	114	104
10	94	70	70	63	38	98	90	106	215	214	100	103
11	91	69	66	60	34	84	95	123	184	203	98	127
12	90	69	71	59	33	75	91	117	160	180	111	177
13	89	67	68	59	32	59	88	108	147	155	121	185
14	87	66	105	59	37	54	88	108	169	148	152	162
15	83	68	113	57	42	54	85	138	162	129	129	153
16	80	67	91	50	45	55	86	156	146	133	133	158
17	75	64	65	54	48	140	86	135	121	124	142	152
18	73	63	71	54	50	192	83	181	111	128	152	154
19	72	61	67	50	53	167	81	188	117	132	140	177
20	71	50	54	52	56	201	90	162	117	129	138	164
21	70	52	45	56	57	175	109	162	129	146	137	155
22	71	53	50	55	58	170	94	183	143	141	145	151
23	70	53	68	53	62	138	88	196	160	127	161	150
24	69	58	58	45	70	142	83	202	182	123	149	158
25	73	66	60	58	60	103	82	172	203	119	143	170
26	87	108	59	56	56	104	84	153	192	112	145	179
27	75	80	56	55	55	128	96	142	168	114	174	182
28	73	72	52	54	53	132	99	137	143	114	152	183
29	71	79	50	50	---	134	102	150	146	119	144	183
30	72	73	45	45	---	141	99	151	160	113	123	174
31	76	---	38	43	---	160	---	151	---	106	119	---
TOTAL	2551	2062	2155	1676	1395	3226	2995	4226	4875	4904	4073	4406
MEAN	82.3	68.7	69.5	54.1	49.8	104	99.8	136	163	158	131	147
MAX	100	108	120	65	70	201	162	202	215	272	174	185
MIN	69	50	38	40	32	40	81	89	111	106	98	103
AC-FT	5060	4090	4270	3320	2770	6400	5940	8380	9670	9730	8080	8740
CAL YR 1977	TOTAL	24292	MEAN	66.6	MAX	170	MIN	25	AC-FT	48180		
WTR YR 1978	TOTAL	38544	MEAN	106	MAX	272	MIN	32	AC-FT	76450		

PEND OREILLE RIVER BASIN

12330000 BOULDER CREEK AT MAXVILLE, MT

LOCATION.--Lat 46°28'20", long 113°13'59", in SW¼ sec.4, T.8 N., R.13 W., Granite County, Hydrologic Unit 17010202, on right bank 0.2 mi (0.3 km) upstream from mouth and 0.7 mi (1.1 km) north of Maxville.

DRAINAGE AREA.--71.3 mi² (184.7 km²).

PERIOD OF RECORD.--April 1939 to current year. Monthly discharge only for some periods, published in WSP 1316.

GAGE.--Water-stage recorder. Altitude of gage is 4,750 ft (1,448 m), from topographic map. Apr. 15, 1939, to July 7, 1941, nonrecording gage at site 75 ft (23 m) upstream at different datum. July 8-20, 1941, nonrecording gage at site 175 ft (53 m) upstream at datum 1.03 ft (0.314 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Diversions for irrigation of about 238 acres (960,000 m²), all of which lies below station.

AVERAGE DISCHARGE.--39 years, 47.6 ft³/s (1.348 m³/s), 34,490 acre-ft/yr (42.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,460 ft³/s (41.3 m³/s) June 19, 1975, gage height, 4.55 ft (1.387 m) in gage well, 4.80 ft (1.463 m), from floodmarks; minimum, 3.0 ft³/s (0.085 m³/s) about Mar. 24, 1964, gage height, 0.73 ft (0.223 m), result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 150 ft³/s (4.25 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
May 22	2330	193	5.47	2.67	0.814	June 8	0015	*419	11.9	*3.35	1.021

Minimum discharge, 13 ft³/s (0.37 m³/s) Oct. 11, gage height, 1.11 ft (0.338 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	18	20	15	18	17	46	61	127	164	35	22
2	16	20	22	16	18	17	46	69	127	173	31	21
3	16	19	23	17	18	16	40	71	149	156	28	20
4	15	19	23	18	18	17	38	64	192	149	27	19
5	15	19	22	18	18	18	37	60	244	186	26	19
6	14	19	22	18	18	18	35	59	330	175	25	20
7	17	19	22	17	18	17	32	57	376	148	24	20
8	16	17	20	17	18	18	32	52	376	141	23	23
9	16	19	19	18	18	18	33	51	390	131	23	20
10	15	18	20	18	18	18	32	78	362	114	22	19
11	14	18	21	18	18	17	35	88	266	102	22	37
12	14	18	21	18	17	17	33	76	230	94	21	56
13	17	17	22	17	16	17	32	71	245	83	22	44
14	20	17	23	17	17	17	32	89	272	77	30	49
15	19	17	23	17	17	17	31	134	253	73	25	45
16	19	17	23	18	17	17	32	138	217	77	29	47
17	18	17	23	18	17	18	33	117	189	72	33	42
18	18	17	23	18	17	19	31	133	194	68	38	44
19	18	16	22	17	17	19	31	136	204	62	32	42
20	17	14	20	18	17	20	35	133	178	60	27	40
21	17	15	19	18	17	20	35	146	183	60	26	40
22	17	16	20	18	17	21	34	179	188	56	27	40
23	17	17	21	18	17	22	32	187	200	53	32	44
24	17	18	21	17	17	23	31	162	202	51	28	52
25	19	19	21	18	17	22	32	143	202	48	25	61
26	26	20	20	19	17	22	36	130	170	43	24	69
27	21	23	19	18	17	24	46	121	159	40	27	74
28	20	21	18	18	17	27	50	126	157	40	24	74
29	20	21	18	19	---	30	53	148	161	40	23	69
30	19	20	18	18	---	34	54	138	168	38	22	62
31	19	---	16	18	---	43	---	131	---	36	22	---
TOTAL	543	545	645	547	486	640	1099	3348	6711	2810	823	1234
MEAN	17.5	18.2	20.8	17.6	17.4	20.6	36.6	108	224	90.6	26.5	41.1
MAX	26	23	23	19	18	43	54	187	390	186	38	74
MIN	14	14	16	15	16	16	31	51	127	36	21	19
AC-FT	1080	1080	1280	1080	964	1270	2180	6640	13310	5570	1630	2450

CAL YR 1977 TOTAL 8824.7 MEAN 24.2 MAX 103 MIN 5.9 AC-FT 17500
WTR YR 1978 TOTAL 19431.0 MEAN 53.2 MAX 390 MIN 14 AC-FT 38540

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LOCATION.--Lat 46°39'45", long 113°08'57", in SE4NW4SE4 sec.31, T.11 N., R.12 W., Granite County, Hydrologic Unit 17010201, at bridge on old U.S. Highway 10A, 0.4 mi (0.6 km) southwest of Drummond, 0.9 mi (1.4 km) downstream from Flint Creek, and at mile 417.0 (671.0 km).

PERIOD OF RECORD.--March 1967 to June 1968, October 1970, June 1971 to September 1972 (occasional discharge measurements and gage heights only). October 1972 to current year.

REMARKS.--Records good. Some regulation by settling ponds on Silver Bow Creek near Anaconda and by Georgetown Lake (see p. 739) on Flint Creek. Diversions for irrigation of about 86,500 acres (350 km²) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,490 ft³/s (240 m³/s) June 20, 1975, gage height, 10.60 ft (3.231 m), from floodmarks; minimum daily, 58 ft³/s (1.64 m³/s) Aug. 15, 20, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,800 ft³/s (79.3 m³/s) June 10, gage height, 6.88 ft (2.097 m);
minimum daily, 63 ft³/s (1.78 m³/s) Mar. 2.

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	546	552	540	300	495	333	1520	1030	1660	1150	405	523
2	570	564	570	270	484	63	1470	1040	1570	1240	340	489
3	588	564	564	300	478	116	1350	1140	1380	1380	356	484
4	546	534	696	330	473	375	1220	1210	1320	1440	347	484
5	540	540	606	370	467	484	1170	1120	1460	1760	333	495
6	529	546	576	420	445	570	1080	1150	1650	2340	333	511
7	564	564	600	480	534	544	1020	1160	2150	1940	276	540
8	552	540	576	500	545	765	1020	1070	2420	1670	247	600
9	564	512	529	529	540	1080	941	983	2550	1910	306	612
10	546	517	552	570	534	1090	950	991	2550	1610	256	625
11	540	517	625	546	524	1120	974	1150	2350	1570	240	631
12	534	512	600	534	345	958	934	1330	2000	1420	236	644
13	534	517	657	529	370	815	954	1240	1670	1350	228	1150
14	534	523	717	540	340	570	911	1170	1580	1150	289	950
15	546	540	744	495	360	588	860	1180	1560	1020	289	911
16	534	512	836	446	390	552	866	1460	1480	1070	410	844
17	523	506	676	457	410	744	896	1630	1370	1140	400	844
18	512	512	540	478	450	941	881	1640	1210	983	415	866
19	523	457	470	467	484	1320	836	2250	1180	911	457	851
20	512	248	420	540	500	1400	829	2010	1250	919	451	911
21	512	244	400	529	523	1230	958	1850	1150	890	430	904
22	534	342	410	512	534	1150	974	1850	1080	829	489	911
23	506	410	440	478	540	1240	866	2140	991	793	540	896
24	523	570	410	435	730	1240	836	2430	974	710	540	888
25	517	600	370	462	644	1140	807	2450	1180	619	529	927
26	606	663	390	446	644	1050	800	2140	1260	576	552	934
27	588	606	370	457	657	1180	919	1820	1190	540	546	950
28	570	594	370	446	588	1240	999	1580	1020	506	529	927
29	558	588	370	500	---	1270	974	1490	983	484	517	950
30	540	588	360	478	---	1300	1020	1560	1010	478	534	942
31	546	---	330	484	---	1500	---	1530	---	430	529	---
TOTAL	16837	15482	16314	14328	14163	28118	29871	46834	45138	35014	12444	23400
MEAN	543	516	526	462	506	907	996	1511	1505	1129	402	780
MAX	606	663	836	570	730	1500	1520	2450	2550	2340	552	1150
MIN	506	244	330	270	340	63	800	983	974	430	228	484
CF5M	.23	.22	.22	.19	.21	.38	.42	.64	.63	.48	.17	.33
IN.	.26	.24										

POND OREILLE RIVER BASIN

12332000 MIDDLE FORK ROCK CREEK NEAR PHILIPSBURG, MT

LOCATION.--Lat 46°11'42", long 113°30'00", in SWSE¼ sec.8, T.5 N., R.15 W., Granite County, Hydrologic Unit 17010202, on right bank 0.3 mi (0.5 km) upstream from East Fork, 2.3 mi (3.7 km) upstream from West Fork, and 13.7 mi (22.0 km) southwest of Philipsburg.

DRAINAGE AREA.--123 mi² (319 km²).

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 5,385.84 ft (1,641.604 m) National Geodetic Vertical Datum of 1929. Sept. 21, 1937 to May 10, 1942, nonrecording gage at site 600 ft (183 m) upstream at different datum. May 11, 1942, to May 11, 1954, nonrecording gages at site 400 ft (122 m) downstream at different datum. May 12, 1954, to Sept. 30, 1955, nonrecording gage at site 300 ft (91 m) upstream at datum 5.74 ft (1.750 m) higher.

REMARKS.--Records good except those for winter period, which are poor. A few small diversions for irrigation above station.

AVERAGE DISCHARGE.--41 years, 124 ft³/s (3.512 m³/s), 13.69 in/yr (348 mm/yr), 89,840 acre-ft/yr (111 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,680 ft³/s (47.6 m³/s) June 16, 1974, gage height, 5.58 ft (1.701 m); minimum daily, 5.3 ft³/s (0.150 m³/s) Feb. 9, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 450 ft³/s (12.7 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s)		Gage height (ft)		Date	Time	Discharge (ft ³ /s)		Gage height (ft)	
May 23	1600	563	15.9	3.83	1.167	July 8	0700	595	16.9	3.96	1.207
June 10	0600	*1,260	35.7	*5.01	1.527						

Minimum discharge, 10 ft³/s (0.28 m³/s) Jan. 30, gage height, 1.65 ft (0.503 m), result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	UCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	43	30	15	31	27	153	243	394	571	135	70
2	55	44	33	16	34	25	155	272	392	574	133	68
3	53	42	35	18	34	28	139	275	437	593	127	68
4	50	40	32	21	33	35	129	269	537	523	121	64
5	48	41	31	23	34	33	125	259	643	482	119	62
6	46	42	32	27	36	33	118	256	843	462	115	67
7	47	40	33	30	34	34	115	246	1010	459	109	72
8	47	42	32	29	33	34	105	237	1070	563	103	75
9	47	44	31	27	35	34	101	237	1060	504	99	69
10	47	40	30	26	36	34	99	303	1120	444	96	66
11	45	37	31	25	35	32	113	344	880	421	96	88
12	45	36	32	25	30	32	109	318	709	380	92	94
13	44	36	33	25	30	32	103	310	697	341	94	96
14	44	36	34	25	31	32	103	372	793	314	117	89
15	43	37	27	24	33	30	103	473	779	300	113	86
16	43	36	21	24	35	29	111	477	699	301	103	84
17	42	36	20	23	36	33	113	433	598	284	107	82
18	41	32	21	25	37	36	109	458	591	261	103	82
19	41	29	21	26	38	40	109	444	666	243	96	85
20	40	25	20	27	40	39	122	411	606	230	90	83
21	39	26	19	26	40	38	127	441	600	219	87	83
22	39	28	19	25	40	40	120	516	592	201	84	81
23	39	30	20	23	38	42	118	555	628	188	80	81
24	38	31	20	22	37	47	115	532	673	179	77	85
25	40	30	20	30	35	44	116	475	667	175	72	84
26	52	29	20	29	33	47	129	423	553	163	72	86
27	48	29	19	30	32	53	148	389	502	160	76	89
28	45	28	20	33	30	62	163	384	504	160	72	91
29	44	28	22	31	---	76	170	444	555	175	69	88
30	44	28	19	30	---	98	183	438	584	158	69	84
31	44	---	16	30	---	131	---	419	---	144	69	---
TOTAL	1400	1045	793	790	970	1330	3723	11653	20382	10172	2995	2402
MEAN	45.2	34.8	25.6	25.5	34.6	42.9	124	376	679	328	96.6	80.1
MAX	60	44	35	33	40	131	183	555	1120	593	135	96
MIN	38	25	16	15	30	25	99	237	392	144	69	62
CFSM	.37	.28	.21	.21	.28	.35	1.01	3.06	5.52	2.67	.79	.65
IN.	.42	.32	.24	.24	.29	.40	1.13	3.52	6.16	3.08	.91	.73
AC-FT	2780	2070	1570	1570	1920	2640	7380	23110	40430	20180	5940	4760
CAL YR 1977	TOTAL	23643	MEAN	64.8	MAX	328	MIN 15	CFSM .53	IN 7.15	AC-FT	46900	
WTR YR 1978	TOTAL	57655	MEAN	158	MAX	1120	MIN 15	CFSM 1.29	IN 17.44	AC-FT	114400	

12334510 ROCK CREEK NEAR CLINTON, MT

LOCATION.--Lat 46°43'21", long 113°40'56", in NE¼SW¼ sec.12, T.11 N., R.17 W., Missoula County, Hydrologic Unit 17010202, on left bank 100 ft (30 m) downstream from private road bridge, 0.2 mi (0.3 km) upstream from mouth, and 3.7 mi (6.0 km) southeast of Clinton.

DRAINAGE AREA.--885 mi² (2,292 km²).

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,519.46 ft (1,072.731 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Some regulation by East Fork Rock Creek reservoir (see p. 739.). During irrigation season water is diverted from East Fork Rock Creek in sec.5, T.4 N., R.14 W., 500 ft (152 m) below Rock Creek Dam, through a canal into Trout Creek, thence into Flint Creek (see schematic diagram, p. 668). Diversions for irrigation of about 16,100 acres (65.2 km²).

AVERAGE DISCHARGE.--6 years, 618 ft³/s (17.50 m³/s), 9.48 in/yr (241 mm/yr), 447,700 acre-ft/yr (552 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,520 ft³/s (156 m³/s) June 20, 1975, gage height, 7.49 ft (2.283 m); minimum, 45 ft³/s (1.27 m³/s) Jan. 3, 1974, gage height, 1.65 ft (0.503 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1972 reached a stage of 8.5 ft (2.59 m), from floodmark, discharge, 6,500 ft³/s (184 m³/s); local residents report flood of 1927 reached a stage of about 9.5 ft (2.90 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,610 ft³/s (45.6 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 23	1915	2,710 76.7	6.21 1.893	June 8	1815	*3,640 103	*6.87 2.094

Minimum daily discharge, 120 ft³/s (340 m³/s) Dec. 31, Jan. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	280	214	220	120	175	184	1160	1230	1850	1650	522	297
2	257	210	249	140	178	169	1170	1500	1780	1580	504	284
3	242	214	358	160	164	150	1010	1600	1850	1610	482	280
4	231	200	331	180	178	170	865	1530	2110	1570	454	280
5	227	204	261	190	172	210	803	1430	2410	1490	433	268
6	224	214	235	190	181	200	738	1420	2800	1440	417	264
7	231	214	249	200	178	194	708	1340	3240	1370	397	280
8	235	200	227	220	181	191	669	1260	3520	1490	382	288
9	231	178	214	220	169	214	629	1220	3520	1630	358	280
10	231	188	214	204	169	235	602	1370	3550	1390	349	280
11	227	194	220	194	166	227	655	1700	3200	1240	340	292
12	220	194	220	191	136	227	696	1670	2730	1150	331	402
13	217	191	220	188	150	217	655	1560	2510	1060	322	471
14	217	191	272	188	140	210	635	1660	2570	990	363	433
15	210	197	318	188	150	197	629	2060	2580	945	433	407
16	210	197	309	175	170	194	662	2330	2410	930	392	382
17	204	188	261	172	190	204	690	2130	2190	894	412	358
18	200	178	220	184	191	313	655	2090	2020	851	412	354
19	197	158	235	166	181	392	635	2150	2050	810	392	358
20	197	140	194	164	181	412	662	2030	2030	783	358	354
21	194	142	181	188	178	407	738	2080	1900	776	344	349
22	194	155	231	184	178	443	708	2390	1890	763	344	335
23	191	253	257	172	164	465	676	2630	1900	732	368	331
24	188	272	231	152	197	516	649	2610	1930	683	368	322
25	200	249	220	158	200	482	635	2360	1980	649	344	318
26	235	249	204	188	194	449	662	2100	1860	622	318	309
27	264	309	184	184	191	504	830	1920	1650	596	318	305
28	235	280	155	164	188	602	975	1850	1580	571	313	301
29	220	276	140	172	---	708	1080	1960	1600	602	310	305
30	217	261	130	166	---	810	1120	2000	1650	577	288	301
31	217	---	120	150	---	998	---	1940	---	540	297	---
TOTAL	6843	6310	7080	5512	4930	10894	23001	57120	68860	31984	11665	9788
MEAN	221	210	228	178	176	351	767	1843	2295	1032	376	326
MAX	280	309	358	220	200	998	1170	2630	3550	1650	522	471
MIN	188	140	120	120	136	150	602	1220	1580	540	288	264
CFSM	.25	.24	.26	.20	.20	.40	.87	2.08	2.59	1.17	.43	.37
IN.	.29	.27	.30	.23	.21	.46	.97	2.40	2.89	1.34	.49	.41
AC-FT	13570	12520	14040	10930	9780	21610	45620	113300	136600	63440	23140	19410
CAL YR 1977	TOTAL	99153	MEAN 272	MAX 864	MIN 90	CFSM .31	IN 4.17	AC-FT 196700				
WTR YR 1978	TOTAL	243987	MEAN 668	MAX 3550	MIN 120	CFSM .76	IN 10.26	AC-FT 483900				

12335500 NEVADA CREEK ABOVE RESERVOIR, NEAR FINN, MT

LOCATION.--Lat 46°46'25", long 112°45'25", near south line of sec.20, T.12 N., R.9 W., Powell County, Hydrologic Unit 17010203, on right bank 0.3 mi (0.5 km) downstream from Gallagher Creek, 2 mi (3 km) upstream from Buffalo Creek, and 3 mi (5 km) west of Finn.

DRAINAGE AREA.--116 mi² (300 km²).

PERIOD OF RECORD.--April 1939 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,660 ft (1,420 m), from river-profile map. Prior to Apr. 30, 1942, nonrecording gage at site 0.9 mi (1.4 km) downstream at different datum. Apr. 30, 1942, to July 26, 1953, water-stage recorder at site 1 mi (2 km) downstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Diversions for irrigation of about 2,900 acres (11.7 km²) above station.

AVERAGE DISCHARGE.--39 years, 38.3 ft³/s (1.085 m³/s), 27,750 acre-ft/yr (34.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,800 ft³/s (51.0 m³/s) June 2, 1953, gage height, 6.00 ft (1.829 m), site and datum then in use, from rating curve extended above 400 ft³/s (11.3 m³/s) on basis of inflow-outflow study of Nevada Lake; maximum gage height, 7.40 ft (2.256 m) May 29, 1953, site and datum then in use (backwater from diversion dam); minimum discharge, probably less than 2.0 ft³/s (0.057 m³/s) at times in 1944, 1957, 1972 and 1973.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 290 ft³/s (8.21 m³/s) and maximums (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 21	2130	385 10.9	3.44 1.049	May 24	0015	377 10.7	3.41 1.039
Mar. 26	2045	*680 19.3	*3.98 1.213	July 16	1800	523 14.8	3.09 1.186

Minimum daily discharge, 3.5 ft³/s (0.099 m³/s) Jan. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.9	6.7	7.4	5.5	6.0	6.8	152	112	119	42	24	15
2	6.5	7.0	8.0	4.0	6.6	6.8	144	116	101	49	24	14
3	6.0	6.8	10	5.0	6.6	6.4	99	122	94	51	22	13
4	5.8	7.0	15	5.4	6.2	6.0	83	120	102	79	22	13
5	5.8	7.2	14	6.0	6.0	6.4	86	110	132	155	22	13
6	5.9	7.3	14	7.0	6.4	6.8	72	108	169	76	21	17
7	6.9	7.7	13	8.0	6.0	7.0	65	97	195	60	20	14
8	7.0	7.4	12	9.0	7.0	7.2	60	90	186	66	19	15
9	6.6	7.8	14	9.4	6.4	7.2	54	81	174	68	19	13
10	6.6	8.3	17	10	6.4	6.4	52	89	165	55	18	13
11	6.3	11	16	12	6.2	10	57	114	148	49	17	21
12	6.1	7.8	16	10	6.0	11	56	132	121	46	17	31
13	6.1	7.0	16	9.8	5.6	12	55	121	101	44	17	20
14	6.1	7.6	16	9.0	5.2	11	54	117	91	41	19	16
15	5.9	6.8	15	8.0	6.0	10	52	159	88	45	18	15
16	5.8	5.8	15	7.4	6.4	40	56	241	82	135	21	14
17	5.6	5.0	15	7.0	7.4	170	62	214	81	77	23	13
18	5.6	5.4	15	6.4	7.0	274	59	211	77	53	23	14
19	5.6	5.8	15	6.0	7.2	272	55	175	82	47	20	15
20	5.6	6.4	13	7.0	7.4	265	59	166	70	44	19	15
21	5.4	6.6	12	6.6	6.8	258	73	176	64	41	18	14
22	5.5	7.0	12	6.0	7.4	182	65	232	59	37	19	14
23	5.5	7.6	10	5.6	7.4	138	60	273	54	34	20	15
24	5.5	8.0	8.0	5.4	8.6	183	56	270	54	32	18	15
25	7.4	9.0	6.0	5.6	7.0	151	53	187	63	28	17	15
26	9.0	8.8	5.6	5.8	6.4	280	61	145	57	29	17	14
27	7.1	8.4	5.4	5.6	6.6	349	90	124	49	32	17	15
28	6.8	8.6	5.2	5.4	6.6	261	105	114	45	31	16	15
29	6.4	8.2	5.0	6.0	---	226	112	120	41	30	16	15
30	6.5	7.8	4.8	5.2	---	182	115	138	42	27	15	14
31	6.8	---	4.5	5.2	---	176	---	139	---	24	15	---
TOTAL	194.6	221.8	354.9	212.3	184.8	3530.0	2222	4611	2906	1627	593	460
MEAN	6.28	7.39	11.4	6.85	6.00	114	74.1	149	46.9	52.5	19.1	15.3
MAX	9.0	11	17	12	8.6	349	152	273	195	155	24	31
MIN	5.4	5.0	4.5	3.5	5.2	6.0	52	81	41	24	15	13
AC-FT	386	440	704	421	367	7000	4410	9150	5760	3230	1180	912
CAL YR 1977	TOTAL	4505.7	MEAN 12.3	MAX 47	MIN 4.5	AC-FT 8940						
WTR YR 1978	TOTAL	17117.4	MEAN 46.9	MAX 349	MIN 3.5	AC-FT 33950						

12338690 MONTURE CREEK NEAR OVANDO, MT

LOCATION.--Lat 47°02'44", long 113°11'23", in SW¼NE¼NW¼ sec.24, T.15 N., R.13 W., Powell County, Hydrologic Unit 17010203, on right bank 450 ft (137 m) upstream from bridge on State Highway 200, 0.15 mi (0.24 km) downstream from Dick Creek, 3.2 mi (5.1 km) northwest of Ovando, and 3.7 mi (6.0 km) upstream from mouth.

DRAINAGE AREA.--140 mi² (363 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 3,987.13 ft (1,215.277 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for winter period, which are poor. Diversions for irrigation of about 1,700 acres (6.88 km²) above station.

AVERAGE DISCHARGE.--5 years, 202 ft³/s (5.721 m³/s) 146,300 acre-ft/yr (180 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,120 ft³/s (60.0 m³/s) June 16, 1974, gage height, 4.18 ft (1.274 m); minimum daily, 20 ft³/s (0.566 m³/s) Jan. 5, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,430 ft³/s (40.5 m³/s) June 7, gage height, 3.63 ft (1.106 m); minimum daily, 30 ft³/s (0.850 m³/s) Dec. 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	35	36	31	36	34	467	615	531	539	119	76
2	38	35	37	31	37	32	497	634	531	492	114	73
3	36	34	40	33	38	33	442	637	597	466	112	71
4	36	34	42	33	37	34	391	611	745	486	109	69
5	36	34	44	34	37	35	378	559	940	553	105	68
6	36	35	43	34	37	36	336	565	1170	480	101	69
7	38	35	43	35	38	36	366	466	1350	433	100	72
8	34	35	40	35	38	36	286	451	1300	422	96	69
9	36	35	39	36	36	37	277	454	1240	422	92	66
10	36	35	39	36	37	40	265	507	1150	381	89	64
11	36	34	39	34	36	40	286	526	957	351	86	65
12	36	34	41	35	36	40	297	599	798	323	82	68
13	35	35	43	36	36	38	268	564	747	297	80	70
14	35	35	45	35	35	36	266	553	627	275	81	68
15	35	34	46	35	35	37	247	674	642	261	82	67
16	35	34	45	34	36	36	320	746	750	264	85	66
17	35	34	42	34	36	36	375	774	664	251	88	64
18	35	35	40	33	36	41	361	736	637	240	86	64
19	35	35	34	32	36	46	346	732	671	227	87	63
20	35	32	38	34	36	49	363	771	637	215	85	62
21	35	32	38	36	36	56	469	868	622	206	84	62
22	34	33	37	36	36	63	591	1040	648	193	88	62
23	34	34	36	35	35	70	362	1130	665	183	101	60
24	34	35	36	34	35	104	331	1020	684	173	89	59
25	35	36	35	37	35	134	316	846	686	160	85	57
26	40	40	34	39	35	139	370	719	643	154	82	56
27	36	36	34	38	35	169	302	635	572	149	81	55
28	36	37	35	37	36	202	380	541	551	141	80	54
29	35	36	32	37	---	234	634	603	562	135	78	55
30	35	38	31	37	---	277	642	591	543	127	77	55
31	35	---	30	36	---	374	---	554	---	122	76	---
TOTAL	1113	1036	1197	1082	1012	2574	11397	20837	23310	9121	2862	1929
MEAN	35.9	34.6	38.6	34.9	36.1	83.2	360	672	777	294	90.4	64.3
MAX	40	40	46	39	38	379	642	1130	1350	553	119	76
MIN	34	32	30	31	33	32	265	451	531	122	76	54
AC-FT	2210	2060	2370	2150	2010	5120	22610	41330	46240	18090	5560	3630

CAL YR 1977 TOTAL 26819 MEAN 73.5 MAX 389 MIN 20 AC-FT 53200
WTR YR 1978 TOTAL 77417 MEAN 212 MAX 1350 MIN 30 AC-FT 153600

LOCATION.--Lat 47°01'11", long 113°23'16", in NW¼NW¼NW¼ sec.33, T.15 N., R.14 W., Missoula County, Hydrologic Unit 17010203, Clearwater State Forest, on left bank 700 ft (213 m) upstream from Blanchard Lake, 1.3 mi (2.1 km) northwest of Clearwater, and 4.9 mi (7.9 km) upstream from mouth.

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,814.23 ft (1,162.577 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for winter period, which are poor. A few minor diversions for irrigation at station. During summer months Elbow Lake, 1.5 mi (2.4 km) upstream, maybe regulated for recreational purpose

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,900 ft³/s (82.1 m³/s) May 17, 1975, gage height, 7.85 ft (2.393 m); minimum, 27 ft³/s (0.76 m³/s) Aug. 25, 26, 1977, gage height, 3.69 ft (1.125 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,600 ft³/s (45.3 m³/s) Apr. 3, gage height, 6.76 ft (2.060 m); minimum, 48 ft³/s (1.36 m³/s) Oct. 1, gage height, 3.88 ft (1.183 m).

	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	98	101	80	78	78	1280	1450	725	607	132	76
2	52	92	121	90	82	76	1510	1430	693	572	122	75
3	55	90	135	100	84	74	1600	1420	686	542	114	73
4	56	86	145	110	84	75	1550	1390	695	527	112	70
5	55	84	151	120	84	76	1460	1320	752	546	109	69
6	55	82	156	130	84	78	1370	1210	845	552	103	69
7	58	80	159	124	85	78	1270	1100	988	531	98	87
8	58	76	152	111	86	78	1160	1010	1090	511	93	108
9	61	76	140	107	85	82	1110	948	1140	497	86	107
10	62	74	136	103	85	84	1060	926	1180	483	75	106
11	62	71	136	97	84	85	1040	971	1140	464	71	104
12	62	71	136	98	80	87	1060	1050	1050	434	71	108
13	64	70	137	96	70	86	1060	1040	958	404	70	107
14	65	68	142	95	70	90	1050	998	902	373	66	105
15	65	69	144	96	72	90	993	978	884	346	67	102
16	65	71	143	94	74	90	977	1040	849	333	69	98
17	65	71	139	92	74	90	1050	1090	792	317	71	95
18	65	70	136	90	78	94	1080	1070	734	300	70	92
19	65	68	134	88	74	101	1080	1020	715	285	71	88
20	64	62	125	86	73	110	1060	975	716	271	79	84
21	62	58	115	85	72	123	1090	963	688	244	84	84
22	61	58	114	83	72	141	1140	1010	676	231	86	84
23	78	59	119	82	73	164	1130	1110	690	217	88	83
24	117	62	110	82	74	199	1080	1150	706	209	89	83
25	131	64	105	80	75	253	1030	1110	713	194	89	81
26	136	70	100	80	76	318	993	1030	721	182	89	80
27	129	75	95	80	78	393	1070	943	693	173	86	79
28	122	62	90	80	79	488	1220	861	658	165	83	76
29	115	68	85	80	---	630	1350	808	635	156	81	77
30	108	94	80	78	---	608	1430	783	625	146	78	77
31	104	---	75	76	---	1010	---	759	---	139	77	---
TOTAL	2367	2241	3856	2895	2185	6231	35333	32953	24339	10953	2681	2629
MEAN	76.4	74.7	124	93.4	78.0	201	1178	1063	811	353	86.5	87.6
MAX	136	98	159	130	86	1010	1600	1450	1180	607	132	108
MIN	49	58	75	76	70	74	977	759	625	139	67	69
CFSM	.22	.22	.36	.27	.23	.58	3.41	3.08	2.35	1.02	.25	.25
IV.	.26	.24	.42	.31	.24	.67	3.81	3.55	2.62	1.16	.29	.28
AC=FT	4690	4450	7650	5740	4330	12360	70080	65360	48280	21730	5320	5210
CAL YR 1977	TOTAL											

12340000 BLACKFOOT RIVER NEAR BONNER, MT

LOCATION.--Lat 46°53'59", long 113°45'20", in SE¼SE¼NW¼ sec.9, T.13 N., R.17 W., Missoula County, Hydrologic Unit 17010203, Lolo National Forest, on right bank 5.6 mi (9.0 km) northeast of Bonner, 5.0 mi (8.0 km) downstream from Union Creek, and 7.3 mi (11.7 km) upstream from mouth.

DRAINAGE AREA.--2,290 mi² (5,931 km²).

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 River near Bonner 1903-05.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,344.76 ft (1,019.483 m) National Geodetic Vertical Datum of 1929. July 7, 1898, to June 30, 1901, and May 15, 1903, to Oct. 31, 1905, nonrecording gage at site 7 mi (11 km) downstream at different datum. Oct. 4, 1939, to Sept. 30, 1955, nonrecording gage at site 1.3 mi (2.1 km) downstream at datum 21.92 ft (6.651 m) lower.

REMARKS.--Records excellent except those for winter period, which are poor. Diversions for irrigation of about 20,000 acres (80.9 km²) above station.

AVERAGE DISCHARGE.--42 years (1899-1901, 1903-4, 1939-78), 1,658 ft³/s (46.95 m³/s), 9.83 in/yr (250 mm/yr), 1,201,000 acre-ft/yr (1.48 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,200 ft³/s (544 m³/s) June 10, 1964, gage height, 10.89 ft (3.319 m); minimum daily, 2,000 ft³/s (5.66 m³/s) Jan. 4, 5, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,390 ft³/s (238 m³/s) June 9, gage height, 7.35 ft (2.240 m); minimum daily, 210 ft³/s (5.95 m³/s) Nov. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	450	463	508	300	400	449	3270	4200	4280	4120	1240	807		
2	443	463	566	250	410	392	3520	4280	4160	3940	1200	798		
3	440	459	699	220	420	384	3480	4360	4170	3830	1140	782		
4	435	486	732	250	430	439	3250	4310	4580	3820	1090	778		
5	431	462	696	350	440	467	3060	4120	5490	4290	1080	750		
6	432	466	639	450	450	475	2880	3880	6770	4580	1040	760		
7	437	462	616	550	460	459	2690	3680	7870	4290	1010	796		
8	445	455	551	540	470	467	2530	3530	8090	4110	973	826		
9	445	446	482	530	450	506	2430	3450	8190	4130	947	821		
10	447	448	512	520	440	555	2340	3610	7930	3800	911	802		
11	443	445	550	510	420	568	2370	4070	7170	3500	863	801		
12	439	444	616	500	380	579	2440	4390	6250	3230	840	858		
13	435	442	613	500	340	567	2410	4340	5610	2980	830	925		
14	435	444	667	490	320	558	2350	4260	5610	2770	847	947		
15	434	451	688	490	340	542	2310	4670	5650	2600	866	917		
16	433	456	696	480	380	530	2330	5440	5370	2540	890	880		
17	431	448	630	480	400	542	2500	5650	4900	2450	926	857		
18	433	439	625	460	420	680	2570	5500	4590	2330	932	844		
19	431	400	567	440	448	873	2530	5770	4650	2210	912	840		
20	431	300	503	420	443	1090	2530	6130	4660	2110	888	835		
21	427	250	400	440	439	1370	2740	6580	4480	1990	884	829		
22	427	210	450	460	435	1610	2770	7060	4420	1870	879	818		
23	424	250	500	440	445	1820	2720	7610	4490	1780	952	800		
24	436	300	460	420	461	1940	2600	7390	4600	1700	994	788		
25	463	400	430	430	466	1900	2500	6670	4660	1620	935	775		
26	498	500	400	440	463	1730	2520	5870	4570	1540	884	761		
27	496	600	370	450	471	1680	2420	5230	4200	1480	858	749		
28	490	639	340	440	468	2100	3420	4750	3960	1420	839	741		
29	478	583	310	420	---	2250	3850	4580	4000	1380	824	740		
30	471	533	340	400	---	2490	4120	4510	4020	1340	821	739		
31	468	---	370	380	---	2870	---	4390	---	1290	816	---		
TOTAL	13830	13144	16526	13450	11909	33082	83950	154240	159390	85040	29113	24364		
MEAN	446	433	533	434	425	1067	2798	4977	5313	2743	939	812		
MAX	498	639	732	550	471	2870	4120	7610	8190	4580	1240	947		
MIN	424	210	310	220	320	384	2310	3450	3960	1290	818	739		
CFSM	.20	.19	.23	.19	.19	.47	1.22	2.17	2.32	1.20	.41	.36		
IN.	.22	.21	.27	.22	.19	.54	1.36	2.51	2.59	1.38	.47	.40		
AC-FT	27430	26070	32780	26680	23620	65620	166500	306000	316100	168700	57750	48330		
CAL YR 1977	TOTAL	243441	MEAN	667	MAX	2140	MIN	210	CFSM	.29	IN	3.95	AC-FT	482900
WTR YR 1978	TOTAL	638078	MEAN	1748	MAX	8190	MIN	210	CFSM	.76	IN	10.37	AC-FT	1266000

PEND OREILLE RIVER BASIN

12340500 CLARK FORK ABOVE MISSOULA, MT

LOCATION.--Lat 46°52'38", long 113°55'53", in NW¼NW¼NW¼ sec.19, T.13 N., R.18 W., Missoula County, Hydrologic Unit 17010204, on right bank 0.2 mi (0.3 km) downstream from county road bridge, 2.8 mi (4.5 km) east of Missoula, 2.8 mi (4.5 km) downstream from Milltown Dam, 3.0 mi (4.8 km) downstream from Blackfoot River, and at mile 361.6 (581.8 km).

DRAINAGE AREA.--5,999 mi² (15,537 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1929 to current year. Monthly discharge only for some period, 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 (974.842 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to May 27, 1929, nonrecording gage.

REMARKS.--Water-discharge records excellent except those for winter period, which are fair. Diurnal fluctuation caused by powerplant at Bonner. Diversions for irrigation of about 120,000 acres (490 km²) above station.

AVERAGE DISCHARGE.--49 years, 3,024 ft³/s (85.64 m³/s), 2,191,000 acre-ft/yr (2.70 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,300 ft³/s (915 m³/s) June 21, 1975, gage height, 13.75 ft (4.191 m); minimum, 115 ft³/s (3.26 m³/s) Oct. 25, 1943, gage height, 0.64 ft (0.195 m), powerplant shutdown; minimum daily, 340 ft³/s (9.63 m³/s) Sept. 27, 1937.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1908 reached a discharge of 48,000 ft³/s (1,400 m³/s), furnished by The Montana Power Company.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,200 ft³/s (402 m³/s) June 9, gage height, 8.73 ft (2.661 m); minimum discharge, 295 ft³/s (8.35 m³/s) Nov. 19, gage height, 1.51 ft (0.460 m), powerplant shutdown.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1360	1340	1480	900	1060	1330	6450	6770	7980	6900	2400	1940
2	1390	1330	1530	750	1070	1100	6690	7090	7730	6750	2320	1920
3	1360	1350	1920	700	1230	1020	6470	7370	7600	6760	2230	1890
4	1330	1370	2110	600	1240	1110	5970	7370	8060	6960	2160	1860
5	1300	1320	1890	1000	1230	1320	5570	7040	7130	7200	2110	1850
6	1300	1360	1650	1300	1250	1410	5350	6810	10900	8190	2050	1850
7	1320	1360	1660	1500	1260	1450	4970	6600	12700	7740	1750	1950
8	1350	1330	1510	1450	1330	1630	4760	6280	15700	7360	1890	2010
9	1350	1280	1330	1450	1300	1740	4540	6090	14000	7700	1830	2020
10	1340	1240	1340	1400	1290	2240	4430	6210	13900	7230	1550	1990
11	1330	1260	1500	1400	1250	2260	4430	7090	12700	6600	1590	1970
12	1310	1260	1640	1400	1030	2080	4570	7610	11000	6260	1590	2280
13	1300	1260	1650	1350	980	1960	4460	7490	9850	5660	1570	2710
14	1310	1260	1740	1350	879	1810	4370	7350	9610	4700	1510	2830
15	1290	1280	2010	1360	1050	1660	4300	8020	9690	4860	1750	2650
16	1280	1310	2070	1380	1150	1540	4290	9170	9280	4770	1800	2520
17	1279	1270	1950	1260	1230	1560	4510	9600	8600	4590	1800	2430
18	1260	1210	1750	1270	1240	2210	4630	9310	7960	4540	1980	2400
19	1250	1090	1600	1230	1240	3040	4460	10000	7900	4280	1940	2420
20	1220	800	1390	1110	1240	3320	4470	10300	7990	4050	1910	2440
21	1230	700	1200	1270	1270	3660	4840	10600	7640	3950	1930	2400
22	1220	600	1300	1310	1280	3790	4930	11100	7460	3810	1850	2360
23	1210	700	1400	1240	1350	4100	4770	12100	7440	3590	2010	2310
24	1210	900	1400	1160	1500	4140	4550	12400	7510	3370	2130	2280
25	1270	1100	1300	1160	1580	4210	4410	11500	7740	3140	2100	2270
26	1520	1300	1200	1260	1520	3810	4400	10400	7750	3010	1940	2250
27	1620	1690	1100	1270	1480	4020	5080	9310	7170	2870	1950	2240
28	1410	1630	1000	1210	1430	4430	5800	8510	6690	2770	1990	2230
29	1290	1560	900	1220	---	4810	6260	8230	6620	2730	1950	2250
30	1200	1560	1000	1210	---	5090	6700	8270	6710	2660	1930	2240
31	1340	---	1100	1070	---	5710	---	8100	---	2520	1920	---
TOTAL	40740	37020	46620	37740	34979	83560	151430	264090	273010	157520	59430	66780
MEAN	1314	1234	1504	1217	1249	2695	5048	8519	9100	5081	1917	2226
MAX	1620	1690	2110	1500	1580	5710	6700	12400	14000	8190	2400	2830
MIN	1200	600	900	700	879	1020	4290	6090	6620	2520	1510	1850
AC-FT	80810	73430	92470	74860	69380	165700	300400	523800	541500	312400	117900	132500

CAL YR 1977 TOTAL 532185 MEAN 1458 MAX 3280 MIN 600 AC-FT 1056000
WTR YR 1978 TOTAL 1252919 MEAN 3433 MAX 14000 MIN 600 AC-FT 2485000

12340500 CLARK FORK RIVER ABOVE MISSOULA, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: June 1977 to current year.

INSTRUMENTATION.--Temperature recorder since June 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 22.0°C July 23, 24, 1977, minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 20.5°C July 26-28; minimum, 0.0°C on many days during November to March.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	10.5	10.0	10.0	5.5	4.5	5.0	.0	.5	.5	.0	.0	.0
2	10.5	10.5	10.5	5.5	5.0	5.0	.0	.0	.5	.0	.0	.0
3	10.5	10.0	10.0	5.0	4.0	4.5	.0	1.5	1.5	.0	.0	.0
4	10.5	9.5	10.0	4.0	3.5	4.0	.0	1.0	1.0	.0	.0	.0
5	10.0	7.5	7.5	4.5	4.0	4.0	.0	.5	.5	.0	.0	.0
6	7.5	7.0	7.5	5.0	4.5	4.5	.0	.0	.5	.0	.0	.0
7	8.5	7.5	8.0	4.5	3.5	4.5	.0	.5	.5	.0	.0	.0
8	8.5	8.0	8.0	3.5	2.5	3.0	.5	.0	.0	.0	.0	.0
9	8.5	7.5	8.0	2.5	2.0	2.0	.0	.0	.0	.0	.0	.0
10	7.5	7.0	7.0	2.5	2.0	2.5	.0	.0	.0	.0	.0	.0
11	7.0	6.5	6.5	.0	2.5	2.5	.5	.0	.0	.0	.0	.0
12	7.0	6.0	6.5	.0	2.5	3.0	1.5	.5	1.0	.0	.0	.0
13	8.0	7.0	7.5	.0	3.0	3.0	1.5	1.5	1.5	.5	.0	.0
14	8.5	7.5	8.0	.0	3.0	3.0	2.0	1.5	2.0	.5	.5	.5
15	8.5	8.0	8.0	.0	3.0	3.0	2.0	2.0	2.0	.5	.0	.5
16	8.5	7.5	8.0	.0	2.5	2.5	2.0	1.5	2.0	.0	.0	.0
17	8.5	8.0	8.0	.0	2.0	2.0	1.5	.5	.5	.5	.0	.0
18	8.0	7.5	8.0	.0	.5	1.0	.5	.5	.5	.5	.0	.0
19	8.0	7.5	7.5	1.0	.0	.0	.5	.5	.5	.0	.0	.0
20	8.0	7.5	8.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	8.0	7.0	7.5	.0	.0	.0	.0	.0	.0	.5	.0	.0
22	7.5	6.5	7.0	.0	.0	.0	.0	.0	.0	1.0	.5	.5
23	7.0	6.5	6.5	.0	.0	.0	.0	.0	.0	.5	.5	.5
24	7.0	6.5	6.5	.0	.0	.0	.0	.0	.0	.5	.0	.0
25	7.5	7.0	7.0	.0	.0	.0	.0	.0	.0	.5	.0	.5
26	7.5	7.0	7.5	.0	.0	.0	.0	.0	.0	1.0	.5	.5
27	7.0	6.0	6.5	.0	.0	.0	.0	.0	.0	1.5	1.0	1.0
28	6.5	6.0	6.0	1.0	.0	.5	.5	.0	.0	1.0	.0	.5
29	7.0	6.5	7.0	1.5	1.0	1.5	.0	.0	.0	.5	.0	.5
30	7.5	6.5	7.0	1.5	1.0	1.5	.0	.0	.0	1.0	.0	.5
31	6.5	5.0	6.0	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	10.5	5.0	7.5	5.5	.0	2.0	2.0	.0	.5	1.5	.0	.0

12340500 CLARK FORK ABOVE MISSOULA, MT--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	.0	.0	.0	2.0	1.0	1.5	8.0	7.0	7.5	9.0	8.5	9.0
2	.0	.0	.0	1.0	.0	.5	7.0	6.0	6.5	9.0	8.5	8.5
3	1.0	.0	.5	.0	.0	.0	6.0	4.5	5.5	8.5	7.5	8.0
4	1.5	.5	1.0	.5	.0	.0	7.0	5.0	6.0	8.5	7.0	7.5
5	1.0	1.0	1.0	.5	.0	.0	6.5	5.5	6.0	7.5	6.5	7.0
6	1.5	1.0	1.0	1.5	.0	.5	7.0	5.0	6.0	8.0	6.5	7.0
7	1.5	1.0	1.5	3.0	1.5	2.0	7.0	6.0	6.5	9.0	7.5	8.0
8	2.0	1.5	1.5	3.5	2.5	3.0	7.0	6.0	6.5	10.0	7.5	8.5
9	1.5	.5	1.0	4.0	3.5	3.5	8.5	6.5	7.0	10.0	8.5	9.0
10	1.0	1.0	1.0	4.0	3.5	3.5	9.0	6.5	7.5	10.0	9.0	9.5
11	1.0	.0	.5	4.0	3.0	3.5	9.0	7.0	7.5	10.0	9.0	9.0
12	.0	.0	.0	4.0	3.5	3.5	7.0	6.0	6.5	9.5	7.5	8.5
13	.0	.0	.0	3.5	3.5	3.5	7.5	5.0	6.0	10.0	8.5	9.0
14	.0	.0	.0	3.5	2.5	2.5	8.5	6.5	7.5	11.5	9.5	10.5
15	.0	.0	.0	3.5	2.5	3.0	9.0	7.5	8.0	11.0	9.0	10.0
16	.0	.0	.0	4.0	3.0	3.5	8.5	7.5	8.0	8.5	8.0	8.0
17	.5	.0	.0	5.5	4.0	4.5	7.5	6.0	6.5	8.0	7.5	7.5
18	.0	.0	.0	6.5	5.5	6.0	8.5	5.5	6.5	8.0	7.5	7.5
19	.5	.0	.0	6.5	4.5	5.0	10.0	7.0	8.0	10.0	7.5	8.5
20	1.5	.5	1.0	6.0	4.0	5.0	9.5	8.5	9.0	11.0	9.0	10.0
21	2.0	1.5	1.5	6.5	4.5	5.5	8.5	6.5	7.0	11.5	10.0	10.5
22	2.0	1.5	1.5	7.0	5.5	6.0	7.5	6.0	6.5	11.0	9.0	10.0
23	2.0	1.5	2.0	7.5	5.5	6.5	7.5	6.0	6.5	9.0	6.0	7.5
24	2.5	2.0	2.0	7.5	6.0	6.5	8.5	5.5	6.5	7.5	6.0	6.5
25	2.0	1.5	1.5	6.5	5.0	5.5	10.0	8.0	9.0	8.5	7.0	7.5
26	2.0	1.5	1.5	7.0	4.5	5.5	10.5	9.5	10.0	9.0	7.5	8.0
27	3.0	2.0	2.5	8.5	6.0	7.0	10.5	8.5	9.5	10.0	8.0	9.0
28	2.5	1.5	2.0	8.5	7.0	7.5	10.0	9.0	9.5	11.0	9.5	10.0
29	---	---	---	9.0	6.5	7.5	10.0	8.0	9.0	10.5	9.5	10.0
30	---	---	---	8.5	7.5	8.0	10.0	8.5	9.0	9.5	8.0	8.5
31	---	---	---	9.0	7.5	8.0	---	---	---	6.5	7.5	8.0
MONTH	3.0	.0	1.0	9.0	.0	4.0	10.5	4.5	7.5	11.5	6.0	6.5
JUNE				JULY			AUGUST			SEPTEMBER		
1	11.0	8.0	9.0	15.5	13.0	14.5	20.0	18.0	18.5	17.0	16.0	16.5
2	13.0	10.0	11.0	15.0	14.5	14.5	19.0	17.0	16.0	17.0	16.0	16.5
3	13.5	11.5	12.5	14.5	13.5	14.0	19.0	17.5	16.0	17.5	16.5	17.0
4	14.0	11.5	13.0	13.5	12.5	13.0	19.5	17.5	16.5	17.0	16.5	17.0
5	14.0	12.0	13.0	13.0	12.0	12.5	20.0	16.5	19.0	17.5	16.0	17.0
6	13.5	12.5	13.0	15.5	12.0	13.5	20.0	18.5	19.0	17.0	16.0	16.5
7	13.0	12.0	12.5	15.5	14.0	14.5	20.0	18.0	19.0	17.5	16.5	17.0
8	13.0	11.5	12.0	15.5	14.0	14.5	20.0	18.5	19.5	16.5	15.0	15.5
9	12.5	11.0	12.0	16.5	14.5	15.5	20.0	18.5	19.0	15.0	14.0	14.5
10	11.0	10.0	10.5	17.5	15.5	16.5	20.0	18.5	19.0	15.0	14.0	14.5
11	10.5	9.5	10.0	16.5	15.0	15.5	19.0	17.5	18.0	14.0	12.0	13.0
12	11.0	9.0	10.0	16.5	14.0	15.5	18.0	17.0	18.0	12.0	10.5	11.0
13	13.5	11.0	12.0	17.5	14.5	16.0	16.0	16.0	17.0	12.0	10.0	10.5
14	13.5	12.0	12.5	18.0	15.0	16.5	16.5	14.5	15.5	13.0	11.5	12.0
15	12.5	11.5	11.5	18.5	16.0	17.5	15.0	14.5	15.0	13.0	11.5	12.0
16	11.5	10.0	10.5	18.5	16.5	17.5	15.0	14.0	14.5	11.5	10.0	10.5
17	12.5	9.5	10.5	18.0	16.0	16.5	14.0	12.0	13.0	10.5	9.0	9.5
18	13.0	11.0	12.0	16.0	14.0	15.0	13.0	11.5	12.0	10.0	8.5	9.0
19	12.5	11.5	12.0	16.5	14.5	15.5	14.0	13.0	13.5	8.5	8.0	8.0
20	13.0	10.5	11.5	16.5	14.5	15.5	15.0	14.0	14.5	9.0	7.5	8.0
21	14.5	11.5	13.0	17.5	14.5	16.0	16.5	15.0	15.5	9.5	8.5	9.0
22	15.0	13.0	14.0	18.5	15.0	16.5	17.0	14.5	16.0	9.5	9.0	9.0
23	15.5	13.0	14.5	19.0	16.0	17.5	15.0	14.0	14.5	11.0	9.5	10.0
24	15.0	13.5	14.5	19.5	16.5	18.0	15.5	14.5	14.5	12.5	10.5	11.5
25	13.5	11.5	12.5	20.0	17.0	18.5	16.0	15.5	15.5	13.0	11.5	12.5
26	13.5	10.5	11.5	20.5	17.5	18.5	16.5	15.5	16.0	13.5	12.5	13.0
27	15.0	11.5	13.0	20.5	18.5	19.5	16.0	15.5	15.5	13.5	12.5	13.0
28	15.5	13.5	14.5	20.5	17.0	18.5	16.0	14.5	15.0	13.0	10.5	12.0
29	16.0	13.5	14.5	19.5	17.0	18.0	16.0	15.0	15.5	11.5	10.0	10.5
30	15.5	13.5	14.5	20.0	17.5	18.5	16.5	15.5	16.0	11.5	10.5	11.0
31	---	---	---	20.0	18.0	19.0	16.0	15.5	16.0	---	---	---
MONTH	16.0	8.0	12.5	20.5	12.0	16.0	20.0	11.5	16.5	17.5	7.5	12.5
YEAR	20.5	.0	7.5									

12342500 WEST FORK BITTERROOT RIVER NEAR CONNER, MT

LOCATION.--Lat 45°43'30", long 114°16'50", in SE¼NE¼NW¼ sec.26, T.1 S., R.22 W., Ravalli County, Hydrologic Unit 17010205, on right bank 0.6 mi (1.0 km) downstream from Painted Rocks Lake, 6.4 mi (10.3 km) upstream from Nez Perce Creek, 16.1 mi (25.9 km) southwest of Conner, and at mile 19.2 (30.9 km).

DRAINAGE AREA.--317 mi² (821 km²).

PERIOD OF RECORD.--April 1941 to current year.

REVISED RECORDS.--WSP 1246: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,581.4 ft (1,396.41 m) National Geodetic Vertical Datum of 1929 (Forest Service bench mark).

REMARKS.--Records good. Flow regulated by Painted Rocks Lake (see p.739). Diversions for irrigation of about 200 acres (0.81 km²) above station.

AVERAGE DISCHARGE.--37 years, 293 ft³/s (8.298 m³/s), 212,300 acre-ft/yr (262 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,060 ft³/s (115 m³/s) May 9, 1947, gage height, 6.18 ft (1.884 m); minimum, 0.2 ft³/s (0.006 m³/s) Nov. 25, 1952; minimum daily, 0.6 ft³/s (0.017 m³/s) May 3-7, 1954.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,370 ft³/s (67.1 m³/s) June 8, gage height, 4.77 ft (1.454 m); minimum daily, 110 ft³/s (3.12 m³/s) Aug. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	144	134	125	123	116	116	152	992	1150	661	185	203
2	144	134	127	123	116	116	157	1010	1140	644	178	203
3	144	132	126	123	116	116	156	1020	1230	611	173	203
4	143	131	126	122	116	116	159	997	1450	583	168	203
5	142	131	126	121	116	116	161	923	1710	565	165	203
6	142	131	126	121	116	116	161	842	2030	513	164	203
7	142	131	126	121	116	115	161	754	2270	488	164	203
8	142	131	126	121	116	114	161	691	2330	557	136	203
9	142	131	126	121	116	114	161	652	2300	537	110	202
10	139	131	126	121	116	114	161	721	2220	480	111	200
11	139	131	126	121	116	114	163	861	1930	436	112	200
12	139	129	126	121	116	114	164	920	1600	406	112	222
13	139	129	126	121	116	114	164	914	1430	382	113	243
14	139	128	126	121	116	114	164	997	1380	359	156	241
15	139	129	126	121	116	114	165	1290	1370	341	191	240
16	139	129	126	121	116	112	167	1450	1290	326	184	240
17	136	126	125	121	116	111	167	1340	1170	311	180	240
18	136	126	123	120	116	111	167	1270	1100	299	172	240
19	136	126	125	119	115	113	167	1230	1100	286	161	239
20	135	126	126	119	115	114	169	1170	1050	279	146	191
21	136	126	126	119	114	116	254	1210	1010	276	139	132
22	136	126	126	119	114	119	423	1390	979	266	133	121
23	136	126	126	119	114	122	445	1560	952	254	136	121
24	135	126	126	119	114	125	425	1550	932	241	133	121
25	135	126	126	119	115	128	415	1410	929	229	127	121
26	134	126	126	119	116	130	453	1270	866	218	123	121
27	134	126	126	119	116	133	600	1170	780	211	122	121
28	134	126	123	119	116	135	801	1120	731	207	120	121
29	134	126	123	119	---	139	911	1210	705	221	116	121
30	134	126	123	117	---	143	926	1250	693	208	162	121
31	134	---	123	116	---	148	---	1220	---	194	204	---
TOTAL	4283	3864	3889	3726	3240	3722	8902	34409	39827	11589	4600	5543
MEAN	138	129	125	120	116	120	297	1110	1328	374	148	185
MAX	144	134	127	123	116	148	926	1560	2330	661	204	243
MIN	134	126	123	116	114	111	152	652	693	194	110	121
AC-FT	8500	7660	7710	7390	6430	7380	17660	68250	79000	22990	9120	10990
CAL YR 1977	TOTAL	44308	MEAN 121	MAX 596	MIN 10	AC-FT 87880						
WTR YR 1978	TOTAL	127594	MEAN 350	MAX 2330	MIN 110	AC-FT 253100						

PEND OREILLE RIVER BASIN

12344000 BITTERROOT RIVER NEAR DARBY, MT

LOCATION.--Lat 45°58'20", long 114°08'26", in SW¼SE¼NE¼ sec.36, T.3 N., R.21 W., Ravalli County, Hydrologic Unit 17010205, on left bank 45 ft (14 m) downstream from bridge on U.S. Highway 93, 0.3 mi (0.5 km) downstream from Chaffin Creek, 4.1 mi (6.6 km) southeast of Darby, and at mile 77.2 (124 km).

DRAINAGE AREA.--1,049 mi² (2,717 km²).

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 3,943.14 ft (1,201.869 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 2, 1939, nonrecording gage at highway bridge 45 ft (14 m) upstream at same datum.

REMARKS.--Records good. Some regulation by Painted Rocks Lake (see p.739). Diversions for irrigation of about 5,000 acres (20 km²) above station. Ditch bypassing station irrigates about 500 acres (2.0 km²) below.

AVERAGE DISCHARGE.--41 years, 937 ft³/s (26.54 m³/s), 678,900 acre-ft/yr (837 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft³/s (326 m³/s) May 9, 1947, gage height, 8.18 ft (2.493 m); maximum gage height, 8.42 ft (2.566 m) June 17, 1974 (backwater from log jam); minimum discharge observed, about 71 ft³/s (2.01 m³/s) Feb. 9, 1939; minimum gage height, 0.10 ft (0.030 m) Nov. 28, 1976 and Mar. 15, 1977, result of freezeup and regulation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,160 ft³/s (203 m³/s) June 8, gage height, 6.49 ft (1.978 m); minimum, 172 ft³/s (4.87 m³/s) Nov. 20, gage height, 0.33 ft (0.101 m), result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	390	360	423	250	310	347	2710	3170	3240	2940	669	442
2	362	370	647	250	311	299	2510	3300	3280	2830	632	431
3	346	358	925	340	312	272	2080	3310	3700	2580	601	420
4	338	356	706	427	299	354	1780	3110	4420	2500	571	410
5	330	356	578	400	304	359	1580	2850	5090	2450	536	410
6	330	373	533	385	314	359	1430	2620	6020	2300	519	436
7	350	363	522	372	316	340	1340	2440	6730	2290	502	502
8	355	346	462	369	324	356	1270	2300	6730	2690	474	524
9	351	301	432	366	311	335	1200	2220	6590	2480	410	491
10	356	352	451	357	314	414	1170	2560	6390	2280	400	463
11	349	342	444	351	295	424	1320	3030	5200	2160	365	508
12	346	349	449	344	252	432	1330	2960	4310	1940	375	571
13	353	343	448	340	246	421	1290	2890	4130	1810	385	656
14	356	345	707	342	288	409	1260	3190	4360	1740	577	601
15	354	362	856	339	320	392	1240	4090	4220	1710	589	589
16	347	362	778	328	314	369	1300	4250	3860	1740	589	565
17	343	353	616	331	302	395	1280	3800	3530	1590	595	542
18	334	299	612	328	302	457	1220	3560	3520	1590	577	536
19	334	255	539	321	301	583	1210	3460	3700	1500	530	536
20	332	193	409	323	300	675	1280	3320	3460	1200	465	524
21	328	220	406	319	296	753	1360	3460	3410	1120	452	436
22	316	257	518	317	303	884	1510	4130	3370	1040	442	410
23	314	319	490	293	314	1000	1520	4470	3450	1000	469	405
24	314	345	466	277	347	1100	1460	4250	3500	954	431	400
25	332	369	435	319	360	1030	1440	3840	3470	942	405	395
26	437	613	409	331	355	982	1630	3480	3910	670	390	380
27	404	637	332	311	362	1060	2140	3220	2780	835	405	370
28	385	550	300	297	350	1360	2600	3210	2880	835	390	366
29	377	511	384	312	---	1680	2830	3650	3030	856	375	366
30	370	473	458	279	---	2010	2830	3600	3120	773	375	358
31	367	---	379	292	---	2420	---	3410	---	714	447	---
TOTAL	10900	10974	16116	10190	8722	22327	49120	103150	124570	51879	14982	14043
MEAN	352	366	520	329	312	720	1637	3327	4152	1674	483	468
MAX	437	637	925	427	362	2420	2830	4470	6730	2940	669	656
MIN	314	193	300	230	246	272	1170	2220	2760	714	375	358
AC-FT	21620	21770	31970	20210	17300	44290	97430	204600	247100	102900	29720	27850
CAL YR 1977	TOTAL	180725	MEAN	495	MAX	2390	MIN	142	AC-FT	558500		
WTR YR 1978	TOTAL	436973	MEAN	1197	MAX	6730	MIN	193	AC-FT	866700		

12346500 SKALKAHO CREEK NEAR HAMILTON, MT

LOCATION.--Lat 46°09'43", long 113°57'08", in SW¼NE¼ sec.27, T.5 N., R.19 W., Ravalli County, Hydrologic Unit 17010205, Bitterroot National Forest, on right bank 2 mi (3 km) downstream from Daly Creek, 11.4 mi (18.3 km) southeast of Hamilton, and at mile 12.0 (19.3 km).

DRAINAGE AREA.--87.8 mi² (227.4 km²).

PERIOD OF RECORD.--December 1948 to September 1953, August 1957 to current year. April 1920 to September 1924 at site 3 mi (5 km) downstream; records not equivalent owing to inflow.

GAGE.--Water-stage recorder. Datum of gage is 4,393.16 ft (1,339.035 m) National Geodetic Vertical Datum of 1929 (Bureau of Public Roads bench mark).

REMARKS.--Records good except those for winter period, which are poor. During irrigation season flow is supplemented by releases from Kent and Dam Creek Lakes, combined capacity, 200 acre-ft (247,000 m³).

AVERAGE DISCHARGE.--25 years, (1949-53, 1957-78), 94.2 ft³/s (2.668 m³/s), 14.57 in/yr (370 mm/yr), 68,250 acre-ft/yr (84.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,210 ft³/s (34.3 m³/s) June 1, 1972, gage height, 4.84 ft (1.475 m); maximum gage height recorded, 5.18 ft (1.579 m) Feb. 29, 1960 (backwater from ice); minimum discharge recorded, 10 ft³/s (0.28 m³/s) Apr. 2, 1953, gage height, 1.26 ft (0.384 m), backwater from ice, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 640 ft³/s (18.1 m³/s) June 9, gage height, 4.07 ft (1.241 m), only peak above base of 400 ft³/s (11.3 m³/s); minimum daily discharge, 17 ft³/s (0.48 m³/s) Jan. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	39	36	33	21	23	23	105	168	264	332	95	50		
2	36	34	37	17	24	21	101	183	276	326	93	57		
3	36	33	38	20	24	23	88	184	320	305	90	56		
4	35	33	35	22	25	25	81	175	376	294	89	55		
5	34	34	33	24	25	26	77	165	418	275	86	55		
6	34	33	33	26	26	27	73	159	497	254	84	57		
7	37	31	33	28	26	28	71	154	539	265	81	63		
8	36	31	34	27	25	28	69	149	548	288	80	62		
9	36	35	33	27	24	30	68	150	583	265	78	57		
10	35	32	33	26	22	29	69	173	549	238	77	56		
11	34	31	32	26	20	28	78	187	447	219	75	78		
12	34	31	32	26	18	28	75	175	410	201	74	93		
13	35	31	32	25	18	28	72	177	422	185	78	77		
14	35	31	39	25	19	27	72	217	445	178	103	70		
15	34	32	39	25	20	28	74	278	434	171	81	67		
16	34	31	36	25	20	30	78	278	344	167	92	65		
17	34	30	39	24	21	28	76	249	392	157	90	61		
18	33	29	36	24	21	30	74	246	396	149	86	61		
19	33	26	33	24	21	31	76	237	396	140	78	60		
20	33	23	30	24	22	31	83	242	382	138	74	58		
21	33	20	28	25	22	32	85	278	383	132	73	58		
22	32	23	30	26	22	35	81	345	387	125	75	57		
23	32	27	32	25	23	37	79	345	393	121	77	57		
24	31	31	34	24	24	40	77	323	391	116	70	57		
25	44	35	33	24	25	37	79	301	400	112	66	56		
26	41	50	30	25	25	37	92	277	364	109	66	54		
27	37	45	28	26	25	40	106	255	350	107	66	54		
28	36	40	26	25	25	47	119	274	350	106	62	54		
29	35	45	27	24	---	58	125	309	353	106	62	52		
30	36	33	28	23	---	71	130	286	353	101	61	51		
31	34	---	25	22	---	95	---	275	---	98	61	---		
TOTAL	1088	976	1011	755	635	1078	2533	7214	12212	5775	2423	1819		
MEAN	35.1	32.5	32.6	24.4	22.7	34.8	84.4	233	407	186	78.2	60.6		
MAX	44	50	39	28	26	45	130	345	583	332	103	93		
MIN	31	20	25	17	16	21	68	149	264	98	61	51		
CFSM	.40	.37	.37	.28	.26	.40	.96	2.65	4.64	2.12	.89	.69		
IN.	.46	.41	.43	.32	.27	.46	1.07	3.06	5.17	2.45	1.03	.77		
AC-FT	2160	1940	2010	1500	1260	2140	5020	14310	24220	11450	4810	3610		
CAL YR 1977	TOTAL	16874	MEAN	46.2	MAX	166	MIN	20	CFSM	.53	IN	7.15	AC-FT	33470
WTR YR 1978	TOTAL	37519	MEAN	103	MAX	583	MIN	17	CFSM	1.17	IN	15.90	AC-FT	74420

PEND OREILLE RIVER BASIN

12353000 CLARK FORK BELOW MISSOULA, MT

LOCATION.--Lat 46°52'09", long 114°07'33", in NW¼NE¼SE¼ sec.21, T.13 N., R.20 W., Missoula County, Hydrologic Unit 17010204, on right bank 1.0 mi (1.6 km) downstream from Bitterroot River, 4.5 mi (7.2 km) west of Missoula, and at mile 349.5 (562.3 km).

DRAINAGE AREA.--9,003 mi² (23,318 km²).

WATER-DISCHARGE RECORDS

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 (939.967 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Water-discharge records excellent. Some diurnal fluctuation at low flow caused by powerplant at Bonner 14.9 mi (24.0 km) upstream. Diversions for irrigation of about 235,000 acres (951 km²) above station.

AVERAGE DISCHARGE.--49 years, 5,510 ft³/s (156.0 m³/s), 3,992,000 acre-ft/yr (4.92 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 52,800 ft³/s (1,500 m³/s) May 23, 1948, gage height, 12.08 ft (3.682 m); minimum, 388 ft³/s (11.0 m³/s) Jan. 18, 1933; minimum gage height, 0.30 ft (0.091 m) about Jan. 16, 1954, Mar. 24, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 30,700 ft³/s (869 m³/s) June 9, gage height, 9.10 ft (2.774 m); minimum, 1,120 ft³/s (31.7 m³/s) Jan. 3, gage height, 0.77 ft (0.235 m), result of freezeup and regulation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2650	2550	3120	1770	1970	2470	12700	12900	15000	15900	3740	2660
2	2710	2500	3130	1260	2000	2130	13200	14400	14500	15200	3560	2650
3	2680	2580	4390	1240	2170	1890	12500	14900	14600	14600	3400	2620
4	2580	2570	4960	1570	2290	2010	11000	14600	16800	14300	3240	2580
5	2500	2490	4280	2150	2250	2540	9610	13600	20000	14500	3120	2520
6	2460	2520	3780	2840	2220	2490	9280	12700	23600	15100	3010	2520
7	2470	2530	3780	2970	2290	2530	8650	11900	27600	14400	2740	2770
8	2500	2500	3520	2970	2370	2710	8170	11200	30100	14300	2690	2990
9	2520	2420	3060	2620	2370	2890	7760	10600	30400	15100	2630	3120
10	2500	2300	2970	2840	2540	5550	7450	10800	30100	14100	2550	3030
11	2500	2340	3130	2740	2250	3480	7420	12800	27600	13200	2250	2970
12	2470	2340	3350	2650	1850	3330	7870	13800	22900	12000	2200	3390
13	2460	2320	3390	2600	1670	3220	7730	13400	20000	10800	2180	4230
14	2490	2300	3620	2600	1590	3060	7500	13200	20100	9400	2150	4450
15	2490	2350	4540	2550	1850	2860	7340	15200	20700	9100	2410	4250
16	2470	2470	4720	2410	2030	2740	7280	18000	19700	9250	2730	4120
17	2440	2460	4390	2340	2120	2710	7620	18200	17600	8950	2710	3960
18	2390	2320	3920	2350	2120	3170	7620	17000	16200	8500	3080	3680
19	2350	2030	3680	2200	2150	4190	7360	17100	16700	7730	3030	3900
20	2300	1580	3190	2150	2200	4540	7340	17200	17000	7110	2920	3920
21	2250	1410	2550	2290	2200	5220	7900	17800	16100	6690	2900	3840
22	2220	1400	2710	2370	2220	5570	8080	19500	16100	6330	2840	3720
23	2180	1640	3060	2270	2290	6140	7990	22000	16500	5960	2960	3600
24	2170	1950	3040	2150	2490	6550	7730	22700	16900	5640	3080	3520
25	2200	2350	2710	2080	2650	6850	7420	21500	17900	5370	3030	3480
26	2440	2860	2740	2230	2610	5380	7420	19300	18200	5050	2820	3420
27	2890	3740	2460	2270	2580	5470	8800	17100	15400	4700	2760	3570
28	2680	3640	2200	2200	2570	7170	10600	15600	14300	4470	2760	3310
29	2550	3310	2000	2170	---	6250	12000	15600	14700	4410	2690	3310
30	2410	3280	2250	2150	---	9160	12600	16500	15400	4250	2650	3300
31	2550	---	2270	2010	---	10700	---	15700	---	4020	2630	---
TOTAL	76470	73050	103130	71110	61710	136560	266140	486600	582900	300430	87260	101430
MEAN	2467	2435	3327	2294	2204	4405	8871	15700	19430	9691	2815	3381
MAX	2690	3740	4980	2970	2650	10700	13200	22700	30400	15900	3740	4450
MIN	2170	1400	2000	1240	1590	1890	7280	10600	14300	4020	2150	2520
AC-FT	151700	144900	204600	141000	122400	270900	527900	965200	1156000	595900	173100	201200

CAL YR 1977 TOTAL 996050 MEAN 2729 MAX 8610 MIN 1090 AC-FT 1976000
 WTR YR 1978 TOTAL 2346790 MEAN 6430 MAX 30400 MIN 1240 AC-FT 4655000

12353000 CLARK FORK BELOW MISSOULA, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: June 1977 to current year.

INSTRUMENTATION.--Temperature recorder since June 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 22.0°C Aug. 8, 1978; minimum, 0.0°C on several days during winter periods.

EXTREME FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 22.0°C Aug. 8; minimum, 0.0°C on several days during November, December, February, and March.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	11.0	9.5	10.0	6.0	5.5	5.5	1.5	1.0	1.5	.5	.5	.5
2	11.0	9.5	10.0	6.5	5.5	6.0	2.0	1.0	1.5	.5	.5	.5
3	11.0	8.5	10.0	5.5	4.5	5.0	3.0	2.0	2.5	.5	.5	.5
4	10.5	8.0	9.5	5.5	4.5	5.0	2.5	1.5	2.0	1.0	.5	.5
5	9.5	7.5	8.5	5.5	4.5	5.0	1.5	1.0	1.5	1.0	.5	.5
6	8.5	7.5	8.0	6.0	5.0	5.5	1.5	1.0	1.0	1.0	.5	.5
7	10.0	8.0	9.0	5.5	4.5	5.0	1.5	1.0	1.5	1.0	.5	.5
8	9.5	8.0	9.0	4.5	3.5	4.0	1.0	.5	.5	1.0	.5	.5
9	9.0	8.0	8.5	4.0	3.0	3.5	.5	.5	.5	1.0	.5	1.0
10	9.0	7.0	8.0	4.5	3.0	3.5	1.0	.5	1.0	1.5	1.0	1.0
11	9.0	6.5	7.5	4.5	3.0	3.5	1.5	1.0	1.5	1.0	1.0	1.0
12	9.0	6.5	7.5	4.5	3.5	4.0	2.5	1.5	2.0	1.5	1.0	1.0
13	9.0	7.0	8.0	4.5	3.5	4.0	2.5	2.0	2.5	1.5	1.0	1.0
14	10.0	8.0	9.0	4.5	3.5	4.0	3.0	2.5	3.0	1.5	1.0	1.0
15	10.0	7.5	9.0	4.0	3.5	4.0	3.5	2.5	3.0	1.5	.5	1.0
16	10.0	7.5	9.0	4.0	3.0	3.5	3.0	2.0	2.5	1.0	.5	1.0
17	10.0	7.5	8.5	3.5	3.0	3.0	2.0	1.0	1.5	1.5	.5	1.0
18	9.5	7.5	8.5	2.5	1.5	2.0	1.5	1.0	1.0	1.5	.5	1.0
19	9.5	7.5	8.5	1.0	.0	.5	1.5	1.0	1.0	1.5	.5	1.0
20	9.5	7.5	8.5	.5	.5	.5	1.0	.5	.5	1.5	1.0	1.0
21	9.0	7.0	8.0	.5	.5	.5	.5	.5	.5	1.5	1.0	1.0
22	8.5	7.0	8.0	1.0	.5	.5	.5	.5	.5	2.0	1.0	1.5
23	8.5	6.5	7.5	1.0	.5	.5	1.0	.5	.5	1.5	1.0	1.0
24	8.5	6.5	7.5	1.0	1.0	1.0	.5	.0	.5	1.5	1.0	1.0
25	8.0	7.5	8.0	1.5	1.0	1.0	1.0	.5	.5	1.5	1.0	1.5
26	8.0	7.5	8.0	2.0	1.0	1.5	1.0	.5	.5	2.0	1.0	1.5
27	7.5	6.5	7.0	1.5	1.0	1.0	.5	.0	.5	2.5	1.5	2.0
28	7.5	6.5	7.0	2.0	1.0	1.5	.5	.5	.5	2.0	1.0	1.5
29	8.0	7.0	7.5	3.0	1.5	2.0	1.0	.5	.5	2.0	1.0	1.5
30	8.0	7.0	7.5	3.0	2.0	2.5	.5	.5	.5	1.5	.5	1.0
31	7.5	6.0	6.5	---	---	---	.5	.0	.5	1.0	.5	.5
MONTH	11.0	6.0	8.5	6.5	.0	3.0	3.5	.0	1.0	2.5	.5	1.0

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN		MAX	MIN		MEAN	MAX	MIN		MEAN	MAX	MIN		MEAN
		FEBRUARY			MARCH				APRIL				MAY		
1	1.0	.5	.5	3.0	1.5	2.0		8.5	7.5	8.0		10.0	9.0	9.5	
2	1.5	.5	1.0	2.0	.0	1.0		7.5	6.0	6.5		9.0	8.5	9.0	
3	2.5	1.0	1.5	1.0	.0	.5		6.0	5.5	6.0		9.0	8.0	8.5	
4	3.0	1.5	2.0	1.5	.5	1.0		7.0	5.5	6.0		8.0	7.5	8.0	
5	2.5	1.5	2.0	2.5	.5	1.5		7.0	6.0	6.5		7.5	6.5	7.0	
6	3.0	2.0	2.0	4.0	1.0	2.5		7.0	5.5	6.5		8.5	6.5	7.5	
7	3.5	1.5	2.5	4.0	1.5	3.0		7.5	6.0	7.0		9.0	7.5	8.0	
8	3.5	2.5	3.0	4.5	3.0	4.0		8.0	6.5	7.5		9.5	7.5	9.0	
9	2.5	1.5	2.0	5.5	3.5	4.5		9.0	7.0	8.0		10.0	9.0	9.5	
10	3.0	1.5	2.0	5.5	3.5	4.5		9.5	7.5	8.5		10.5	9.0	9.5	
11	1.5	.5	1.0	5.0	3.0	4.0		9.5	7.0	8.5		10.0	9.0	9.5	
12	.5	.0	.5	5.0	3.5	4.0		7.0	6.5	7.0		9.5	8.0	9.0	
13	1.0	.5	.5	5.0	3.5	4.0		7.5	5.5	6.5		10.0	8.5	9.5	
14	1.0	.5	.5	4.5	3.0	3.5		8.5	7.0	7.5		11.5	9.5	10.5	
15	1.0	.5	.5	5.5	2.5	4.0		9.0	7.5	8.5		11.5	9.0	10.5	
16	1.5	.5	1.0	6.0	3.5	4.5		9.0	8.0	8.5		9.0	8.0	8.5	
17	2.0	.5	1.0	7.5	3.5	5.5		7.5	6.5	7.0		8.0	7.5	8.0	
18	1.5	1.0	1.5	7.5	5.0	6.5		8.5	6.0	7.0		8.0	7.5	8.0	
19	2.5	1.0	1.5	7.5	5.0	6.0		9.5	7.5	8.5		10.5	8.0	9.0	
20	3.0	1.0	2.0	7.0	4.5	5.5		10.0	8.5	9.0		11.0	9.0	10.0	
21	3.5	2.0	2.5	7.5	5.5	6.0		8.5	7.0	7.5		11.5	10.0	11.0	
22	4.0	2.0	3.0	7.5	6.5	7.0		7.5	6.5	7.0		11.5	9.5	10.5	
23	4.0	2.0	3.0	8.0	6.5	7.0		7.5	6.5	7.0		9.0	6.0	7.5	
24	4.0	2.5	3.5	7.5	6.5	7.0		8.0	6.5	7.5		8.0	6.0	7.0	
25	3.0	2.5	2.5	6.5	5.5	6.0		10.5	8.0	9.0		8.5	7.5	8.0	
26	3.5	2.0	2.5	7.5	5.5	6.0		11.0	9.5	10.0		9.5	7.5	8.5	
27	4.0	2.5	3.0	8.5	6.5	7.5		10.0	9.0	9.5		10.0	8.5	9.5	
28	4.0	2.5	3.0	8.5	8.0	8.0		10.0	9.0	9.5		11.5	9.5	10.5	
29	---	---	---	9.0	7.5	8.0		10.0	8.5	9.5		10.5	9.5	10.5	
30	---	---	---	8.5	8.0	8.5		10.0	8.5	9.5		9.5	8.5	9.0	
31	---	---	---	9.0	7.5	8.5		---	---	---		9.0	8.0	8.5	
MONTH	4.0	.0	2.0	9.0	.0	5.0		11.0	5.5	8.0		11.5	6.0	9.0	
		JUNE				JULY				AUGUST				SEPTEMBER	
1	11.5	8.0	9.5	16.0	13.5	15.0		20.5	17.5	19.0		19.0	15.0	16.5	
2	13.0	10.0	11.5	15.5	14.0	15.0		20.0	17.0	18.0		19.5	15.5	17.0	
3	14.0	11.5	13.0	15.0	14.0	14.5		20.5	16.5	18.5		19.0	15.5	17.0	
4	14.0	11.5	13.0	14.0	13.0	13.0		21.0	17.0	16.5		19.0	15.5	17.0	
5	14.5	12.0	13.0	13.0	12.0	12.5		21.5	17.5	19.0		17.5	16.0	16.5	
6	14.0	12.0	13.0	15.5	12.0	13.5		21.5	18.0	19.5		18.0	15.5	16.5	
7	13.5	12.0	12.5	16.0	14.0	15.0		21.5	17.5	19.0		18.0	16.0	17.0	
8	13.5	11.5	12.5	15.5	14.0	15.0		22.0	17.0	19.5		17.0	15.0	16.0	
9	12.5	11.5	12.0	17.0	14.5	15.5		21.5	18.0	19.5		17.0	13.5	15.0	
10	11.5	10.0	11.0	17.5	15.5	16.5		21.5	18.0	19.5		15.0	14.0	14.5	
11	11.0	9.5	10.5	16.5	15.0	16.0		21.0	16.5	18.5		14.0	12.5	13.0	
12	11.0	9.5	10.0	17.0	14.0	15.5		20.0	16.0	18.0		12.0	10.5	11.5	
13	13.0	11.0	12.0	18.0	14.5	16.5		17.5	15.5	16.5		13.0	10.5	11.5	
14	13.5	12.0	13.0	18.5	15.0	17.0		17.0	14.5	15.5		14.0	11.5	12.5	
15	12.5	11.5	12.0	18.5	16.5	17.5		16.0	14.0	15.0		13.0	11.5	12.5	
16	11.0	10.0	11.0	19.0	17.0	18.0		15.5	14.0	14.5		12.0	10.0	11.0	
17	12.5	9.5	11.0	18.0	15.5	16.5		13.5	12.5	13.0		12.0	9.5	10.0	
18	13.0	11.5	12.5	19.0	14.5	15.0		14.5	12.0	13.0		10.0	8.5	9.5	
19	13.0	11.5	12.5	16.5	14.5	15.5		15.5	12.0	13.5		10.0	8.0	9.0	
20	13.5	10.5	12.0	17.0	14.5	15.5		17.0	13.0	14.5		10.5	8.0	9.0	
21	14.5	11.5	13.0	17.5	15.0	16.0		18.5	13.5	15.5		10.5	8.5	9.5	
22	15.0	13.0	14.0	18.0	15.5	17.0		16.0	14.5	15.5		10.5	9.0	9.5	
23	15.5	13.0	14.5	18.5	17.0	17.5		16.5	13.5	14.5		12.0	9.5	10.5	
24	15.5	13.5	14.5	19.5	17.5	18.5		17.0	13.5	15.0		13.5	10.5	11.5	
25	14.0	11.5	12.5	20.0	17.5	18.5		18.0	14.0	15.5		14.5	11.5	12.5	
26	13.5	10.5	12.0	20.0	16.0	19.0		18.0	14.5	16.0		15.0	12.5	13.5	
27	15.0	11.5	13.5	21.0	18.5	19.5		18.0	14.5	16.0		14.5	12.5	13.5	
28	16.0	13.5	14.5	19.5	17.5	18.5		17.5	14.0	15.5		12.5	11.0	12.0	
29	16.0	14.0	15.0	20.0	17.0	18.0		18.0	14.0	15.5		12.5	10.5	11.0	
30	15.5	13.5	15.0	20.5	17.5	18.5		17.5	14.5	16.0		12.5	10.5	11.5	
31	---	---	---	21.0	18.0	19.0		17.5	15.0	16.0		---	---	---	
MONTH	16.0	8.0	12.5	21.0	12.0	16.5		22.0	12.0	16.5		19.5	8.0	13.0	
YEAR	22.0	.0	8.0												

12353280 NINEMILE CREEK NEAR HUSON, MT

LOCATION.--Lat 47°03'47", long 114°24'46", near center of NW¼ sec.17, T.15 N., R.22 W., Missoula County, Hydrologic Unit 17010204, on right bank, 0.7 mi (1.1 km) southwest of Ninemile ranger station, 2.8 mi (4.5 km) upstream from mouth, and 4.8 mi (7.7 km) northwest of Huson.

DRAINAGE AREA.--170 mi² (440 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 3,027.66 ft (922.831 m), National Geodetic Vertical Datum of 1929 (Missoula County bench mark).

REMARKS.--Records good except those for winter period, which are poor. Diversions for irrigation of about 2,100 acres (85.0 km²) above station.

AVERAGE DISCHARGE.--5 years, 133 ft³/s (3.767 m³/s), 10.62 in/yr (270 mm/yr), 96,360 acre-ft/yr (119 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 1,700 ft³/s (48.1 m³/s) Jan. 16, 1974; maximum gage height, 6.7 ft (2.04 m) Jan. 15, 1974 (ice jam); minimum discharge, 9.4 ft³/s (0.27 m³/s) Dec. 23, 1974, gage height, 3.14 ft (0.957 m), result of freezeup; minimum gage height, 2.78 ft (0.847 m) Aug. 18, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 824 ft³/s (23.3 m³/s) Mar. 31, gage height, 5.48 ft (1.670 m), only peak above base of 650 ft³/s (18.4 m³/s); minimum daily, 17 ft³/s (0.48 m³/s) Nov. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	26	39	45	37	55	782	509	304	193	72	48
2	28	29	44	40	36	54	708	561	307	176	70	45
3	27	29	104	45	38	52	580	581	340	192	65	43
4	26	26	111	50	37	56	476	532	430	202	63	41
5	26	27	81	55	37	56	418	458	517	207	62	42
6	26	25	70	60	38	55	365	392	593	194	60	46
7	29	26	66	55	39	55	326	353	612	184	58	49
8	28	26	60	50	40	58	302	325	584	187	55	55
9	28	24	55	48	39	77	290	320	550	213	48	47
10	28	25	53	45	40	104	284	368	495	222	47	44
11	27	25	55	42	38	107	323	455	430	208	45	43
12	27	25	64	41	36	107	322	440	371	195	45	59
13	27	25	68	41	34	103	301	399	329	183	50	61
14	26	25	138	41	36	99	283	391	304	172	49	52
15	26	28	146	41	35	91	267	463	289	164	48	49
16	26	27	138	40	40	91	284	501	268	164	54	46
17	25	27	117	40	42	101	292	457	248	154	55	45
18	25	24	107	40	40	152	273	410	252	150	59	45
19	23	20	90	40	40	241	260	380	222	144	59	44
20	23	18	75	40	40	279	299	391	202	135	56	43
21	21	17	60	39	40	330	369	460	188	128	55	43
22	20	20	62	38	43	398	336	548	182	119	60	42
23	21	23	64	37	47	502	313	550	177	114	76	41
24	21	26	66	39	54	560	282	512	172	108	59	39
25	23	29	68	39	56	486	273	439	266	102	55	38
26	26	47	65	38	57	436	335	375	248	95	53	37
27	26	41	60	37	57	504	337	337	222	93	51	37
28	25	36	55	36	59	613	550	311	202	89	50	37
29	25	40	50	38	---	649	544	307	192	86	49	39
30	25	41	54	36	---	742	507	311	196	81	47	37
31	27	---	50	35	---	800	---	322	---	75	49	---
TOTAL	791	829	2335	1311	1178	8015	11460	13158	9674	4729	1716	1337
MEAN	25.5	27.6	75.3	42.3	42.1	259	382	424	322	153	55.4	44.6
MAX	30	47	146	60	59	800	782	581	612	222	72	61
MIN	20	17	39	35	34	52	260	307	172	75	45	37
CFSM	.15	.16	.44	.25	.25	1.52	2.25	2.49	1.89	.90	.33	.26
IN.	.17	.18	.51	.29	.26	1.75	2.51	2.88	2.12	1.03	.36	.29
AC-FT	1570	1640	4630	2600	2340	15900	22730	26100	19190	9380	3410	2650
CAL YR 1977	TOTAL	15368	MEAN	42.1	MAX 146	MIN 12	CFSM .25	IN 3.36	AC-FT	30480		
WTR YR 1978	TOTAL	56535	MEAN	155	MAX 800	MIN 17	CFSM .91	IN 12.37	AC-FT	112100		

12354500 CLARK FORK AT ST. REGIS, MT

LOCATION.--Lat 47°18'07", long 115°05'11", near center of SW¼ sec.19, T.18 N., R.27 W., Mineral County, Hydrologic Unit 17010204, on left bank at St. Regis, 0.4 mi (0.6 km) downstream from St. Regis River, and at mile 270.3 (434.9 km).

DRAINAGE AREA.--10,709 mi² (27,736 km²).

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 (792.593 m) above mean sea level (levels by Corps of Engineers). Prior to Nov. 29, 1933, nonrecording gage at same site and datum.

REMARKS.--Records excellent. Diversions for irrigation of about 244,000 acres (987 km²) above station.

AVERAGE DISCHARGE.--68 years, 7,580 ft³/s (214.7 m³/s), 5,492,000 acre-ft/yr (6.77 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 68,900 ft³/s (1,950 m³/s) May 24, 1948, gage height, 19.96 ft (6.084 m), from graph based on gage readings; minimum, 1,000 ft³/s (28.3 m³/s) Dec. 17, 1940, gage height, 3.36 ft (1.024 m), but may have been less during periods of ice effect in several years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37,400 ft³/s (1,060 m³/s) June 9, gage height, 15.12 ft (4.609 m); minimum, 1,710 ft³/s (48.4 m³/s) Jan. 3, gage height, 4.43 ft (1.350 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2970	3130	4260	2960	2730	3330	17700	17700	19700	19200	5170	3540		
2	3150	3230	4780	2300	2680	3150	18900	18900	19300	19000	4890	3540		
3	3190	3230	6660	1860	2720	2770	18300	20400	19500	18300	4670	3530		
4	3150	3230	7400	2030	2890	2690	16600	20300	21400	17800	4490	3460		
5	3070	3200	6860	2580	2960	2840	14900	19200	24700	17500	4300	3420		
6	3020	3110	6650	3310	2950	3080	13700	17700	28700	17900	4130	3390		
7	3010	3140	5560	4250	2950	3190	12700	16700	32800	17800	3990	3470		
8	3010	3140	5320	4090	3000	3270	11800	15800	36200	17100	3710	3770		
9	3050	3080	4690	3980	3050	3530	11200	15300	37300	17600	3660	3930		
10	3050	3000	4420	3830	3060	3640	10700	15700	36800	17600	3540	3980		
11	3030	2910	4380	3740	3030	4330	10600	17100	35100	16400	3280	3910		
12	3020	2930	4640	3610	2820	4430	10800	18600	30900	15200	3160	3960		
13	2990	2920	4950	3480	2400	4350	11000	18500	26500	13900	3220	4550		
14	2970	2930	5620	3450	2430	4240	10700	18200	24700	12700	3200	5230		
15	2980	2980	6650	3420	2350	4030	10400	19200	25300	11400	3130	5320		
16	2990	3000	7110	3340	2540	3850	10300	22300	24800	11300	3450	5180		
17	2960	3070	6910	3220	2700	3730	10400	23400	22900	11300	3660	5050		
18	2930	3040	6340	3160	2790	3650	10500	22500	20900	10800	3610	4900		
19	2890	2860	5750	3130	2800	4800	10400	21600	20600	10100	4010	4830		
20	2860	2400	5250	3020	2810	5920	10400	22400	21100	9330	3960	4850		
21	2810	2060	4410	2960	2850	6680	10900	23100	20500	8670	3900	4820		
22	2770	1930	4180	3070	2870	7300	11200	24800	20000	8210	3930	4720		
23	2740	2000	4320	3100	2910	8170	11100	26800	20200	7780	4020	4600		
24	2710	2160	4370	3000	3010	9360	10800	28100	20500	7380	4020	4480		
25	2720	2630	4240	2910	3190	9780	10500	27400	21500	7030	4030	4380		
26	2810	3530	4080	2870	3340	9650	10600	25200	22700	6700	3940	4330		
27	3020	4010	3850	2970	3360	9510	11900	22700	20800	6390	3740	4260		
28	3330	4590	3530	2990	3370	10500	14700	20800	18500	6030	3670	4190		
29	3180	4530	3360	2930	---	11800	16500	20000	18000	5810	3670	4150		
30	3110	4390	3230	2880	---	13600	17200	20400	18800	5640	3590	4140		
31	3030	---	3310	2850	---	15700	---	20500	---	5450	3560	---		
TOTAL	92520	92380	156680	97290	80560	187270	377400	641300	730700	377320	119520	127880		
MEAN	2985	3079	5054	3138	2877	6041	12580	20690	24360	12170	3855	4263		
MAX	3330	4590	7400	4250	3370	15700	18900	28100	37300	19200	5170	5320		
MIN	2710	1930	3230	1860	2350	2690	10300	15300	18000	5450	3130	3390		
CFSM	.28	.29	.47	.29	.27	.56	1.18	1.93	2.28	1.14	.36	.40		
IN.	.32	.32	.54	.34	.28	.65	1.31	2.23	2.54	1.31	.42	.44		
AC-FT	183500	183200	310600	193000	159800	371400	748600	1272000	1449000	748400	237100	253600		
CAL YR 1977	TOTAL	1319890	MEAN	3616	MAX	10900	MIN	1520	CFSM	.34	IN	4.56	AC-FT	2618000
WTR YR 1978	TOTAL	3080820	MEAN	8441	MAX	37300	MIN	1860	CFSM	.79	IN	10.70	AC-FT	6111000

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA

(International gaging station)

LOCATION.--Lat 49°00'02", long 114°28'35", Hydrologic Unit 17010206, on right bank 45 ft (14 m) north of international boundary at Flathead, British Columbia, 1.6 mi (2.6 km) upstream from Sage Creek, 6.5 mi (10.5 km) northwest of Trail Creek, Mt., and at mile 216.6 (348.5 km).

DRAINAGE AREA.--427 mi² (1,106 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1929 to current year (no winter records prior to 1952). Prior to October 1934, published as Flathead River near Trail Creek, Mt. October 1970 to September 1972, published as North Fork Flathead River at Flathead, British Columbia.

REVISED RECORDS.--WSP 1092: 1933 (maximum gage height only).

GAGE.--Water-stage recorder. Datum of gage is 3,968.16 ft (1,209.495 m), National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1949, nonrecording gage, and Sept. 1, 1949, to Oct. 4, 1964, water-stage recorder, at site 1,200 ft (370 m) upstream at datum 7.80 ft (2.377 m) higher. Oct. 5, 1964, to Aug. 1, 1973, water-stage recorder at site on left bank 155 ft (47 m) upstream at datum 1.42 ft (0.433 m) lower.

REMARKS.--Water-discharge records good except those for winter period, which are fair.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

AVERAGE DISCHARGE.--27 years (1951-78), 969 ft³/s (27.44 m³/s), 30.81 in/yr (783 mm/yr), 702,000 acre-ft/yr (866 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,300 ft³/s (462 m³/s) June 8, 1964, gage height, 8.00 ft (2.438 m), in gage well, 8.6 ft (2.62 m), from outside floodmarks, site and datum then in use, from rating curve extended above 8,000 ft³/s (230 m³/s) on basis of slope-area measurement of peak flow; minimum daily, 62 ft³/s (1.76 m³/s) Jan. 2, 1977, but may have been less during periods of no winter record.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,520 ft³/s (185 m³/s) June 6, gage height, 5.40 ft (1.646 m); minimum daily, 92 ft³/s (2.61 m³/s) Jan. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	219	172	265	115	112	123	736	2760	2350	1720	589	392
2	215	220	360	92	124	115	671	3090	2590	1590	566	386
3	208	216	395	97	135	110	566	3170	3410	1500	539	364
4	199	205	360	140	144	114	547	2780	4440	1480	513	346
5	189	193	269	152	145	122	532	2280	5460	1500	498	356
6	194	191	153	164	144	126	484	2020	6090	1450	480	364
7	190	201	146	176	140	128	443	1860	5480	1370	460	371
8	186	184	124	187	137	128	447	1830	5060	1340	441	401
9	184	178	113	176	135	126	440	2160	4960	1230	426	450
10	181	171	135	164	131	126	454	3490	4110	1250	414	427
11	176	145	164	132	120	128	538	3550	3240	1280	405	417
12	171	148	221	131	109	127	567	2970	2790	1180	392	460
13	171	165	597	137	103	127	587	2530	2680	1070	396	469
14	174	174	583	145	111	126	557	2850	2630	1000	401	458
15	175	174	590	130	120	123	524	4370	2670	945	408	508
16	174	165	514	145	130	121	524	4740	2350	925	413	533
17	175	165	424	138	141	117	536	3650	2150	953	443	493
18	172	171	395	132	147	115	514	3640	2250	1060	449	466
19	170	133	323	125	146	114	518	3570	2450	1190	440	440
20	165	119	223	128	144	113	601	3980	2170	1080	462	426
21	161	75	161	132	145	115	648	4760	2160	1020	447	433
22	160	82	173	134	145	118	639	5710	2260	942	432	465
23	155	123	184	133	145	121	607	5170	2530	874	533	508
24	152	151	161	132	143	134	594	3730	2320	821	550	501
25	177	178	138	130	143	150	648	2990	2220	764	488	471
26	172	206	127	129	140	170	863	2410	2160	730	453	452
27	168	390	138	127	139	207	1420	2150	2010	710	411	436
28	166	375	150	127	135	250	2250	2300	1900	669	395	426
29	162	365	161	122	---	328	2790	2660	1900	639	375	407
30	166	337	150	118	---	476	2680	2450	1820	607	357	403
31	171	---	132	114	---	701	---	2360	---	600	365	---
TOTAL	5496	5774	8055	4204	3753	5203	23985	98200	90570	33489	13941	13031
MEAN	177	192	260	136	134	168	800	3168	3019	1080	450	434
MAX	219	390	597	187	147	701	2790	5710	6090	1720	589	533
MIN	152	75	113	92	103	110	440	1830	1820	600	357	346
CFSM	.42	.45	.61	.32	.31	.39	1.87	7.42	7.07	2.53	1.05	1.02
IN.	.48	.50	.70	.37	.33	.45	2.09	8.56	7.89	2.92	1.21	1.14
AC-FT	10900	11450	15980	8340	7440	10320	47570	194800	179600	66430	27650	25850
CAL YR 1977 TOTAL	146280				2750	62	CFSM .94	IN 12.74	AC-FT 290100			
WTR YR 1978 TOTAL	305701				6090	75	CFSM 1.96	IN 26.63	AC-FT 606400			

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970, 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1974 to current year.

WATER TEMPERATURES: November 1974 to current year.

SUSPENDED-SEDIMENT DISCHARGE: April 1975 to current year.

INSTRUMENTATION.--Temperature recorder since October 1, 1975.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 309 micromhos Jan. 12, 28, 1975; minimum daily, 130 micromhos May 20, 1976.

WATER TEMPERATURES: Maximum, 19.5°C Aug. 2, 1977; minimum, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily, 1,310 mg/L June 20, 1975; minimum daily, 1 mg/L on many days each year.

SEDIMENT LOADS: Maximum daily, 36,100 tons (32,700 tonnes) June 20, 1975; minimum daily, 0.25 ton (0.23 tonne) Jan. 2, 1978.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 307 micromhos Nov. 20; minimum daily, 170 micromhos June 9, 19.

WATER TEMPERATURES: Maximum, 18.0°C Aug. 8; minimum, 0.0°C on many days during November to March.

SEDIMENT CONCENTRATIONS: Maximum daily, 386 mg/L June 5; minimum daily, 1 mg/L on many days throughout year.

SEDIMENT LOADS: Maximum daily, 5,970 tons (5,420 tonnes) June 6; minimum daily, 0.25 ton (0.23 tonne) Jan. 2.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLJA, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT												
18...	1130	162	0	267	7.7	1.0	4.0	0	--	11.8	104	<1
NOV												
16...	1200	163	--	268	7.8	-2.0	1.5	1	--	12.8	105	K2
DEC												
19...	1045	319	1	263	7.8	-2.0	.0	1	--	12.6	99	K4
FEB												
10...	1530	131	0	269	8.2	2.0	.0	1	--	12.6	99	K6
APR												
10...	1200	456	2	245	8.1	2.0	4.0	1	--	11.8	104	<1
MAY												
11...	1200	3550	60	183	8.5	8.0	5.0	25	--	11.5	105	K10
JUN												
16...	1300	5320	2	178	7.8	11.0	6.0	--	1.9	10.7	100	<1
JUL												
18...	1100	930	50	220	8.1	14.0	9.5	--	1.0	9.7	98	K10
AUG												
15...	1230	389	60	256	8.1	15.0	10.5	--	.50	9.7	101	K2
SEP												
19...	1200	460	1	245	8.0	4.0	6.0	--	.60	11.1	104	K2

DATE	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CaCO3)	ACIDITY (MG/L AS H)	ACIDITY (MG/L AS CaCO3)	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SURP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT											
18...	K2	150	8	.0	.0	43	9.8	.7	.0	.3	170
NOV											
16...	K2	140	5	.0	.0	42	9.5	.7	.0	.3	170
DEC											
19...	K4	150	12	--	--	45	9.4	.6	.0	.3	170
FEB											
10...	K2	150	14	.0	.0	45	10	.6	.0	.3	170
APR											
10...	K2	140	8	.0	.0	41	9.0	.5	.0	.3	160
MAY											
11...	K3	98	0	.1	5.0	28	6.9	.5	.0	.2	120
JUN											
16...	<1	99	11	.0	.0	29	6.4	.6	.0	.2	--
JUL											
18...	32	120	6	.0	.0	34	7.6	.9	.0	.3	--
AUG											
15...	K7	130	2	.0	.0	39	8.4	.7	.0	.3	--
SEP											
19...	K3	130	13	.0	.0	40	8.0	.9	.0	.3	--

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)
OCT 18...	0	140	5.4	5.1	.3	.1	4.6	129	148	.18	56.4
NOV 16...	0	140	4.3	6.3	.3	.1	4.6	132	148	.18	58.1
DEC 19...	0	140	4.3	8.1	.3	.1	4.6	132	152	.18	114
FEB 10...	0	140	1.7	7.4	.3	.1	4.6	152	152	.21	53.8
APR 10...	0	130	2.0	7.2	.2	.1	4.5	130	142	.18	160
MAY 11...	0	98	.6	3.8	--	.1	4.6	96	108	.13	920
JUN 16...	--	88	--	6.6	.2	.1	4.6	94	101	.13	596
JUL 18...	--	110	--	3.9	.2	.1	5.2	113	119	.15	284
AUG 15...	--	130	--	4.6	.3	.1	4.5	127	136	.17	133
SEP 14...	--	120	--	7.1	.3	.1	4.8	132	134	.18	164

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT 18...	.01	--	.04	--	.05	--	.01	.01	1.2	--	--
NOV 16...	.02	--	.01	--	.35	--	.00	.00	.7	--	--
DEC 19...	.04	--	.02	--	.00	--	.00	.00	--	1.6	.1
FEB 10...	.03	.02	.01	.03	.00	.06	.01	.01	6.8	--	--
APR 10...	.01	.17	.01	.18	.18	.19	.00	.00	--	1.2	.2
MAY 11...	.02	.30	.01	.31	.12	.33	.075	.007	4.5	--	--
JUN 16...	.02	1.1	.01	1.1	.02	1.1	.014	.007	1.2	--	--
JUL 18...	.01	.22	.00	.22	.09	.23	.002	.001	--	2.0	.2
AUG 15...	.00	.15	.00	.15	.36	.15	.001	.000	.9	--	--
SEP 19...	.01	.19	.00	.19	.14	.20	.000	.000	10	--	--

DATE	TIME	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
DEC 19...	1045	80	20	1	1	0	0	0	0	10
APR 10...	1200	60	0	1	1	0	100	1	1	10
JUL 18...	1100	110	5	2	0	200	200	1	2	10

PEND OREILLE RIVER BASIN

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHROMIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)
DEC 19...	0	0	0	12	0	110	20	5	0	0
APR 10...	0	3	1	6	0	60	30	11	3	0
JUL 18...	0	0	0	4	1	80	30	11	12	10

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 19...	0	.0	.0	0	0	0	0	50	0
APR 10...	0	.0	.0	0	0	0	0	10	0
JUL 18...	0	.0	.0	0	0	0	0	10	10

SPECIFIC CONDUCTANCE (MICROMHJS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	272	268	275	260	281	293	234	199	188	193	241	256
2	272	257	269	242	276	295	235	202	180	196	249	257
3	272	262	258	257	272	298	241	200	180	201	245	259
4	272	266	266	273	271	291	248	199	180	201	249	260
5	273	265	279	272	269	284	252	204	180	201	250	258
6	272	265	277	270	268	279	253	206	180	204	251	262
7	273	263	269	272	267	274	256	206	177	206	255	262
8	273	267	278	271	268	273	257	208	174	205	251	257
9	270	272	283	273	266	272	257	205	170	207	252	251
10	274	268	284	275	272	275	257	195	173	207	254	247
11	272	269	263	275	284	277	251	197	177	206	254	251
12	272	268	246	276	286	277	249	196	180	209	254	246
13	270	261	248	274	289	277	251	195	180	212	256	245
14	272	269	223	272	284	282	252	200	190	217	259	250
15	273	268	254	277	278	288	251	202	180	219	251	244
16	270	269	254	282	275	285	252	194	180	219	255	242
17	271	268	268	280	273	281	249	198	180	220	251	240
18	270	263	268	277	273	277	251	194	180	213	252	243
19	272	291	271	277	272	273	255	196	170	210	250	243
20	272	307	278	277	273	275	253	194	180	213	251	246
21	273	304	286	274	273	278	250	194	180	214	258	250
22	272	304	276	272	270	279	250	195	180	219	259	248
23	272	287	272	274	268	280	256	196	180	222	247	242
24	273	275	282	277	272	278	258	192	180	224	248	243
25	263	269	291	275	276	276	256	195	180	230	251	244
26	268	258	287	272	273	274	249	197	180	230	254	244
27	269	260	283	273	270	271	238	200	180	231	255	245
28	270	253	279	273	282	268	217	200	190	233	270	249
29	270	259	276	279	---	262	206	193	190	238	260	250
30	269	261	277	284	---	256	207	194	190	239	259	252
31	267	---	278	282	---	245	---	195	---	238	259	---
MEAN	271	271	271	273	274	277	246	198	180	215	253	250
WTR YR 1978	MEAN	248		MAX	307		MIN	170				

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.5	6.5	7.5	3.0	2.0	2.5	.0	.0	.0	.0	.0	.0
2	8.0	5.0	7.0	3.0	2.0	2.5	.0	.0	.0	.0	.0	.0
3	7.0	4.0	6.0	3.0	1.5	2.5	.0	.0	.0	.0	.0	.0
4	7.0	3.5	5.0	2.5	1.0	2.0	.0	.0	.0	.0	.0	.0
5	6.0	3.5	5.0	3.0	1.5	2.0	.0	.0	.0	.0	.0	.0
6	7.0	3.5	5.5	3.0	2.5	3.0	.0	.0	.0	.0	.0	.0
7	7.0	5.5	6.0	3.0	1.0	2.0	.0	.0	.0	.0	.0	.0
8	5.5	5.0	5.5	.5	.0	.0	.0	.0	.0	.0	.0	.0
9	6.0	4.5	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	5.5	2.5	4.0	2.0	.0	1.0	.0	.0	.0	.0	.0	.0
11	5.5	2.5	4.0	3.5	2.5	3.0	.0	.0	.0	.0	.0	.0
12	7.0	3.0	5.0	3.5	2.5	3.0	.0	.0	.0	.0	.0	.0
13	8.5	6.5	7.0	3.0	2.0	2.5	.0	.0	.0	.0	.0	.0
14	6.5	4.0	5.5	2.5	1.0	1.5	.0	.0	.0	.0	.0	.0
15	6.5	3.0	5.0	1.0	.5	.5	.0	.0	.0	.0	.0	.0
16	7.5	4.5	6.0	1.5	.5	1.0	.0	.0	.0	.0	.0	.0
17	6.5	3.5	5.0	1.0	.0	.5	.0	.0	.0	.0	.0	.0
18	6.0	3.0	5.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
19	6.5	3.5	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	6.0	3.5	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	5.0	2.5	4.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	5.5	3.0	4.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	5.5	3.0	4.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	6.0	3.5	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	6.0	5.0	5.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	5.0	4.0	4.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	4.0	2.0	3.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	5.5	3.5	4.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	5.5	4.5	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	5.0	3.5	4.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	4.0	3.5	3.5	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	8.5	2.0	5.0	3.5	.0	1.0	.0	.0	.0	.0	.0	.0
FEBRUARY			MARCH			APRIL			MAY			
1	.0	.0	.0	.0	.0	.0	2.5	1.0	2.0	6.5	3.5	5.0
2	.0	.0	.0	.0	.0	.0	5.0	2.0	3.0	5.0	3.0	4.0
3	.0	.0	.0	.0	.0	.0	4.5	2.0	3.0	5.0	3.0	4.0
4	.0	.0	.0	.0	.0	.0	6.0	1.5	4.0	4.5	2.5	3.5
5	.0	.0	.0	.0	.0	.0	5.0	3.0	4.0	5.0	2.5	4.0
6	.0	.0	.0	.0	.0	.0	5.0	1.0	3.0	6.0	3.0	4.5
7	.0	.0	.0	.0	.0	.0	6.0	1.0	3.5	7.0	2.5	4.5
8	.0	.0	.0	.0	.0	.0	5.0	2.0	4.0	8.5	3.0	5.5
9	.0	.0	.0	.0	.0	.0	6.5	1.5	4.0	7.0	4.5	5.5
10	.0	.0	.0	.0	.0	.0	7.0	2.5	5.0	6.5	3.5	5.0
11	.0	.0	.0	.0	.0	.0	5.5	3.5	4.5	5.5	3.5	4.5
12	.0	.0	.0	.0	.0	.0	5.0	1.0	3.0	5.5	3.5	4.5
13	.0	.0	.0	.0	.0	.0	5.0	1.5	3.5	5.5	3.5	4.5
14	.0	.0	.0	.0	.0	.0	4.0	2.5	3.0	5.0	4.5	4.5
15	.0	.0	.0	.0	.0	.0	7.0	2.0	4.0	5.5	3.5	4.5
16	.0	.0	.0	.0	.0	.0	6.0	3.5	5.0	5.0	3.5	4.5
17	.0	.0	.0	.0	.0	.0	5.5	3.0	4.0	6.5	4.0	5.0
18	.0	.0	.0	.0	.0	.0	6.5	2.5	4.5	6.5	3.5	5.0
19	.0	.0	.0	2.5	.0	.5	8.5	2.5	5.5	9.0	3.5	6.0
20	.0	.0	.0	4.5	1.0	2.5	6.0	3.5	5.0	9.0	4.0	6.5
21	.0	.0	.0	4.5	2.5	3.5	4.5	3.0	3.5	7.0	4.5	6.0
22	.0	.0	.0	5.0	2.0	3.5	7.0	2.5	4.0	7.5	4.5	6.0
23	.0	.0	.0	5.5	2.5	4.0	6.5	2.5	4.5	5.5	3.0	4.0
24	.0	.0	.0	5.5	3.0	4.0	7.5	2.0	5.0	5.0	3.5	4.0
25	.0	.0	.0	4.5	2.5	3.5	9.0	4.0	6.5	6.0	3.5	5.0
26	.0	.0	.0	5.0	2.5	4.0	7.5	4.5	6.0	7.0	4.0	5.5
27	.0	.0	.0	5.0	2.5	3.5	6.0	4.0	5.0	6.0	4.5	6.0
28	.0	.0	.0	4.0	2.5	3.5	5.0	3.0	4.0	7.5	5.0	6.0
29	---	---	---	6.0	2.5	4.0	5.0	3.0	4.0	5.5	4.5	5.0
30	---	---	---	4.5	2.5	3.0	6.5	3.0	4.5	5.5	4.0	5.0
31	---	---	---	3.5	1.5	2.0	---	---	---	7.5	4.5	6.0
MONTH	.0	.0	.0	6.0	.0	1.5	9.0	1.0	4.0	9.0	2.5	5.0

PEND OREILLE RIVER BASIN

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE				JULY				AUGUST		
											SEPTEMBER	
1	10.0	4.5	7.0	14.0	8.5	11.0	15.5	11.0	13.5	13.5	10.0	11.5
2	10.5	5.0	7.5	13.5	9.0	11.0	16.0	10.0	13.0	14.5	8.5	11.5
3	10.5	5.5	8.0	11.5	9.0	10.0	16.5	10.5	13.5	14.5	10.0	12.5
4	10.5	5.5	8.0	11.5	8.5	10.0	17.0	11.0	14.0	15.0	10.0	12.5
5	10.0	5.5	7.5	11.5	9.0	10.0	17.5	12.0	15.0	12.5	10.5	11.5
6	9.5	6.0	7.5	12.5	8.5	10.5	15.5	11.5	13.5	12.5	10.5	11.5
7	10.0	5.5	7.5	12.5	9.0	10.5	17.0	10.5	14.0	13.0	10.5	12.0
8	10.0	6.0	8.0	12.5	8.5	10.5	18.0	12.0	15.0	12.0	9.5	11.0
9	8.5	6.0	7.0	13.5	9.0	11.5	17.0	11.5	14.5	13.0	8.5	10.5
10	7.0	4.5	6.0	12.0	9.0	10.5	17.0	12.0	14.5	12.5	10.0	11.0
11	8.0	5.5	6.5	10.0	8.0	9.0	15.5	11.0	13.5	10.0	8.5	9.5
12	9.0	5.0	7.0	14.0	7.5	11.0	14.0	11.0	12.5	10.0	6.5	9.0
13	9.0	6.0	7.5	15.0	8.5	12.0	13.0	10.5	11.5	9.5	7.5	8.5
14	4.5	5.5	7.5	15.5	9.5	12.5	12.5	10.0	11.5	11.0	8.5	9.5
15	7.5	6.0	6.5	15.5	10.0	13.0	11.0	10.0	10.5	10.0	8.0	9.0
16	6.5	5.5	7.0	13.5	10.5	12.0	12.5	9.0	10.5	9.0	6.5	7.5
17	10.0	6.0	7.5	12.0	10.5	11.0	12.0	9.5	11.0	9.0	5.0	7.0
18	11.5	6.5	8.5	10.5	9.5	10.0	12.5	9.5	11.0	6.5	5.0	6.0
19	10.0	6.0	8.0	13.5	7.5	10.0	12.0	9.0	10.5	9.0	5.5	7.5
20	11.5	5.5	9.0	13.5	8.0	11.0	10.0	9.0	9.5	9.0	6.0	7.5
21	11.5	7.0	9.0	14.0	8.5	11.5	13.0	9.0	11.0	9.0	6.5	8.0
22	12.0	7.0	9.5	15.5	10.0	12.5	11.0	9.0	10.0	8.5	7.0	7.5
23	11.5	7.5	9.5	15.5	10.0	13.0	13.0	9.0	10.5	9.5	7.0	8.0
24	11.0	7.0	9.0	16.0	10.5	13.5	11.0	8.0	10.0	11.5	8.0	9.5
25	9.0	7.5	8.5	16.5	10.5	13.5	12.5	8.5	10.5	11.5	7.5	9.5
26	11.5	7.0	9.5	15.5	11.0	13.5	12.0	7.5	9.5	11.0	7.5	9.5
27	13.0	7.0	10.0	16.5	12.0	14.0	12.0	7.5	10.0	10.0	8.0	9.0
28	14.0	8.0	11.0	16.0	10.5	13.5	13.0	8.0	10.5	8.5	7.0	7.5
29	13.5	9.0	11.0	16.5	11.0	14.0	13.0	9.0	11.5	10.5	7.5	8.5
30	12.0	8.5	10.5	16.0	11.0	14.0	13.5	9.0	11.5	8.5	6.5	8.0
31	---	---	---	15.0	11.0	13.5	12.5	10.5	11.5	---	---	---
MONTH	14.0	4.5	8.0	16.5	7.5	11.5	18.0	7.5	12.0	15.0	5.0	9.5
YEAR	18.0	.0	5.0									

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPERATURE (DEG C)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIA 4. % FINER THAN .062 MM
OCT						
18...	1130	4.0	162	1	.44	77
NOV						
16...	1200	1.5	163	2	.88	61
DEC						
19...	1045	.0	319	2	1.7	48
FEB						
10...	1530	.0	131	2	.71	78
APR						
10...	1200	4.0	456	3	3.7	76
MAY						
11...	1200	5.0	3550	115	1100	57
JUN						
16...	1300	6.0	5320	22	140	77
JUL						
18...	1100	9.5	930	7	18	77
AUG						
15...	1230	10.5	389	2	2.1	84
SEP						
19...	1200	6.0	460	1	1.2	70

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCENTRATION (MG/L)		LOADS (T/DAY)		MEAN CONCENTRATION (MG/L)		LOADS (T/DAY)		MEAN CONCENTRATION (MG/L)		LOADS (T/DAY)		MEAN CONCENTRATION (MG/L)		LOADS (T/DAY)		MEAN CONCENTRATION (MG/L)		LOADS (T/DAY)				
OCTOBER				NOVEMBER				DECEMBER				JANUARY				FEBRUARY				MARCH			
1	1	.59	1	.46	2	1.4	2	.62	1	.30	1	.33											
2	2	1.2	1	.59	2	1.9	1	.25	1	.33	1	.31											
3	1	.56	1	.59	2	2.1	1	.26	2	.73	2	.59											
4	2	1.1	1	.55	2	1.9	1	.38	2	.78	2	.62											
5	2	1.0	1	.52	2	1.5	2	.82	2	.78	2	.66											
6	2	1.0	1	.52	2	.83	3	1.3	2	.78	1	.34											
7	2	1.0	1	.54	2	.79	3	1.4	2	.76	1	.35											
8	2	1.0	1	.50	1	.33	4	2.0	2	.74	2	.69											
9	2	.99	1	.48	2	.61	3	1.4	1	.36	2	.69											
10	1	.49	1	.46	1	.36	2	.89	1	.35	2	.69											
11	2	.95	1	.39	1	.50	2	.71	2	.65	2	.69											
12	1	.46	1	.40	3	1.8	2	.71	2	.59	2	.69											
13	1	.46	1	.45	2	3.2	2	.74	1	.28	2	.69											
14	1	.47	1	.47	1	1.6	2	.78	1	.30	2	.68											
15	2	.94	2	.94	1	1.6	1	.35	2	.65	2	.66											
16	1	.47	2	.89	1	1.4	1	.39	2	.70	2	.65											
17	1	.47	2	.89	1	1.1	1	.37	2	.76	1	.32											
18	1	.46	2	.92	1	1.1	1	.36	2	.79	1	.31											
19	1	.46	1	.36	2	1.7	1	.34	2	.79	2	.62											
20	1	.45	2	.64	2	1.2	1	.35	2	.78	2	.61											
21	1	.43	4	.81	2	.87	1	.36	2	.78	1	.31											
22	1	.43	2	.44	2	.93	1	.36	2	.78	1	.32											
23	1	.42	1	.33	2	.99	2	.72	2	.78	2	.65											
24	1	.41	2	.82	2	.87	2	.71	1	.39	2	.72											
25	2	.96	2	.96	4	1.5	1	.35	1	.39	3	1.2											
26	1	.46	2	1.1	4	1.4	1	.35	2	.76	3	1.4											
27	1	.45	1	1.1	2	.75	1	.34	2	.75	5	2.8											
28	1	.45	2	2.0	3	1.2	2	.69	1	.36	10	6.8											
29	1	.44	2	2.0	3	1.3	2	.66	---	---	21	19											
30	1	.45	2	1.8	2	.81	1	.32	---	---	33	42											
31	1	.46	---	---	2	.75	1	.31	---	---	39	74											
TOTAL	---	19.88	---	22.92	---	38.29	---	19.59	---	17.19	---	160.39											
APRIL				MAY				JUNE				JULY				AUGUST				SEPTEMBER			
1	28	56	40	248	18	114	10	46	7	11	1	1.1											
2	13	24	45	375	45	315	9	39	3	4.6	2	2.1											
3	8	13	44	377	127	1170	8	32	2	2.9	2	2.0											
4	8	12	26	195	261	3130	6	24	3	4.2	1	.93											
5	4	5.7	16	98	386	5690	9	36	5	6.7	4	3.8											
6	5	6.5	11	60	363	5970	11	43	1	1.3	1	.98											
7	3	3.6	12	60	155	2290	18	67	2	2.5	1	1.0											
8	4	4.8	11	54	122	1670	6	22	2	2.4	1	1.1											
9	4	4.8	22	129	132	1770	5	17	2	2.3	1	1.2											
10	5	6.1	110	1060	72	799	7	24	2	2.2	1	1.2											
11	18	26	76	728	48	420	5	17	2	2.2	1	1.1											
12	6	9.5	22	176	39	153	4	13	1	1.1	2	2.5											
13	5	7.9	17	116	35	253	7	20	1	1.1	2	2.5											
14	3	4.5	34	262	32	245	6	16	1	1.1	2	2.5											
15	3	4.2	289	3600	28	202	4	10	2	2.2	4	5.5											
16	2	2.8	165	2110	24	152	9	22	2	2.2	2	2.9											
17	4	5.8	81	842	21	121	14	36	2	2.4	1	1.3											
18	3	4.2	33	324	24	146	16	46	3	3.6	2	2.5											
19	5	7.0	53	511	27	177	12	39	4	4.8	9	11											
20	6	9.7	74	795	20	117	5	15	2	2.5	7	8.1											
21	8	14	117	1510	20	117	5	14	4	4.8	2	2.3											
22	4	6.9	150	2310	25	153	3	7.6	12	14	1	1.3											
23	5	8.2	330	4640	23	145	3	7.1	10	14	3	4.1											
24	7	11	51	514	21	132	3	6.7	2	3.0	2	2.7											
25	5	8.7	33	266	17	102	4	8.3	2	2.6	1	1.3											
26	36	86	31	202	16	93	3	5.9	1	1.2	1	1.2											
27	105	403	26	151	14	76	3	5.8	1	1.1	1	1.2											
28	139	844	23	143	14	72	2	3.6	1	1.1	1	1.2											
29	86	648	31	223	13	67	2	3.5	1	1.0	2	2.2											
30	40	289	15	98	11	54	1	1.6	1	.96	1	1.1											
31	---	---	14	89	---	---	4	6.5	1	.99	---	---											
TOTAL	---	2536.9	---	22316	---	26056	---	654.6	---	108.05	---	73.91											
TOTAL LOAD FOR YEAR:				52023.72 TONS.																			

12355000 FLATHEAD RIVER AT FLATHEAD, BRITISH COLUMBIA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH JF EXPJ- SURE (DAYS)	PERI- PHYTON BIOMASS TJIAL DRY WEIGHT G/SQ M	PERI- PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI- PHYTON CHROMO- FLUORJM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- FLUORJM (MG/M2)
OCT 18...	1130	27	.551	.394	.003	.001
MAY 11...	1200	31	3.70	2.99	1.90	.750
JUL 18...	1100	32	3.39	2.91	1.01	.150

PHYTOPLANKTON

DATE TIME	NOV 16,77 1200	MAY 11,78 1200	JUN 16,78 1300	JUL 16,78 1100	AUG 15,78 1230
TOTAL CELLS/ML	20	460	120	89	0
DIVERSITY: DIVISION	0.7	0.7	0.0	0.0	0.0
..CLASS	0.7	0.7	0.0	0.0	0.0
..ORDER	1.5	1.3	0.7	0.0	0.0
...FAMILY	1.9	1.4	2.3	1.0	0.0
....GENUS	1.9	1.4	2.3	1.0	0.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CARTERIA	4# 20		33	7	--	-	--	-	--	-
CHRYSTOPHYTA										
..BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCEACEAE										
....CYCLOTELLA	--	-	330# 71		--	-	--	-	--	-
....MELOSIRA	8# 40		--	-	23# 20		--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	33	7	23# 20		--	-	--	-
....COCCONEIS	4# 20		--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	23# 20		--	-	--	-
...FRAGILARIACEAE										
....HANNAEA	--	-	--	-	23# 20		--	-	--	-
....SYNEDRA	--	-	--	-	--	-	44# 50		--	-
...GOMPHONEMACEAE										
....GOMPHONEMA	4# 20		--	-	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	--	-	33	7	--	-	--	-	--	-
...NITZSCHACEAE										
....NITZSCHIA	--	-	--	-	23# 20		44# 50		--	-
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
....EUGLENAEAE										
....TRACHELOMONAS	--	-	33	7	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

+ - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT

LOCATION.--Lat 48°29'44", long 114°07'36", in NE¼SW¼NW¼ sec.35, T.32 N., R.20 W., Flathead County, Hydrologic Unit 17010206, on right bank 1.5 mi (2.4 km) downstream from Canyon Creek, 3.8 mi (6.1 km) upstream from Middle Fork, 8.8 mi (14.2 km) northeast of Columbia Falls, and at mile 162.1 (260.8 km).

DRAINAGE AREA.--1,548 mi² (4,009 km²).

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 (958.776 m), National Geodetic Vertical Datum of 1929. 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 (4.3 km) downstream at different datums.

REMARKS.--Water-discharge records good except those for winter period which are poor. A few small diversions from tributaries for irrigation of hay meadows above station.

AVERAGE DISCHARGE.--47 years (1910-12, 1913-15, 1935-78), 3,002 ft³/s (85.02 m³/s), 26.34 in/yr (669 mm/yr), 2,175,000 acre-ft/yr (2.68 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,100 ft³/s (1,960 m³/s) June 9, 1964, gage height, 18.60 ft (5.669 m), from floodmark, from rating curve extended above 37,000 ft³/s (1,050 m³/s) on basis of slope-area measurement of peak flow; minimum, 198 ft³/s (5.61 m³/s) Jan. 8, 1953, gage height, 0.86 ft (0.262 m), site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,000 ft³/s (510 m³/s) June 6, gage height, 9.00 ft (2.743 m); minimum daily, 320 ft³/s (9.06 m³/s) Nov. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1040	730	730	550	450	440	3680	7930	7450	7230	2540	1750
2	1040	854	730	500	470	577	3510	8580	7650	6910	2430	1720
3	1010	879	850	550	500	402	3130	9150	8820	6630	2300	1660
4	980	846	838	600	580	445	2870	8790	11200	6530	2160	1610
5	960	814	723	650	650	498	2770	7630	14000	6390	2060	1560
6	933	790	666	700	700	493	2610	6700	16500	6190	1980	1620
7	915	783	701	750	680	493	2400	6070	17400	5910	1940	1620
8	897	760	550	800	660	493	2310	5690	16300	5600	1870	1720
9	906	701	500	750	660	509	2250	5800	16600	5400	1790	1870
10	868	701	600	700	650	515	2220	7600	15100	5150	1760	1920
11	854	715	854	600	600	504	2480	9270	12700	5020	1710	1920
12	830	708	1030	550	500	504	2610	8550	10600	4770	1660	1910
13	814	701	1010	560	440	498	2570	7580	9690	4410	1660	1960
14	814	715	990	600	465	493	2510	8130	9840	4090	1600	2020
15	814	730	1060	650	538	460	2390	10800	9600	3910	1600	1980
16	806	715	1070	650	593	482	2370	13200	8640	3800	1740	2020
17	798	694	951	620	568	482	2540	12100	7750	3820	1850	2030
18	790	680	888	600	562	509	2490	10900	7450	4200	1990	1980
19	775	593	806	560	532	550	2430	10200	7930	4730	1950	1870
20	760	538	708	520	509	574	2610	10600	7780	4530	2060	1790
21	745	400	730	540	504	600	3050	12100	7580	4180	2190	1700
22	738	320	798	550	504	659	3100	14000	7850	3930	2160	1660
23	730	400	897	560	509	723	2930	14300	8250	3660	2640	1620
24	715	600	790	550	504	870	2750	12600	8580	3420	2770	1670
25	715	830	600	540	498	970	2720	10300	8430	3290	2610	1700
26	723	960	550	530	493	1050	3050	8670	8200	3150	2390	1690
27	723	1100	600	520	487	1290	4100	7580	7580	3050	2190	1650
28	715	990	650	500	482	1600	6000	7110	7300	2950	2030	1610
29	701	854	700	490	---	2010	7630	7380	7300	2800	1910	1570
30	701	798	650	480	---	2580	7880	7480	7430	2690	1790	1510
31	715	---	600	450	---	3440	---	7350	---	2570	1740	---
TOTAL	25545	21899	23800	18170	15288	25538	96160	284140	301500	140910	63070	52910
MEAN	824	730	768	586	546	824	3205	9166	10050	4545	2035	1764
MAX	1040	1100	1070	800	700	3440	7880	14300	17400	7230	2770	2030
MIN	701	320	500	450	440	397	2220	5690	7300	2570	1600	1510
CFSM	.53	.47	.50	.38	.35	.53	2.07	5.92	6.49	2.94	1.32	1.14
IN.	.61	.53	.57	.44	.37	.61	2.31	6.83	7.25	3.39	1.52	1.27
AC-FT	50670	43440	47210	36040	30320	50650	190700	563600	598000	279500	125100	104900
CAL YR 1977 TOTAL	575339			MEAN 1576	MAX 7930	MIN 300	CFSM 1.02	IN 13.83	AC-FT 1141000			
WTR YR 1978 TOTAL	1066930			MEAN 2929	MAX 17400	MIN 320	CFSM 1.89	IN 25.69	AC-FT 2120000			

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970, 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to current year.

WATER TEMPERATURES: October 1975 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1975 to current year.

INSTRUMENTATION.--Temperature recorder since Oct. 1, 1975.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 246 micromhos Dec. 31, 1976; minimum daily, 128 micromhos May 28, June 30, July 1, 1976.

WATER TEMPERATURES: Maximum, 19.0°C July 22, 23, 1977; minimum, 0.0°C on many days during winter periods each year.

SEDIMENT CONCENTRATIONS: Maximum daily, 931 mg/L May 11, 1976; minimum daily, 1 mg/L on many days each year.

SEDIMENT LOADS: Maximum daily, 56,800 tons (51,600 tonnes) May 11, 1976; minimum daily, 1.1 tons (1.0 tonne) Mar. 3, 1978.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 238 micromhos Feb. 13; minimum daily, 137 micromhos June 24.

WATER TEMPERATURES: Maximum recorded, 18.0°C Aug. 5; minimum, 0.0°C on many days during November to March.

SEDIMENT CONCENTRATIONS: Maximum daily, 430 mg/L June 6; minimum daily, 1 mg/L on many days during the year.

SEDIMENT LOADS: Maximum daily, 19,200 tons (17,400 tonnes) June 6; minimum daily, 1.1 tons (1.0 tonne) Mar. 3.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLJW, INSTAN- TANEOUS (CFS)	WEATHER (MMU CODE NUMBER)	SPE- CIFIC CON- DUCTI- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PEK- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (CULS./ 100 ML)
OCT												
19...	1130	782	0	202	8.2	3.0	5.5	1	--	11.2	103	<1
NOV												
17...	1100	671	73	215	7.5	-2.0	1.0	1	--	13.0	102	<1
DEC												
20...	1200	660	2	214	7.6	-5.0	.0	1	--	12.7	97	<1
FEB												
13...	1300	437	0	245	7.6	-10.0	.0	1	--	13.2	102	<1
APR												
07...	1215	2400	0	173	7.6	9.0	3.5	2	--	12.3	107	<1
MAY												
12...	1300	8330	60	160	8.6	9.0	5.0	9	--	11.2	98	K2
JUN												
15...	1300	9150	1	141	7.4	11.0	8.5	--	4.7	10.6	105	K3
JUL												
17...	1100	3860	3	161	7.3	14.0	13.5	--	.60	9.3	99	K4
AUG												
14...	1130	1000	60	162	8.2	20.0	13.5	--	.50	9.5	101	K2
SEP												
20...	1230	1750	1	165	8.0	9.5	8.5	--	.80	10.6	105	<1

DATE	STREAM- TCCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	ACIDITY (MG/L AS H)	ACIDITY (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)
OCT											
19...	K17	110	9	.0	.0	30	7.8	.9	.0	.3	120
NOV											
17...	K4	110	6	.0	.0	32	7.9	.9	.0	.3	130
DEC											
20...	K2	110	14	.0	.0	32	7.9	.8	.0	.3	120
FEB											
13...	<1	130	12	.0	.0	36	8.9	.9	.0	.4	140
APR											
07...	K6	93	11	.0	.0	26	6.7	.7	.0	.4	100
MAY											
12...	K1	83	4	.1	5.0	23	6.3	.5	.0	.3	97
JUN											
15...	K5	71	3	.0	.0	20	5.0	.7	.0	.2	--
JUL											
17...	K15	83	6	.0	.0	23	6.1	1.0	.0	.2	--
AUG											
14...	180	96	8	.0	.0	28	6.7	1.0	.0	.3	--
SEP											
20...	K9	93	4	.0	.0	26	6.7	1.1	.1	.3	--

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	ALKA- LINIT (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SU4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUTENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)
OCT 19...	0	98	1.2	6.9	.2	.1	4.7	96	110	.13	203
NOV 17...	0	110	6.6	9.6	.3	.1	5.0	103	120	.14	187
DEC 20...	0	98	3.0	8.7	.3	.1	5.4	102	115	.14	182
FEB 13...	0	110	5.6	12	.4	.1	5.6	131	133	.18	155
APR 07...	0	82	4.0	11	1.2	.1	6.2	95	102	.13	616
MAY 12...	0	60	.4	6.5	---	.0	5.4	82	97	.11	1840
JUN 15...	--	68	--	6.5	.4	.1	4.6	65	78	.09	1610
JUL 17...	--	77	--	4.7	.2	.1	5.2	82	87	.11	855
AUG 14...	--	90	--	8.8	.3	.0	4.4	106	104	.14	458
SEP 20...	--	89	--	7.2	.4	.0	4.7	93	100	.13	439

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
OCT 19...	.02	--	.04	--	.03	--	.01	.01	.5	--	--
NOV 17...	.03	--	.01	--	.05	--	.00	.00	.6	--	--
DEC 20...	.07	--	.02	--	.02	--	.00	.00	--	1.0	.1
FEB 13...	.06	.03	.00	.03	.01	.09	.01	.01	5.3	--	--
APR 07...	.08	.36	.00	.36	.20	.44	.01	.01	--	2.1	.2
MAY 12...	.05	.36	.01	.37	.33	.42	.045	.006	3.0	--	--
JUN 15...	.05	.32	.01	.33	.07	.38	.013	.009	1.5	--	--
JUL 17...	.00	.18	.00	.18	.05	.18	.001	.000	--	1.5	.2
AUG 14...	.01	.30	.02	.32	.36	.33	.000	.000	.8	--	--
SEP 20...	.00	.42	.00	.42	.26	.42	.001	.000	14	--	--

DATE	TIME	ALUM- INUM, TOTAL RECov- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECov- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECov- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECov- ERABLE (UG/L AS CR)
DEC 20...	1200	60	20	1	1	100	100	2	2	0
APR 07...	1215	130	0	0	1	100	100	2	1	0
JUL 17...	1100	80	10	2	0	200	200	1	2	0

PEND OREILLE RIVER BASIN

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHROMIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS Pb)	LEAD, DIS- SOLVED (UG/L AS Pb)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)
DEC 20...	0	0	0	4	0	20	30	9	3	0
APR 07...	0	0	1	5	1	100	40	13	0	0
JUL 17...	0	0	0	6	1	40	30	11	2	10

DATE	MANGANESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELENIUM, TOTAL RECOVERABLE (UG/L AS SE)	SELENIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 20...	0	.0	.0	0	0	0	0	20	0
APR 07...	0	.0	.0	0	0	0	0	40	10
JUL 17...	0	.0	.0	0	0	0	0	30	10

SPECIFIC CONDUCTANCE (MICROMHDS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	192	207	212	223	197	217	162	162	159	142	180	183
2	191	205	214	222	208	235	164	158	155	142	183	184
3	192	202	213	213	219	233	167	156	152	142	188	186
4	193	205	212	203	213	231	168	155	148	143	183	185
5	193	207	211	191	208	229	169	160	147	144	189	184
6	194	210	---	179	212	227	173	161	150	147	190	183
7	196	209	169	195	217	212	175	160	148	147	189	182
8	196	212	---	210	219	198	177	159	144	150	191	181
9	196	212	224	211	220	199	178	159	141	149	190	180
10	196	211	213	212	221	220	177	156	142	152	191	179
11	200	211	202	214	223	220	172	153	141	153	194	178
12	200	211	199	216	230	220	174	154	146	157	194	178
13	201	211	196	217	236	222	179	157	142	168	195	179
14	201	210	193	218	232	224	176	151	148	162	197	179
15	202	210	190	218	226	224	180	154	145	162	194	177
16	202	209	194	219	221	224	167	155	150	162	191	178
17	202	209	198	219	221	223	173	151	152	163	184	182
18	203	208	200	219	221	223	177	151	150	156	183	183
19	206	208	202	220	221	220	178	153	152	154	190	184
20	206	207	210	222	222	216	173	148	146	153	180	185
21	207	206	217	223	223	212	167	147	147	157	178	187
22	208	205	---	218	223	208	172	148	141	158	170	186
23	208	204	---	220	223	200	177	157	140	161	162	188
24	209	203	---	222	223	192	180	148	137	163	161	193
25	209	202	---	221	226	188	182	151	142	166	165	189
26	212	201	---	219	229	184	175	156	139	167	170	189
27	210	200	222	218	214	176	168	161	141	169	173	189
28	208	203	224	218	198	168	165	160	142	174	178	192
29	209	206	227	219	---	164	167	161	141	171	182	205
30	211	209	226	212	---	160	162	159	140	174	183	194
31	209	---	225	205	---	161	---	157	---	177	188	---
MEAN	202	207	208	214	220	207	172	155	146	158	183	185
WTR YR 1978	MEAN	188	MAX	238	MIN	137						

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.5	7.5	8.0	4.0	3.5	3.5	.0	.0	.0	.0	.0	.0
2	9.0	7.0	8.0	4.5	3.5	4.0	1.0	.0	.5	.0	.0	.0
3	8.0	6.5	7.5	3.5	2.5	3.0	1.5	.0	1.5	.0	.0	.0
4	7.0	5.5	6.5	3.5	2.5	3.0	1.5	.0	.5	.0	.0	.0
5	6.5	5.0	6.0	3.0	2.5	2.5	.0	.0	.0	.0	.0	.0
6	7.0	5.0	6.5	3.5	3.0	3.0	.0	.0	.0	.0	.0	.0
7	7.0	7.0	7.0	3.5	2.5	3.0	.0	.0	.0	.0	.0	.0
8	7.0	6.5	6.5	2.5	1.0	1.5	.0	.0	.0	.0	.0	.0
9	7.5	6.5	7.0	1.0	.5	1.0	.0	.0	.0	.0	.0	.0
10	6.0	4.5	5.5	2.5	1.0	1.5	.0	.0	.0	.0	.0	.0
11	5.5	4.0	5.0	3.5	.0	3.0	.0	.0	.0	.0	.0	.0
12	6.5	4.0	5.5	4.0	.0	3.5	.0	.0	.0	.0	.0	.0
13	7.5	6.0	6.5	3.5	.0	3.0	.0	.0	.0	.0	.0	.0
14	7.0	6.0	6.5	3.0	.0	3.0	1.0	.0	.5	.0	.0	.0
15	6.5	5.0	6.0	2.5	.0	2.0	1.5	.0	1.5	.0	.0	.0
16	7.0	5.0	6.5	2.0	.0	1.5	1.5	.0	1.0	.0	.0	.0
17	6.5	5.5	6.0	2.0	.0	1.5	1.0	.0	.5	.0	.0	.0
18	6.0	5.0	5.5	1.0	.0	.5	.5	.5	.5	.0	.0	.0
19	7.0	5.0	6.0	.5	.0	.0	.5	.0	.0	.0	.0	.0
20	6.5	5.0	6.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
21	5.5	4.5	5.0	.5	.0	.0	.5	.0	.0	.0	.0	.0
22	5.5	4.0	5.0	.5	.0	.0	.5	.0	.0	.0	.0	.0
23	5.5	4.0	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	6.5	5.0	5.5	.0	.0	.0	.5	.0	.0	.0	.0	.0
25	7.0	6.5	7.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	6.5	5.0	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	5.0	3.5	4.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	5.5	4.0	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	6.0	5.0	5.5	.5	.0	.5	.0	.0	.0	.0	.0	.0
30	5.0	4.5	5.0	1.0	.0	.5	.0	.0	.0	.0	.0	.0
31	5.0	4.0	4.5	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	9.0	3.5	6.0	4.5	.0	1.5	1.5	.0	.0	.0	.0	.0
FEBRUARY			MARCH			APRIL			MAY			
1	.0	.0	.0	.5	.0	.0	3.0	2.0	2.5	7.0	5.5	6.0
2	.0	.0	.0	.5	.0	.0	4.0	2.5	3.0	6.5	5.5	6.0
3	.0	.0	.0	.0	.0	.0	5.0	3.0	4.0	6.0	4.5	5.5
4	.0	.0	.0	.0	.0	.0	5.0	3.0	4.0	5.0	4.0	4.5
5	.0	.0	.0	.5	.0	.0	5.0	4.0	4.5	6.0	3.5	4.5
6	.0	.0	.0	.5	.0	.0	4.0	3.0	3.5	6.5	4.5	5.5
7	.0	.0	.0	1.5	.0	.5	5.0	2.5	4.0	6.5	4.5	5.5
8	.0	.0	.0	3.0	1.5	2.0	5.0	3.5	4.5	8.5	4.5	6.5
9	.0	.0	.0	3.5	2.5	2.5	6.0	2.5	4.5	8.0	6.0	6.5
10	.5	.0	.5	3.0	1.5	2.5	6.5	3.5	5.0	6.5	5.5	6.0
11	.5	.0	.0	3.0	1.5	2.0	6.0	4.5	5.0	6.0	5.5	5.5
12	.0	.0	.0	2.0	1.5	1.5	5.0	3.0	4.0	6.5	5.0	5.5
13	.0	.0	.0	2.0	1.0	1.5	5.5	2.5	4.5	6.0	5.0	5.5
14	.0	.0	.0	2.0	1.0	1.5	5.0	3.5	4.0	6.5	5.5	6.0
15	.0	.0	.0	3.0	.5	1.5	6.0	3.0	4.5	6.0	5.0	5.5
16	.0	.0	.0	3.0	1.5	2.0	6.5	4.5	5.5	6.0	5.0	5.5
17	.0	.0	.0	4.0	1.0	2.5	5.0	3.5	4.5	7.0	5.0	6.0
18	.0	.0	.0	4.5	3.0	3.5	6.0	3.5	5.0	6.5	5.5	6.0
19	.5	.0	.0	4.5	3.0	3.5	7.5	4.0	6.0	8.5	5.0	6.5
20	1.0	.5	1.0	5.0	2.5	4.0	7.0	5.0	6.0	9.0	6.5	7.5
21	1.5	.5	1.0	6.0	3.5	4.5	5.5	4.0	4.5	8.5	7.0	7.5
22	2.0	1.0	1.5	5.0	3.5	4.5	6.0	3.5	4.5	7.5	6.0	6.5
23	2.0	1.5	2.0	5.5	4.0	5.0	6.0	4.0	4.5	6.5	4.0	5.0
24	2.0	1.0	1.5	5.5	3.5	4.5	6.5	4.0	5.0	5.5	4.0	4.5
25	2.0	1.0	1.5	4.0	3.0	3.5	7.5	5.0	6.0	6.0	5.0	5.5
26	2.0	1.5	1.5	5.0	3.0	4.0	7.5	6.0	7.0	7.5	5.0	6.5
27	2.5	1.5	2.0	4.5	3.0	4.0	7.0	5.5	6.5	7.5	6.0	6.5
28	1.5	.0	1.0	4.5	3.5	4.0	6.5	5.0	5.5	8.0	7.0	7.5
29	---	---	---	5.0	3.0	4.0	6.0	4.5	5.5	7.0	6.0	6.5
30	---	---	---	4.5	3.0	3.5	6.5	4.5	5.5	6.5	5.5	6.0
31	---	---	---	4.0	2.5	3.5	---	---	---	8.0	6.0	7.0
MONTH	2.5	.0	.5	6.0	.0	2.5	7.5	2.0	5.0	9.0	3.5	6.0

PEND OREILLE RIVER BASIN

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.5	6.0	8.0	13.0	10.5	12.0	16.5	14.5	15.5	14.0	12.5	13.0
2	10.5	7.5	9.0	14.5	11.5	13.0	16.5	14.0	15.5	15.0	11.5	13.0
3	11.0	8.0	9.5	14.0	12.0	13.0	17.0	14.0	15.5	15.0	13.0	14.0
4	10.5	8.0	9.5	13.5	11.5	12.0	17.5	14.5	16.0	15.5	13.0	14.5
5	10.5	8.0	9.0	13.0	11.5	12.0	18.0	15.0	16.5	15.0	13.0	13.5
6	10.0	8.0	9.0	14.0	11.5	12.5	---	---	---	14.5	12.5	13.5
7	10.0	7.5	8.5	13.5	12.0	13.0	---	---	---	14.5	13.0	14.0
8	10.0	8.0	9.0	13.5	11.5	12.5	---	---	---	14.0	11.5	12.5
9	10.0	7.5	8.5	15.0	12.0	13.5	---	---	---	14.0	10.5	12.0
10	8.5	6.5	7.5	15.0	12.5	13.5	---	---	---	13.5	12.5	13.0
11	8.5	7.0	7.5	13.5	10.5	11.5	---	---	---	13.0	11.0	11.5
12	9.0	7.0	8.0	14.0	10.0	11.5	---	---	---	11.0	10.0	10.5
13	10.0	8.0	9.0	15.0	11.5	13.0	---	---	---	10.5	9.5	10.0
14	9.5	7.5	8.5	15.5	12.5	14.0	14.0	---	---	11.5	10.0	10.5
15	9.5	7.5	8.0	16.0	13.0	14.5	13.0	12.5	12.5	11.5	10.5	11.0
16	8.0	7.0	7.5	15.5	13.5	14.5	13.0	11.5	12.5	10.0	8.5	9.5
17	9.0	7.5	8.5	15.0	13.0	13.5	13.0	11.0	12.0	9.0	7.5	8.5
18	11.0	8.0	9.5	13.5	12.0	12.5	13.0	11.5	12.5	8.5	7.0	7.5
19	10.5	8.5	9.5	14.0	10.5	12.0	13.0	11.5	12.0	8.5	7.0	8.0
20	11.5	8.0	9.5	15.0	11.5	13.0	12.0	11.0	11.5	9.0	7.5	8.5
21	12.0	9.0	10.5	14.5	12.0	13.5	13.0	11.0	12.0	9.5	8.0	8.5
22	12.0	9.5	10.5	16.5	12.5	14.0	13.0	11.0	11.5	9.0	8.5	9.0
23	11.5	9.5	10.5	16.5	13.5	15.0	13.0	11.0	11.5	9.5	9.0	9.0
24	11.0	9.5	10.0	16.5	14.0	15.0	13.0	11.0	12.0	11.5	8.5	10.0
25	10.5	9.5	10.0	17.0	13.5	15.5	13.0	11.5	12.0	12.0	10.0	11.0
26	12.5	9.0	10.0	16.5	14.0	15.5	12.5	10.5	11.5	11.5	10.0	11.0
27	13.0	9.5	11.0	17.0	15.0	16.0	13.0	10.5	12.0	11.5	10.0	11.0
28	14.0	10.5	12.0	16.5	14.0	15.5	13.5	11.0	12.5	10.5	9.0	9.5
29	14.0	12.0	13.0	17.5	14.5	16.0	14.5	11.5	13.0	10.0	8.5	9.0
30	13.5	11.0	12.0	17.0	14.5	16.0	14.0	12.0	13.0	9.5	8.5	9.0
31	---	---	---	16.5	14.5	15.5	14.0	12.5	13.0	---	---	---
MONTH	14.0	6.0	9.5	17.5	10.0	13.5	18.0	10.5	13.0	15.5	7.0	11.0
YEAR	18.0	.0	5.5									

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	TEMPERATURE (DEG C)	STREAM- FLOW, INSTANTANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM
OCT											
19...	1130	5.5	782	1	2.1	--	--	--	--	--	67
NOV											
17...	1100	1.0	671	1	1.8	--	--	--	--	--	54
DEC											
20...	1200	.0	660	1	1.8	--	--	--	--	--	77
JAN											
13...	1300	.0	437	2	2.4	--	--	--	--	--	62
FEB											
04...	1000	3.0	2840	10	77	--	--	--	--	--	78
MAR											
12...	1300	5.0	8330	62	1390	--	--	--	--	--	69
APR											
05...	1630	9.0	13700	278	10300	--	--	--	--	--	64
07...	1230	9.5	16200	285	12500	19	42	65	79	100	--
15...	1300	8.5	9150	46	1140	--	--	--	--	--	71
26...	1515	10.5	7750	22	460	--	--	--	--	--	76
MAY											
17...	1100	13.5	3860	7	73	--	--	--	--	--	60
JUN											
14...	1130	13.5	1600	3	13	--	--	--	--	--	58
JUL											
20...	1230	8.5	1750	1	4.7	--	--	--	--	--	90

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	2	5.6	1	2.0	2	3.9	6	8.9	31	38	2	2.4
2	2	5.6	1	2.3	2	3.9	8	11	24	30	2	2.1
3	2	5.5	1	2.4	2	4.5	6	8.9	5	6.8	1	1.1
4	2	5.3	1	2.3	2	4.5	4	6.5	5	7.8	1	1.2
5	2	5.2	1	2.2	2	3.9	3	5.3	4	7.0	2	2.7
6	2	5.0	1	2.1	2	3.6	3	5.7	4	7.6	3	4.0
7	2	4.9	1	2.1	2	3.8	5	10	3	5.5	5	6.7
8	2	4.8	1	2.1	3	4.5	7	15	2	3.6	10	13
9	2	4.9	1	1.9	5	6.8	4	8.1	2	3.6	9	12
10	2	4.8	1	1.9	4	6.5	2	3.8	2	3.5	3	4.2
11	2	4.6	1	1.9	3	6.9	5	8.1	2	3.2	3	4.1
12	2	4.5	1	1.9	3	8.3	7	10	2	2.7	2	2.7
13	2	4.4	1	1.9	2	5.5	3	4.5	2	2.4	2	2.7
14	2	4.4	16	31	3	8.0	1	1.6	2	2.5	2	2.7
15	2	4.4	18	35	5	14	2	3.5	3	4.4	3	3.7
16	1	2.2	7	14	4	12	2	3.5	3	4.8	4	5.2
17	2	4.3	2	3.7	3	7.7	3	5.0	5	7.7	2	2.6
18	1	2.1	2	3.7	2	4.8	5	8.1	8	12	1	1.4
19	1	2.1	2	3.2	2	4.4	4	6.0	13	19	1	1.5
20	2	4.1	2	2.9	2	3.8	3	4.2	13	18	1	1.5
21	1	2.0	2	2.2	2	3.9	2	2.9	9	12	2	3.2
22	2	4.0	2	1.7	2	4.3	3	4.5	3	4.1	3	5.3
23	2	3.9	2	2.2	2	4.8	2	3.0	5	6.9	5	9.8
24	2	3.9	2	3.2	2	4.3	2	3.0	17	23	7	16
25	2	3.9	2	4.5	2	3.2	4	5.8	16	22	7	18
26	2	3.9	2	5.2	2	3.0	7	10	5	6.7	9	26
27	2	3.9	2	5.9	2	3.2	9	13	4	5.3	14	49
28	2	3.9	2	5.3	2	3.5	12	16	3	3.9	19	82
29	2	3.8	2	4.6	2	3.8	17	22	---	---	29	157
30	2	3.8	2	4.3	3	5.3	21	27	---	---	45	313
31	1	1.9	---	---	4	6.5	24	29	---	---	51	474
TOTAL	---	127.6	---	159.6	---	167.1	---	273.9	---	274.0	---	1230.8
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	15	157	84	1800	25	503	16	312	5	34	2	9.5
2	15	142	88	2040	28	578	14	261	5	33	3	14
3	15	127	72	1780	54	1290	13	233	3	19	2	9.0
4	9	70	61	1450	121	3660	15	229	6	35	3	13
5	9	67	37	762	233	8810	12	207	8	44	4	17
6	8	56	21	380	430	19200	11	184	7	37	4	17
7	10	65	17	279	354	16600	9	144	3	16	3	13
8	9	56	19	292	214	9420	10	151	3	15	2	9.3
9	9	55	16	251	206	9230	9	131	3	14	3	15
10	7	42	64	1310	120	4890	7	97	4	19	2	10
11	9	60	75	1880	100	3430	10	136	4	18	2	10
12	10	70	59	1360	177	5070	7	90	3	13	1	5.2
13	22	153	36	737	100	2620	7	83	2	9.0	9	48
14	13	88	54	1190	50	1330	7	77	4	17	6	33
15	5	32	274	7990	49	1270	6	63	6	26	3	16
16	13	83	341	12200	37	863	5	51	1	4.7	9	49
17	11	75	178	5820	34	711	6	62	3	15	1	5.5
18	8	54	86	2530	28	563	15	170	3	16	2	11
19	11	72	72	1980	32	685	22	281	5	26	1	5.0
20	9	63	78	2230	24	504	13	159	4	22	1	4.8
21	16	132	121	3950	23	471	8	90	4	24	2	9.2
22	11	92	282	10700	24	509	6	64	5	29	1	4.5
23	11	87	257	9920	30	668	5	49	7	50	2	8.7
24	9	67	85	2890	32	741	7	65	5	37	1	4.5
25	6	44	50	1390	31	706	5	44	3	21	2	9.2
26	13	107	43	1010	29	642	5	43	2	13	2	9.1
27	52	576	45	921	18	368	6	49	3	18	1	4.5
28	140	2270	50	960	16	515	4	32	2	11	2	8.7
29	191	3930	43	857	17	335	6	45	2	10	1	4.2
30	143	3040	27	545	17	341	6	44	2	9.7	2	8.2
31	---	---	21	417	---	---	5	35	2	9.4	---	---
TOTAL	---	11932	---	81821	---	96323	---	3681	---	664.8	---	385.1

TOTAL LOAD FOR YEAR: 197039.9 TONS.

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PERIPHYTON

DATE	TIME	LENGTH OF EXPOSURE (DAYS)	PERI- PHYTON BIOMASS TOTAL DRY WEIGHT G/30 M	PERI- PHYTON BIOMASS ASH WEIGHT G/30 M	CHLOR-A PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI- PHYTON CHROMO- GRAPHIC FLUOROM (MG/M2)
UGT						
19...	1130	27	.472	.394	.078	.038
MAY						
12...	1300	35	.709	.236	.100	.000
JUN						
15...	1500	34	.515	.079	.000	.000

PHYTOPLANKTON

DATE TIME	NOV 17,77 1100	APR 7,78 1215	MAY 12,78 1300	JUN 15,78 1500
TOTAL CELLS/ML	72	62	690	69
DIVERSITY: DIVISION	0.0	0.0	0.0	0.9
..CLASS	0.0	0.0	0.0	0.9
..ORDER	0.5	0.0	1.0	0.9
...FAMILY	2.5	1.9	1.9	1.6
....GENUS	2.5	1.9	2.1	1.6

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHRYSDOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
....DUSCINOUSACEAE								
....CYCLOTELLA	--	-	--	-	33	5	--	-
....MELUSIRA	9	13	--	-	360#	52	--	-
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	9	13	14#	17	--	-	--	-
....COLCONEIS	--	-	--	-	33	5	--	-
...CYMBELLACEAE								
....CYMBELLA	16#	25	27#	33	--	-	--	-
...DIATOMACEAE								
....DIATOMA	--	-	--	-	33	5	--	-
...FRAGILARIACEAE								
....FRAGILARIA	--	-	--	-	33	5	--	-
...SYNEURA	14#	25	--	-	--	-	--	-
...GOMPHONEMACEAE								
....GOMPHONEMA	5	6	14#	17	98	14	--	-
...NAVICULACEAE								
....NAVICULA	--	-	27#	33	--	-	23#	33
...NITZSCHACEAE								
....NITZSCHIA	14#	19	--	-	98	14	23#	33
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
....EUGLENACEAE								
....EUGLENA	--	-	--	-	--	-	23#	33

12355500 NORTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUL 17, 78 1100	AUG 14, 78 1130	SEP 20, 78 1230
TOTAL CELLS/ML	580	240	140
DIVERSITY: DIVISION	0.8	0.0	0.0
..CLASS	0.8	0.4	0.0
...ORDER	0.8	0.4	0.0
....FAMILY	1.1	1.9	0.0
.....GENUS	1.2	1.9	1.4

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...ZYGEMATALES						
....DESMIDIACEAE						
.....CLOSTERIUM	22	4	--	-	--	-
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
...PENNALES						
....ACHNANTHACEAE						
.....ACHNANTHES	22	4	--	-	--	-
....RHUICUSPHENIA	22	4	--	-	--	-
...CYMBELLACEAE						
....CYMBELLA	22	4	66#	27	--	-
...FRAGILARIACEAE						
....FRAGILARIA	--	-	--	-	57#	40
....HANNAEA	--	-	--	-	14	10
....SYNEDRA	--	-	87#	36	72#	50
...GOMPHONEMACEAE						
....GOMPHONEMA	--	-	66#	27	--	-
...NITZSCHACEAE						
....NITZSCHIA	22	4	--	-	--	-
..CHRYSTOPHYCEAE						
...CHRYSDOMONADALES						
....CHROMONADACEAE						
.....CHROMUNAS	--	-	22	9	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...HORMOGONALES						
....OSCILLATORIA						
.....OSCILLATORIA	470#	81	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

12358500 MIDDLE FORK FLATHEAD RIVER NEAR WEST GLACIER, MT

LOCATION.--Lat 48°29'43", long 114°00'33", in S½SW¼NE¼ sec.34, T.32 N., R.19 W., Flathead County, Hydrologic Unit 17010207, on left bank 0.8 mi (1.3 km) downstream from McDonald Creek, 1.3 mi (2.1 km) west of West Glacier (formerly Belton), and 3.8 mi (6.1 km) upstream from mouth.

DRAINAGE AREA.--1,128 mi² (2,922 km²).

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 (953.634 m) above mean sea level. Prior to Nov. 22, 1950, nonrecording gage at present site and datum.

REMARKS.--Records excellent.

AVERAGE DISCHARGE.--39 years, 2,956 ft³/s (83.71 m³/s), 35.59 in/yr (904 mm/yr), 2,142,000 acre-ft/yr (2.64 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 140,000 ft³/s (3,960 m³/s) June 9, 1964, gage height, 36.46 ft (11.113 m), from floodmarks, from rating curve extended above 31,000 ft³/s (878 m³/s), on basis of contracted-opening measurement at gage height, 19.42 ft (5.919 m) and flood volume-hydrographic comparison; minimum, less than 173 ft³/s (4.90 m³/s) Nov. 27, 1952 (stage below intake pipe).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,600 ft³/s (498 m³/s) June 6, 7, gage height, 7.84 ft (2.390 m); minimum, 234 ft³/s (6.63 m³/s) Mar. 3, gage height, 1.13 ft (0.344 m), result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1400	878	883	609	408	409	5610	7180	7140	8110	2250	1640
2	1410	987	905	574	466	380	4810	8580	7340	7730	2150	1560
3	1360	1050	1070	623	520	360	4260	9250	8420	7500	2000	1520
4	1300	1030	1190	628	575	382	3770	8580	10800	7830	1890	1460
5	1230	999	1090	751	567	407	3510	7420	13700	7960	1810	1430
6	1170	970	1070	831	523	417	3240	6390	16800	8370	1770	1400
7	1120	957	1060	770	506	406	2980	5680	16800	7540	1710	1410
8	1100	931	912	723	499	398	2810	5180	15900	6950	1650	2010
9	1140	880	835	728	487	408	2650	5240	16300	6240	1610	2210
10	1120	846	855	693	476	414	2540	6890	14300	5980	1570	2000
11	1070	842	1060	655	458	417	2760	8140	12000	5670	1510	1850
12	1030	830	1200	659	425	417	3030	7620	10200	5040	1450	2030
13	1010	824	1080	638	427	415	2970	6760	9540	4590	1400	2210
14	1020	831	1150	632	415	414	2860	7210	10600	4430	1350	2120
15	1020	841	1220	641	461	410	2730	9240	10600	4370	1330	2070
16	1010	814	1230	621	463	402	2680	10700	9310	4290	1550	2260
17	996	798	1170	614	452	398	2820	10000	8190	4250	1630	2210
18	978	776	1110	615	451	448	2740	9120	7970	4530	1650	2090
19	960	667	1070	585	442	553	2660	8740	9270	4460	1650	1970
20	934	557	1020	582	429	610	2750	9810	8390	4010	1800	1830
21	910	525	944	574	425	691	3210	11800	8200	3670	1900	1730
22	885	542	925	581	418	807	3240	14200	8850	3450	1870	1650
23	860	606	950	572	422	886	3080	13200	9290	3310	3090	1580
24	834	611	861	555	440	1040	2890	11000	9490	3210	3060	1550
25	836	689	788	553	434	1180	2780	9060	9350	3130	2580	1530
26	876	856	840	556	421	1300	3010	7780	9080	2940	2280	1490
27	870	935	790	557	421	1910	4220	6860	8300	2840	2060	1450
28	846	865	776	536	417	2530	6280	6510	8190	2750	1880	1400
29	840	888	779	520	---	2970	6980	7210	8420	2600	1750	1370
30	857	920	856	504	---	3790	6880	7290	8460	2440	1650	1320
31	879	---	784	443	---	5560	---	7110	---	2330	1590	---
TOTAL	31871	24745	30473	19103	12848	31129	106750	259750	311200	152520	57440	52350
MEAN	1028	825	983	616	459	1004	3558	8379	10370	4920	1853	1745
MAX	1410	1050	1230	831	575	5560	6980	14200	16800	8370	3090	2260
MIN	834	525	776	443	408	360	2540	5180	7140	2330	1330	1320
CFSM	.91	.73	.87	.55	.41	.89	3.15	7.43	9.19	4.36	1.64	1.55
IN.	1.05	.82	1.00	.63	.42	1.03	3.52	8.57	10.26	5.03	1.89	1.73
AC-FT	63220	49080	60440	37890	25480	61740	211700	515200	617300	302500	113900	103800
CAL YR 1977 TOTAL		612104		MEAN 1677	MAX 9480	MIN 238	CFSM 1.49	IN 20.19	AC-FT 1214000			
WTR YR 1978 TOTAL		1090179		MEAN 2987	MAX 16800	MIN 360	CFSM 2.65	IN 35.95	AC-FT 2162000			

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	740	607	801	300	277	333	5150	6350	5370	8000	1460	702
2	735	708	842	250	354	287	5020	6940	5570	7550	1390	669
3	696	727	1170	400	438	270	4410	7070	6740	7220	1310	640
4	657	680	1150	350	462	280	3810	6420	9220	7300	1250	618
5	616	649	1020	400	444	300	3450	5580	12300	8000	1180	601
6	583	630	940	450	427	320	3110	4910	16100	7680	1130	608
7	573	624	894	500	416	340	2820	4490	17500	6810	1090	679
8	571	595	761	550	409	359	2610	4160	16700	6220	1050	801
9	598	545	674	586	382	378	2480	4290	16700	5930	1010	775
10	616	534	718	567	387	386	2430	5250	14200	5680	974	709
11	577	527	811	510	356	388	2710	6180	11400	5390	936	687
12	553	512	819	514	278	377	2810	5870	9330	4630	903	1060
13	578	502	766	500	270	379	2690	5280	8890	4100	894	1210
14	657	501	828	486	260	379	2600	5490	10400	3860	877	1090
15	674	507	851	480	280	370	2530	7470	10200	3720	879	1020
16	674	496	815	459	300	355	2680	8820	8970	3740	934	1090
17	674	491	742	463	320	363	3140	8050	7720	3680	950	1020
18	665	470	718	452	340	429	3050	7200	8080	3470	938	958
19	645	344	710	427	360	500	2970	6830	9740	3340	895	897
20	622	314	619	418	380	630	3130	7790	8660	2980	876	842
21	601	384	454	433	563	731	3480	9280	8490	2700	862	799
22	579	570	440	433	357	961	3360	11200	9280	2500	858	759
23	558	657	460	423	364	1200	3130	11200	9930	2360	1070	726
24	536	716	410	388	385	1520	2900	9430	10200	2250	1050	684
25	563	712	380	387	371	1590	2830	7660	9990	2160	958	652
26	622	1100	400	411	366	1530	3420	6430	9010	2040	883	626
27	610	1090	390	409	363	1990	4420	5710	8110	1930	832	603
28	592	939	380	395	357	2680	5740	5600	8120	1860	787	582
29	592	922	370	386	---	2970	6260	6370	8530	1760	748	575
30	609	885	400	374	---	3860	6340	6070	8490	1640	714	560
31	629	---	360	287	---	5000	---	5670	---	1540	695	---
TOTAL	19195	18938	21073	13288	10066	31515	105480	209060	303940	132040	30383	23242
MEAN	619	631	680	429	360	1017	3516	6744	10130	4259	980	775
MAX	740	1100	1170	586	462	5000	6340	11200	17500	8000	1460	1210
MIN	536	314	360	250	260	270	2430	4160	5370	1540	695	560
CFSM	.53	.54	.59	.37	.31	.88	3.03	5.81	8.73	3.67		

PEND OREILLE RIVER BASIN

12359800 SOUTH FORK FLATHEAD RIVER ABOVE TWIN CREEK, NEAR HUNGRY HORSE, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: May 1965 to current year.

INSTRUMENTATION.--Temperature recorder since May 1965.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 20.0°C July 23, 1977; minimum, 0.0°C on many days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 18.0°C Aug. 8, 9; minimum, 0.0°C on many days during December to March.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	9.5	8.5	4.5	4.0	.5	.5	.0	.0	.0	.0	.0	.0
2	9.5	8.0	4.5	4.0	.5	.5	.0	.0	.0	.0	.0	.0
3	8.5	7.5	4.5	4.0	1.0	.5	.0	.0	.0	.0	.0	.0
4	7.5	6.0	4.0	3.5	1.0	1.0	.0	.0	.0	.0	.0	.0
5	6.5	5.5	4.0	3.5	1.0	1.0	.0	.0	.0	.0	.0	.0
6	7.0	6.0	4.0	4.0	1.0	1.0	.0	.0	.0	.0	.0	.0
7	7.5	7.0	4.0	3.5	1.0	1.0	.0	.0	.0	.0	.0	.0
8	7.5	7.0	3.0	2.5	1.0	1.0	.0	.0	.0	.0	1.0	.0
9	7.0	6.0	2.5	2.0	1.0	1.0	.0	.0	.0	.0	1.5	1.0
10	6.0	5.0	2.0	2.0	1.0	1.0	.0	.0	.0	.0	1.0	1.0
11	6.0	4.5	3.5	2.0	1.0	1.0	.0	.0	.0	.0	1.5	1.0
12	6.5	5.0	4.0	3.0	1.0	1.0	.0	.0	.0	.0	1.0	1.0
13	7.0	6.0	3.0	2.0	1.0	1.0	.0	.0	.0	.0	1.5	1.0
14	7.0	6.0	2.5	2.0	1.5	1.0	.0	.0	.0	.0	1.5	1.0
15	6.5	5.5	2.5	2.0	2.0	1.5	.0	.0	.0	.0	3.0	1.5
16	7.0	5.5	2.0	2.0	2.0	2.0	.0	.0	.0	.0	2.5	2.0
17	6.5	5.5	2.0	1.5	2.0	1.0	.0	.0	.0	.0	4.0	1.5
18	6.0	5.0	1.5	1.0	1.0	.5	.0	.0	.0	.0	5.0	3.5
19	6.5	5.0	1.0	1.0	.5	.0	.0	.0	.0	.0	4.0	3.0
20	6.5	5.5	1.0	1.0	.0	.0	.0	.0	.0	.0	5.5	3.0
21	6.0	5.0	1.0	1.0	.0	.0	.0	.0	.0	.0	5.5	4.5
22	6.0	5.0	1.0	1.0	.0	.0	.0	.0	.0	.0	6.0	4.5
23	6.0	4.5	1.0	1.0	.0	.0	.0	.0	.0	.0	6.0	4.5
24	6.0	5.0	1.0	1.0	.0	.0	.0	.0	.0	.0	5.0	4.5
25	6.0	6.0	1.0	1.0	.0	.0	.0	.0	.0	.0	5.0	4.5
26	6.0	5.5	1.0	.5	.0	.0	.0	.0	.0	.0	5.5	4.0
27	5.5	4.0	.5	.5	.0	.0	.0	.0	.0	.0	6.0	5.0
28	5.0	4.5	.5	.5	.0	.0	.0	.0	.0	.0	5.5	5.0
29	5.5	5.0	.5	.5	.0	.0	.0	.0	---	---	6.0	4.5
30	6.0	5.5	.5	.5	.0	.0	.0	.0	---	---	6.0	5.0
31	5.5	4.5	---	---	.0	.0	.0	.0	---	---	5.5	5.0
MONTH	9.5	4.0	4.5	.5	2.0	.0	.0	.0	.0	.0	6.0	.0

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

[illegible]

12362000 HUNGRY HORSE RESERVOIR NEAR HUNGRY HORSE, MT

LOCATION.--Lat 48°20'28", long 114°00'48", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ 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 (6.1 km) southeast of Hungry Horse, and at mile 5.2 (8.4 km).

DRAINAGE AREA.--1,654 mi² (4,284 km²).

PERIOD OF RECORD.--September 1951 to current year.

GAGE.--Water-stage recorder equipped with remote indicator in power house. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). During construction and prior to May 1, 1953, various types of non-recording 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 (4.26 km³), top of 1.0 ft (0.30 m) flashboards; 3,428,000 acre-ft (4.23 km³) between elevations 3,196 ft (974.1 m), lowest outlet, and 3,560 ft (1,085.1 m), controlled spillway elevation. Dead storage, 40,140 acre-ft (49.5 hm³) below elevation 3,196 ft (974.1 m). Minimum operating level, 445,900 acre-ft (550 hm³), elevation, 3,336 ft (1,016.8 m) for on-site power generation. Water is used for power production, flood control, irrigation and recreation. Controlled spillway is an adjustable ring gate with 1.0 ft (0.3 m) flashboards. Figures given herein represent usable contents.

COOPERATION.--Capacity table and daily elevations furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 3,461,000 acre-ft (4.27 km³) July 3, 4, 1955, Aug. 6, 1956; maximum elevation observed, 3,561.40 ft (1,085.515 m) July 3, 4, 1955; minimum contents observed since normal low operating level reached in May 1952, 607,700 acre-ft (749 hm³) Jan. 13, 1953 (elevation, 3,362.50 ft or 1,024.890 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 3,452,000 acre-ft (4.26 km³) Sept. 17 (elevation, 3,560.98 ft or 1,085.387 m); minimum observed, 1,548,000 acre-ft (1.91 km³) Mar. 25 (elevation, 3,458.56 ft or 1,054.169 m).

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

3,440	1,318,000	3,520	2,560,000
3,460	1,567,000	3,540	2,974,000
3,480	1,859,000	3,565	3,548,000
3,500	2,186,000		

ELEVATION, IN FEET NGVD, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
INSTANTANEOUS OBSERVATIONS AT 2359

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3510.07	3495.37	3482.84	3487.35	3474.76	3465.32	3464.10	3486.90	3521.83	3554.09	3560.76	3560.19
2	3510.22	3494.51	3483.08	3487.42	3473.92	3465.37	3465.43	3488.36	3522.69	3554.87	3560.85	3560.27
3	3509.64	3493.48	3483.37	3487.55	3473.10	3465.24	3466.48	3489.76	3523.77	3555.44	3560.97	3560.35
4	3509.22	3492.43	3483.63	3487.67	3473.16	3465.32	3467.03	3490.96	3525.21	3556.19	3560.70	3560.40
5	3509.32	3491.33	3483.67	3487.82	3473.24	3465.39	3467.86	3491.83	3527.10	3556.57	3560.79	3560.40
6	3508.80	3490.24	3483.95	3487.93	3472.40	3465.48	3468.55	3492.70	3529.39	3557.25	3560.89	3560.35
7	3508.31	3489.15	3484.08	3488.03	3471.52	3465.54	3469.18	3493.55	3531.73	3557.52	3560.83	3560.27
8	3507.91	3488.03	3483.63	3488.17	3470.67	3465.61	3469.79	3494.25	3533.95	3558.10	3560.82	3560.41
9	3507.91	3488.88	3483.79	3487.81	3470.24	3465.70	3470.33	3495.10	3536.10	3558.70	3560.50	3560.51
10	3507.39	3485.70	3484.02	3487.20	3469.81	3465.05	3470.88	3496.14	3537.79	3558.83	3560.21	3560.58
11	3506.87	3485.25	3484.25	3486.50	3469.87	3464.42	3471.52	3497.27	3539.22	3558.87	3559.94	3560.60
12	3506.31	3485.35	3484.43	3485.75	3469.90	3464.51	3472.16	3498.38	3540.16	3558.98	3560.00	3560.70
13	3505.76	3485.47	3484.66	3484.98	3469.43	3463.90	3472.75	3499.42	3540.86	3559.29	3560.09	3560.62
14	3505.23	3485.30	3484.92	3485.07	3468.85	3463.26	3473.23	3500.45	3541.74	3559.52	3560.18	3560.65
15	3505.35	3485.41	3485.19	3485.15	3468.35	3462.60	3473.78	3501.81	3542.60	3559.87	3560.30	3560.72
16	3505.47	3485.53	3485.41	3484.38	3467.90	3461.92	3474.42	3503.35	3543.25	3560.12	3560.41	3560.87
17	3504.92	3484.79	3485.60	3483.58	3467.47	3461.25	3475.08	3504.63	3544.07	3560.16	3560.55	3560.98
18	3504.40	3484.72	3485.80	3482.79	3467.53	3460.56	3475.70	3505.82	3545.00	3560.15	3560.43	3560.84
19	3503.65	3484.78	3485.95	3481.96	3467.61	3460.70	3476.32	3506.97	3545.64	3560.12	3560.55	3560.78
20	3502.95	3484.78	3486.09	3481.15	3467.18	3460.06	3476.98	3508.30	3546.40	3560.06	3560.64	3560.82
21	3501.99	3483.94	3486.20	3481.22	3466.72	3459.81	3477.66	3509.80	3547.05	3560.04	3560.73	3560.58
22	3501.05	3483.10	3486.33	3481.34	3466.28	3459.63	3478.38	3511.58	3547.78	3560.29	3560.80	3560.59
23	3501.11	3482.35	3486.51	3480.52	3465.86	3459.24	3479.05	3513.29	3548.60	3560.54	3560.81	3560.65
24	3500.52	3482.24	3486.61	3479.63	3465.42	3458.90	3479.64	3514.62	3549.70	3560.44	3560.70	3560.74
25	3499.93	3482.42	3486.70	3478.85	3465.49	3458.56	3480.24	3515.66	3551.00	3560.43	3560.57	3560.41
26	3499.29	3482.60	3486.79	3478.00	3465.56	3459.01	3480.95	3516.56	3551.70	3560.62	3560.65	3560.26
27	3498.57	3482.81	3486.90	3477.16	3465.31	3458.82	3481.93	3517.40	3552.13	3560.67	3560.72	3560.32
28	3497.56	3483.02	3486.98	3477.25	3465.33	3459.52	3483.15	3518.27	3552.51	3560.60	3560.52	3560.39
29	3497.00	3483.21	3487.10	3477.32	---	3460.38	3484.40	3519.25	3552.85	3560.75	3560.39	3560.45
30	3497.00	3483.14	3487.20	3476.47	---	3461.54	3485.61	3520.20	3553.24	3560.87	3560.34	3560.52
31	3496.27	---	3487.29	3475.60	---	3462.77	---	3521.02	---	3560.81	3560.45	---
MAX	3510.22	3495.37	3487.29	3488.17	3474.76	3465.70	3485.61	3521.02	3553.24	3560.87	3560.97	3560.98
MIN	3496.27	3482.24	3482.84	3475.60	3465.31	3458.56	3464.10	3486.90	3521.83	3554.09	3559.94	3560.19

(#)	2122	1908	1974	1791	1641	1605	1947	2580	3271	3447	3439	3440
(**)	-244,000	-214,000	+66,000	-183,000	-150,000	-36,000	+342,000	+633,000	+691,000	+176,000	-8,000	+1,000
CAL YR 1977	..	..	..	..	..	..	..	..	..	..	..	..
WAT YR 1978	..	..	..	..	..	..	..	..	..	..	..	..

† Contents, in thousands of acre-feet, at end of month.

†† Change in contents, in acre-feet.

12362500 SOUTH FORK FLATHEAD RIVER NEAR COLUMBIA FALLS, MT

LOCATION.--Lat 48°21'24", long 114°02'12", in SW¼SE¼SW¼ sec.16, T.30 N., R.19 W., Flathead County, Hydrologic Unit 17010209, on right bank 1.7 mi (2.7 km) downstream from Hungry Horse Dam, 3.5 mi (5.6 km) upstream from mouth, and 6.8 mi (10.9 km) east of Columbia Falls and at mile 152.2 (244.9 km).

DRAINAGE AREA.--1,663 mi² (4,307 km²).

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. Datum of gage is 3,040 ft (926.6 m) National Geodetic Vertical Datum of 1929 (levels by the Bureau of Reclamation). September 1910 to September 1916, nonrecording gage, and Apr. 23, 1923, to Sept. 30, 1928, water-stage recorder at site 3 mi (5 km) downstream at different datum. Oct. 1, 1928, to Sept. 30, 1952, water-stage recorder at site 1.5 mi (2.4 km) downstream at different datum.

REMARKS.--Records excellent. Flow regulated by Hungry Horse Reservoir since Sept. 21, 1951 (see preceding page).

AVERAGE DISCHARGE.--50 years, 3,578 ft³/s (101.3 m³/s), 29.22 in/yr (742 mm/yr), 2,592,000 acre-ft/yr (3.20 km³/yr), adjusted for change in contents in Hungry Horse Reservoir since Oct. 1, 1951.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 46,200 ft³/s (1,310 m³/s) June 19, 1916, gage height, 16.6 ft (5.06 m), site and datum then in use, from rating curve extended above 20,000 ft³/s (566 m³/s); minimum observed, 7.3 ft³/s (0.21 m³/s) Sept. 24, 1951, gage height, 0.52 ft (0.158 m), dam closure, site and datum then in use; minimum daily, 7.3 ft³/s (0.21 m³/s) Sept. 24, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,100 ft³/s (314 m³/s) Jan. 31, gage height, 10.74 ft (3.274 m); minimum daily, 164 ft³/s (4.64 m³/s) Jan. 29, May 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	184	9170	4180	180	7240	676	215	176	186	495	2610	4210
2	175	8650	175	180	7230	174	216	183	187	878	181	177
3	7030	9970	175	175	7060	1350	321	426	195	2940	294	183
4	5280	10200	175	180	172	228	2820	1070	215	839	4990	180
5	169	10500	1850	174	169	228	201	1560	238	6140	328	990
6	6240	10500	185	173	7130	231	201	503	261	1560	379	2210
7	6260	10300	180	173	7120	232	169	164	264	5750	2110	2290
8	5150	10200	4680	173	7160	232	173	569	397	1290	1560	180
9	1410	10400	393	3970	3940	232	176	170	473	339	4980	178
10	6230	10600	185	5850	3890	4970	182	1120	436	6110	4930	177
11	6110	4810	185	6570	316	5010	189	1360	222	6460	4560	1270
12	6310	169	180	7030	167	302	181	180	2430	4790	176	1080
13	6300	167	643	7070	3920	5080	176	179	4720	1400	250	3000
14	6310	2750	180	293	4580	5230	741	489	4800	2210	178	1300
15	177	180	175	173	4200	5260	179	201	4760	453	346	984
16	173	180	180	6970	3980	5260	179	203	4790	1770	179	184
17	6330	6910	180	7170	3810	5300	425	699	1670	4740	183	183
18	6120	1470	180	7200	256	5620	182	355	450	4980	3030	3290
19	7680	180	185	7140	172	215	181	194	6070	4740	186	1950
20	7820	180	191	7220	3750	5540	413	199	3100	4510	186	918
21	9650	7270	191	269	3820	5180	1350	1010	4430	3740	377	4220
22	9650	7100	191	168	3850	5160	184	870	4430	228	1360	1300
23	460	7170	191	7100	3780	5070	183	1090	4430	186	1670	185
24	6380	2210	185	7220	3820	5630	182	754	1140	4070	3070	188
25	6400	180	185	7220	285	5590	185	1420	203	3060	3100	5020
26	6450	180	185	7220	184	242	185	184	4360	198	349	2930
27	7540	175	185	7210	2500	5640	192	176	6100	1990	372	187
28	9600	169	180	292	502	770	171	179	6880	3450	3860	183
29	6460	175	180	164	---	182	173	182	7050	179	2600	181
30	1600	2180	180	7020	---	177	174	182	6900	519	1800	181
31	7390	---	185	7310	---	1580	---	662	---	2980	186	---
TOTAL	163038	144295	16495	119257	95003	82591	10501	16709	81787	82994	50382	39509
MEAN	5259	4810	532	3847	3393	2664	350	539	2726	2677	1625	1317
MAX	9650	10600	4680	7310	7240	5640	2820	1560	7050	6460	4990	5020
MIN	169	167	175	164	167	174	169	164	186	179	176	177
CFSM	3.16	2.89	.32	2.31	2.04	1.00	.21	.32	1.64	1.61	.98	.79
IN	3.65	3.23	.37	2.67	2.13	1.85	.23	.37	1.83	1.86	1.13	.88
AC-FT	323400	286200	32720	236500	188400	163800	20830	33140	162200	164600	99930	78370
MEAN †	1291	1212	1606	370	691	2078	6097	7880	14340	5539	1495	1334
CFSM †	.78	.73	.97	.52	.42	1.25	3.67	6.51	8.62	3.33	.90	.80
IN †	.90	.81	1.11	.60	.43	1.44	4.09	7.51	9.62	3.84	1.04	.89
AC-FT †	79,400	72,200	98,700	53,500	38,400	127,800	362,800	666,100	853,200	340,600	91,900	79,400

OBSERVED

CAL YR 1977	TOTAL	1,143,692	MEAN	3,133	MAX	10,600	MIN	159	AC-FT	2,268,000
WTR YR 1978	TOTAL	902,561	MEAN	2,473	MAX	10,600	MIN	164	AC-FT	1,790,000

ADJUSTED

CAL YR 1977	TOTAL	802,819	MEAN	2,200	CFSM	1.32	IN	17.95	AC-FT	1,592,000
WTR YR 1978	TOTAL	1,443,959	MEAN	3,956	CFSM	2.38	IN	32.29	AC-FT	2,864,000

†Adjusted for change in contents in Hungry Horse Reservoir.

PEND OREILLE RIVER BASIN

12363000 FLATHEAD RIVER AT COLUMBIA FALLS, MT

LOCATION.--Lat 48°21'43", long 114°11'02", in NW¼NW¼SE¼ sec.17, T.30 N., R.20 W., Flathead County, Hydrologic Unit 17010208, on right bank 200 ft (61 m) downstream from county road bridge at Columbia Falls, 5.7 mi (9.2 km) downstream from South Fork, and at mile 143.0 (230.1 km).
 DRAINAGE AREA.--4,464 mi² (11,562 km²).
 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 (907.594 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Nov. 12, 1928, nonrecording gage on bridge 200 ft (61 m) upstream at datum 0.19 ft (0.058 m) higher.
 REMARKS.--Records excellent. South Fork Flathead River, which contributes about one-third of flow, completely regulated by Hungry Horse Reservoir 10.9 mi (17.5 km) upstream since Sept. 21, 1951 (see p. 710).
 AVERAGE DISCHARGE.--50 years, 9,778 ft³/s (276.9 m³/s), 29.74 in/yr (755 mm/yr), 7,084,000 acre-ft/yr (8.73 km³/yr), adjusted for change in contents in Hungry Horse Reservoir since Oct. 1, 1951.
 EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 176,000 ft³/s (4,980 m³/s) June 9, 1964, gage height, 25.58 ft (7.797 m), from floodmarks, from rating curve extended above 75,000 ft³/s (2,120 m³/s) on basis of slope-area measurement of peak flow; minimum, 798 ft³/s (22.6 m³/s) Dec. 8, 1929, gage height, -0.08 ft (-0.024 m).
 EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a stage of 22.7 ft (6.92 m), from floodmarks, discharge, 142,000 ft³/s (4,020 m³/s), from rating curve extended above 75,000 ft³/s (2,120 m³/s) on basis of slope-area measurement of peak flow in 1964.
 EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37,400 ft³/s (1,060 m³/s) June 9, gage height, 11.62 ft (3.542 m); minimum daily, 985 ft³/s (27.9 m³/s) Mar. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3700	10800	6930	1380	8300	1560	10300	15500	15400	17200	7600	7700
2	2630	10600	1840	1310	8060	985	9170	17500	15700	16300	5310	3640
3	9400	12000	2010	1350	8060	2120	8300	19400	17600	17200	4800	3470
4	7560	12200	2210	1420	2000	1000	9770	19300	22200	16000	9230	3340
5	2360	12400	3590	1650	1390	1060	7050	17500	27900	20300	4490	4080
6	7780	12400	2010	1880	7600	1100	6530	14400	33500	17400	4320	5090
7	8350	12200	1880	1820	8250	1100	5960	12500	35300	19300	5970	5660
8	6940	12100	5540	1730	8330	1090	5670	11900	33500	15000	5220	3970
9	4200	12100	2440	5580	5160	1110	5420	11400	34000	12400	8350	4440
10	7840	12300	1400	6190	4950	5340	5250	15300	31400	16800	8530	4270
11	8110	7200	1800	7770	1860	6030	5610	19200	26500	17600	8050	5170
12	8230	1790	2320	8270	1160	1860	6130	17300	24600	15100	3720	5100
13	8190	1720	2690	8280	4200	5390	6040	15200	24700	11600	3430	7190
14	8210	4170	2390	2540	5430	6100	6430	15900	25900	10800	3250	5650
15	2400	1780	2460	1460	5200	6110	5640	20200	26100	9210	3400	5200
16	2000	1710	2550	7130	4940	6110	5500	24400	24000	10100	3570	4630
17	7840	7610	2380	8360	4800	6150	6090	23500	19100	12300	3790	4600
18	7920	3760	2210	8310	1970	6540	5750	21500	16400	14000	6720	7510
19	9470	1510	2090	8250	1190	2090	5550	19900	23400	14500	4060	5980
20	9290	1390	1890	8290	3960	5990	5910	21000	20500	13500	4180	4710
21	11500	7340	1770	2450	4730	4440	7160	24900	20700	12100	4640	7800
22	11200	7960	1760	1400	4760	4600	7650	29300	21900	8420	5490	4770
23	2530	8220	1870	7330	4720	6660	6610	29700	22700	7490	7270	3510
24	7770	4160	1870	8310	4760	7570	6210	26200	20400	10600	8780	3510
25	8000	1500	1580	8310	1880	7820	5980	21700	19000	9730	8560	8340
26	8120	1690	1540	8340	1160	3370	6320	18200	22400	7000	5660	6290
27	8950	1910	1660	8360	3060	8010	8100	15500	22800	8110	4880	3390
28	11400	1880	1640	2340	1770	5680	12000	14400	23100	9260	7360	3280
29	8120	1900	1760	1310	---	5320	14800	15300	23500	6060	7050	3210
30	3140	2860	1630	7060	---	6590	15300	15700	23800	5890	5510	3100
31	9050	---	1500	8080	---	10500	---	15700	---	7800	3680	---
TOTAL	222200	191160	71210	156260	123650	139395	222200	579400	718000	389070	176870	148600
MEAN	7168	6372	2297	5041	4416	4497	7407	18690	23930	12550	5705	4953
MAX	11500	12400	6930	8360	8330	10500	15300	29700	35300	20300	9230	8340
MIN	2000	1390	1400	1310	1160	985	5250	11400	15400	5890	3250	3100
AC=FT	440700	379200	141200	309900	245300	276500	440700	1149000	1424000	771700	350800	294700
MEAN †	3,199	2,776	3,370	2,064	1,716	3,911	13,150	28,980	35,540	15,410	5,575	4,969
CFSM †	.72	.62	.75	.46	.38	.88	2.95	6.49	7.96	3.45	1.25	1.11
IN †	.83	.69	.87	.53	.40	1.01	3.29	7.48	8.88	3.98	1.44	1.24
AC=FT †	196,700	165,200	207,200	126,900	95,300	240,500	782,700	1,782,000	2,115,000	947,700	342,800	295,700
OBSERVED												
CAL YR 1977	TOTAL	2,372,157	MEAN	6,499	MAX	18,200	MIN	985	AC=FT	4,705,000		
WTR YR 1978	TOTAL	3,138,015	MEAN	8,597	MAX	35,300	MIN	985	AC=FT	6,224,000		
ADJUSTED												
CAL YR 1977	TOTAL	2,031,307	MEAN	5,565	CFSM	1.25	IN	16.92	AC=FT	4,029,000		
WTR YR 1978	TOTAL	3,679,203	MEAN	10,080	CFSM	2.26	IN	30.65	AC=FT	7,298,000		

† Adjusted for change in contents in Hungry Horse Reservoir.

12363920 STILLWATER RIVER AT OLNEY, MT

LOCATION.--Lat 48°32'35", long 114°34'33", in NE¼NW¼NE¼ sec.18, T.32 N., R.23 W., Flathead County, Hydrologic Unit 17010210, Stillwater State Forest, on pier on downstream side of bridge near left bank, 0.8 mi (1.3 km) upstream from Lower Stillwater Lake, 0.4 mi (0.6 km) south of Olney, and at mile 38.2 (61.5 km).

DRAINAGE AREA.--146 mi² (378 km²).

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 3,072.46 ft (936.486 m) National Geodetic Vertical Datum of 1929. Prior to June 1, 1977, nonrecording gage and crest-stage gage at bridge 0.5 mi (0.8 km) downstream at datum 21.56 ft (6.571 m) lower.

REMARKS.--Records fair except those for winter period, which are poor. No known regulation or diversion above station.

AVERAGE DISCHARGE.--6 years, 152 ft³/s (4.305 m³/s), 14.14 in/yr (359 mm/yr) 110,100 acre-ft/yr (136 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 1,740 ft³/s (49.3 m³/s) June 18, 1974, gage height, 4.42 ft (1.347 m); maximum gage height observed, 5.72 ft (1.743 m) Jan. 9, 1973 (backwater from ice); minimum daily discharge, 25 ft³/s (0.71 m³/s) Dec. 8, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 772 ft³/s (21.9 m³/s) June 10, gage height, 3.28 ft (1.000 m); minimum daily, 30 ft³/s (0.85 m³/s) Jan. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	46	41	42	36	41	39	250	330	408	366	134	113		
2	46	46	44	30	42	40	250	357	419	366	131	113		
3	46	46	46	31	42	40	250	386	440	375	125	108		
4	45	46	46	33	40	39	250	419	460	357	122	103		
5	45	46	49	37	40	39	250	419	520	339	119	103		
6	44	46	49	42	40	37	242	397	554	357	116	105		
7	44	46	49	46	36	36	242	366	590	330	113	110		
8	45	45	49	46	36	36	203	339	703	322	110	110		
9	45	45	46	44	40	36	203	322	715	322	100	110		
10	44	45	44	41	43	36	203	322	741	322	100	105		
11	44	44	43	41	41	37	196	348	691	314	95	110		
12	44	44	43	44	39	39	196	357	655	298	90	105		
13	45	41	41	41	41	40	196	357	667	282	90	105		
14	45	44	46	44	39	39	196	366	603	274	95	98		
15	45	41	48	41	39	37	196	397	578	258	103	100		
16	45	48	51	41	36	39	196	440	542	258	108	98		
17	44	46	52	44	39	39	226	470	542	250	113	92		
18	44	48	54	44	37	39	226	470	530	250	125	92		
19	43	45	55	41	37	40	226	480	490	250	131	92		
20	41	44	57	41	36	41	226	480	490	226	137	90		
21	40	40	42	39	36	44	226	490	470	218	131	90		
22	40	40	42	40	37	46	266	500	450	210	119	85		
23	40	36	44	41	37	52	266	554	460	210	147	85		
24	40	34	48	39	37	69	260	590	460	208	140	88		
25	40	35	45	36	36	85	258	603	470	196	134	83		
26	40	36	43	34	39	95	250	566	450	175	128	83		
27	40	39	42	37	37	110	258	520	450	175	116	79		
28	40	39	45	39	37	122	258	490	460	175	116	77		
29	40	44	42	37	---	147	298	430	419	175	113	75		
30	41	44	42	36	---	196	298	430	419	147	113	77		
31	40	---	45	39	---	210	---	430	---	147	113	---		
TOTAL	1331	1284	1434	1225	1080	1944	7061	13425	15846	8152	3627	2884		
MEAN	42.9	42.8	46.3	39.5	38.6	62.7	235	433	528	263	117	96.1		
MAX	46	48	57	46	43	210	298	603	741	375	147	113		
MIN	40	34	41	30	36	36	196	322	408	147	90	75		
CFSM	.29	.29	.32	.27	.26	.43	1.61	2.97	3.62	1.80	.80	.66		
IN.	.34	.33	.37	.31	.28	.50	1.80	3.42	4.04	2.08	.92	.73		
AC-FT	2640	2550	2840	2430	2140	3860	14010	26630	31430	16170	7190	5720		
CAL YR 1977	TOTAL	26962	MEAN	73.9	MAX	262	MIN	26	CFSM	.51	IN	6.87	AC-FT	53480
WTR YR 1978	TOTAL	59293	MEAN	162	MAX	741	MIN	30	CFSM	1.11	IN	15.11	AC-FT	117600

PEND OREILLE RIVER BASIN

12365000 STILLWATER RIVER NEAR WHITEFISH, MT

LOCATION.--Lat 48°19'08", long 114°23'11", in NE¼SW¼ sec.34, T.30 N., R.22 W., Flathead County, Hydrologic Unit 17010210, on right bank 600 ft (180 m) downstream from road bridge, 6.2 mi (10.0 km) southwest of Whitefish, 10.6 mi (17.1 km) upstream from Whitefish River, and 13.6 mi (21.9 km) upstream from mouth.

DRAINAGE AREA.--524 mi² (1,357 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October and November 1930 (monthly discharge only, published in WSP 1316), December 1930 to September 1950, October 1972 to current year.

REVISED RECORDS.--WSP 1736: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,953.26 ft (900.154 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good except those for winter period, which are poor. Diversions for irrigation of about 200 acres (809,000 m²) above station.

AVERAGE DISCHARGE.--26 years (1930-50, 1972-78), 337 ft³/s (9.544 m³/s), 8.74 in/yr (222 mm/yr), 242,200 acre-ft/yr (301 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,330 ft³/s (123 m³/s) May 26, 1948, gage height, 20.90 ft (6.370 m), from floodmark; minimum daily, 40 ft³/s (1.13 m³/s) Dec. 24, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,680 ft³/s (47.6 m³/s) May 26, gage height, 12.22 ft (3.725 m); minimum daily, 56 ft³/s (1.59 m³/s) Jan. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79	70	90	68	80	76	589	1080	1240	586	287	209
2	79	73	92	56	82	74	677	1150	1190	567	275	207
3	78	79	93	64	84	72	730	1200	1150	558	261	203
4	77	86	93	70	88	74	740	1260	1110	595	251	197
5	76	86	94	78	88	78	724	1290	1100	623	243	191
6	75	84	90	86	90	76	695	1290	1110	659	236	189
7	74	84	86	88	89	75	658	1250	1180	680	228	188
8	74	82	88	88	88	74	620	1180	1230	692	220	190
9	74	79	84	86	86	74	592	1100	1270	712	213	191
10	74	77	86	84	84	76	572	1040	1280	763	206	190
11	74	79	88	86	82	76	571	1050	1280	797	208	186
12	74	79	90	88	78	77	592	1090	1250	806	221	185
13	73	79	96	90	76	78	605	1130	1190	791	215	183
14	73	78	100	90	72	80	600	1160	1120	751	209	186
15	73	79	105	92	72	82	588	1220	1050	694	208	185
16	72	82	110	90	74	84	577	1330	980	638	216	185
17	71	83	110	88	76	84	599	1440	930	591	235	185
18	70	79	107	86	78	83	643	1520	884	556	247	183
19	70	74	105	86	62	84	647	1600	830	536	258	180
20	70	72	103	88	84	88	646	1630	778	518	265	177
21	68	70	101	84	84	94	688	1630	746	491	271	175
22	67	66	96	89	82	100	761	1610	718	468	274	171
23	67	64	92	88	82	110	804	1600	695	444	270	169
24	67	66	94	87	82	115	810	1630	685	422	273	166
25	67	70	92	86	80	145	785	1670	688	392	264	164
26	68	74	88	85	78	170	760	1670	679	366	255	163
27	70	78	86	84	78	200	761	1620	665	347	246	160
28	70	82	88	83	78	245	828	1530	646	335	236	157
29	69	86	90	82	---	297	930	1430	622	320	226	155
30	69	90	92	80	---	367	1020	1350	599	307	217	153
31	70	---	86	78	---	466	---	1290	---	295	211	---
TOTAL	2232	2330	2915	2578	2277	3874	20812	42040	28895	17300	7445	5423
MEAN	72.0	77.7	94.0	83.2	81.3	125	694	1356	963	558	240	181
MAX	79	90	110	92	90	466	1020	1670	1280	806	287	209
MIN	67	64	84	56	72	72	571	1040	599	295	206	153
CFSM	.14	.15	.18	.16	.16	.24	1.32	2.59	1.84	1.07	.46	.35
IN.	.16	.17	.21	.18	.16	.28	1.48	2.98	2.05	1.23	.53	.38
AC-FT	4430	4620	5780	5110	4520	7680	41280	83390	57310	34310	14770	10760
CAL YR 1977	TOTAL	45784	MEAN 125	MAX 448	MIN 45	CFSM .24	IN 3.25	AC-FT 90810				
WTR YR 1978	TOTAL	138121	MEAN 378	MAX 1670	MIN 56	CFSM .72	IN 9.81	AC-FT 274000				

12365000 STILLWATER RIVER NEAR WHITEFISH, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: July 1977 to current year.

INSTRUMENTATION.--Temperature recorder since July 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 23.5°C July 23, Aug. 2, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 23.0°C Aug. 8-10; minimum, 0.0°C on many days during November to March.

TEMPERATURE (DEG. °C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.0	9.5	9.5	5.0	4.5	4.5	.0	.0	.0	.0	.0	.0
2	10.5	9.0	9.5	4.5	3.5	4.0	.0	.0	.0	.0	.0	.0
3	9.5	8.0	9.0	3.5	2.5	3.0	.0	.0	.0	.0	.0	.0
4	8.5	7.0	8.0	3.0	2.0	2.5	.0	.0	.0	.0	.0	.0
5	7.5	7.0	7.5	2.5	2.5	2.5	.0	.0	.0	.0	.0	.0
6	8.0	7.0	7.5	2.5	2.0	2.5	.0	.0	.0	.0	.0	.0
7	7.5	7.5	7.5	3.0	2.5	3.0	.0	.0	.0	.0	.0	.0
8	7.5	7.0	7.0	2.5	1.5	1.5	.0	.0	.0	.0	.0	.0
9	8.0	7.0	7.5	1.5	1.0	1.0	.0	.0	.0	.0	.0	.0
10	7.0	6.0	6.5	1.5	1.0	1.0	.0	.0	.0	.0	.0	.0
11	6.5	5.0	5.5	1.5	1.0	1.5	.0	.0	.0	.0	.0	.0
12	6.0	5.0	5.5	2.0	1.5	1.5	.0	.0	.0	.0	.0	.0
13	6.5	5.5	6.0	2.0	1.5	2.0	.0	.0	.5	.0	.0	.0
14	7.0	5.5	6.0	2.5	2.0	2.0	.0	.0	.5	.0	.0	.0
15	6.5	5.5	6.0	2.0	1.5	1.5	.0	.0	.5	.0	.0	.0
16	7.0	5.5	6.0	1.5	1.0	1.0	1.0	.5	.5	.0	.0	.0
17	6.5	5.5	6.0	1.0	.5	1.0	.0	.0	.5	.0	.0	.0
18	6.5	5.0	5.5	1.0	.0	.5	.0	.0	.0	.0	.0	.0
19	6.5	5.5	6.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
20	6.5	5.5	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	6.0	5.5	5.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	5.5	4.5	5.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
23	5.0	4.5	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	5.0	4.5	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	6.0	5.0	5.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	6.0	5.5	5.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	5.5	4.0	4.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	5.5	4.5	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	5.5	5.0	5.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	5.5	4.5	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	5.5	5.0	5.0	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	10.5	4.0	6.5	5.0	.0	1.0	1.0	.0	.0	.0	.0	.0

12365000 STILLWATER RIVER NEAR WHITEFISH, MT--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	.0	.0	.0	.0	.0	.0	4.5	3.5	4.0	9.5	7.5	8.5
2	.0	.0	.0	.0	.0	.0	4.0	3.0	3.5	9.5	8.5	9.0
3	.0	.0	.0	.5	.0	.0	4.5	3.0	3.5	9.0	8.0	8.5
4	.0	.0	.0	.0	.0	.0	4.5	3.0	4.0	8.5	7.0	8.0
5	.0	.0	.0	.0	.0	.0	5.0	3.5	4.0	7.5	6.5	7.0
6	.0	.0	.0	.0	.0	.0	4.5	3.5	4.0	8.5	7.0	7.5
7	.0	.0	.0	.0	.0	.0	5.5	3.0	4.0	9.0	7.0	7.5
8	.0	.0	.0	.0	.0	.0	6.0	3.5	4.5	10.0	7.0	8.5
9	.0	.0	.0	.0	.0	.0	7.0	4.0	5.0	10.0	8.0	9.0
10	.0	.0	.0	.0	.0	.0	7.0	4.0	5.5	9.5	8.5	9.0
11	.0	.0	.0	.0	.0	.0	7.0	5.0	6.0	10.5	8.5	9.5
12	.0	.0	.0	.0	.0	.0	6.0	4.5	5.5	9.5	8.0	9.0
13	.0	.0	.0	.0	.0	.0	6.5	3.5	5.0	8.5	7.5	8.0
14	.0	.0	.0	.0	.0	.0	6.5	4.5	5.5	9.0	8.0	8.5
15	.0	.0	.0	.0	.0	.0	6.0	4.5	5.5	9.5	8.5	9.0
16	.0	.0	.0	.0	.0	.0	7.0	5.0	6.0	8.5	8.0	8.5
17	.0	.0	.0	.0	.0	.0	6.5	5.0	5.5	9.0	8.0	8.5
18	.0	.0	.0	.0	.0	.0	6.5	4.0	5.0	9.5	8.5	9.0
19	.0	.0	.0	.0	.0	.0	8.5	5.0	6.5	10.5	8.5	9.5
20	.0	.0	.0	.0	.0	.0	8.5	6.0	7.5	12.0	9.0	10.5
21	.0	.0	.0	.0	.0	.0	8.0	6.5	7.0	12.5	11.0	11.5
22	.0	.0	.0	.0	.0	.0	6.5	5.5	6.0	12.0	11.0	11.5
23	.0	.0	.0	.0	.0	.0	6.5	5.0	5.5	11.0	9.5	10.5
24	.0	.0	.0	.0	.0	.0	6.5	4.5	5.5	9.5	8.5	9.0
25	.0	.0	.0	.0	.0	.0	8.5	5.5	6.5	9.5	8.5	9.0
26	.0	.0	.0	.0	.0	.0	9.0	6.5	8.0	10.0	8.5	9.5
27	.0	.0	.0	3.0	.0	1.0	8.5	7.5	8.0	10.0	9.0	9.5
28	.0	.0	.0	4.0	3.0	3.5	8.0	7.5	7.5	11.0	10.0	10.5
29	---	---	---	4.5	3.5	4.0	8.0	7.0	7.5	11.0	10.0	10.5
30	---	---	---	5.0	4.0	4.5	9.0	7.0	8.0	10.5	9.5	10.0
31	---	---	---	5.0	3.5	4.0	---	---	---	10.5	9.0	10.0
MONTH	.0	.0	.0	5.0	.0	.5	9.0	3.0	5.5	12.5	6.5	9.0
JUNE				JULY			AUGUST			SEPTEMBER		
1	12.0	9.5	10.5	19.5	17.5	18.5	22.0	21.0	21.5	18.0	16.0	17.0
2	14.0	10.0	12.0	20.5	18.0	19.0	21.5	20.0	21.0	18.5	16.0	17.0
3	15.5	12.0	13.5	20.5	19.0	19.5	22.0	20.5	21.0	18.5	16.5	17.5
4	16.5	13.0	14.5	20.0	18.5	19.5	22.0	20.5	21.0	19.5	16.5	18.0
5	17.5	14.5	15.5	19.5	18.0	18.5	22.5	21.0	21.5	18.5	17.0	17.5
6	18.0	15.0	16.5	19.0	17.5	18.5	21.5	21.0	21.5	18.0	17.0	17.5
7	18.0	15.5	16.5	19.5	18.0	18.5	22.5	20.5	21.5	18.0	17.0	17.5
8	18.0	15.5	16.5	19.5	18.0	18.5	23.0	20.5	21.5	18.0	16.5	17.0
9	17.5	16.0	16.5	20.5	18.0	19.0	23.0	21.0	22.0	17.0	15.5	16.5
10	17.0	16.0	16.5	20.0	16.5	19.0	23.0	21.0	22.0	16.5	15.5	16.0
11	16.0	14.5	15.0	19.0	17.5	18.0	22.5	20.5	21.5	16.0	15.0	15.5
12	14.5	13.5	14.0	18.0	16.0	17.0	21.0	19.0	20.0	15.0	14.0	14.5
13	15.5	13.0	14.0	19.5	16.5	18.0	19.5	18.0	19.0	14.5	13.5	13.5
14	15.0	14.0	14.5	20.5	17.5	19.0	18.5	17.5	18.0	14.0	13.0	13.5
15	15.0	13.5	14.5	21.0	18.5	19.5	17.5	17.0	17.5	14.5	13.0	13.5
16	14.0	14.0	14.0	21.0	19.5	21.0	17.5	16.0	16.5	13.5	12.5	13.0
17	14.0	13.0	13.5	20.5	19.0	19.5	16.5	15.5	16.0	12.5	10.5	11.5
18	15.0	13.0	14.0	19.5	18.0	18.5	17.0	16.0	16.5	11.0	9.5	10.0
19	16.0	13.5	14.5	18.0	16.5	17.5	16.5	16.0	16.0	11.5	9.5	10.0
20	16.5	14.0	15.0	19.5	16.5	17.5	15.5	15.5	15.5	11.0	8.5	10.0
21	17.0	14.0	15.5	20.0	17.5	18.5	15.5	15.0	15.5	11.0	9.5	10.5
22	18.0	15.0	16.0	20.5	18.0	19.0	15.5	15.0	15.0	11.0	10.0	10.5
23	18.5	15.5	17.0	21.0	18.5	20.0	15.5	15.0	15.0	11.5	10.5	11.0
24	17.5	16.5	17.0	21.5	19.0	20.5	16.0	14.5	15.0	12.5	10.5	11.5
25	17.0	16.0	16.5	22.0	19.5	20.5	16.0	15.0	15.5	13.5	11.5	12.5
26	17.5	15.5	16.0	22.0	20.0	21.0	16.0	15.0	15.5	14.0	11.5	13.0
27	18.5	15.5	16.5	22.0	21.0	21.0	15.5	14.5	15.0	13.5	12.5	13.0
28	20.0	16.5	18.0	22.0	21.0	22.0	16.5	14.5	15.5	13.0	11.5	12.0
29	20.5	17.5	19.0	22.0	20.5	21.5	17.5	15.0	16.0	12.5	11.0	11.5
30	19.5	18.0	19.0	22.0	21.0	21.5	17.5	15.5	16.5	11.5	10.5	11.0
31	---	---	---	22.0	21.5	22.0	17.5	16.5	17.0	---	---	---
MONTH	20.5	9.5	15.5	22.0	16.0	19.5	23.0	14.5	18.0	19.5	8.5	14.0
YEAR	23.0	.0	7.5									

12365800 SWIFT CREEK NEAR WHITEFISH, MT

LOCATION.--Lat 48°28'59", long 114°25'52", in NE¼SE¼NW¼ sec.5, T.31 N., R.22 W., Flathead County, Hydrologic Unit 17010210, on left bank 150 ft (46 m) downstream from farm road bridge, 0.2 mi (0.3 km) downstream from county road bridge, 0.5 mi (0.8 km) upstream from Whitefish Lake, and 7.0 mi (11.3 km) northwest of Whitefish.

DRAINAGE AREA.--78.0 mi² (202.0 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,003.03 ft (915.324 m) National Geodetic Vertical Datum of 1929 (levels by Soil Conservation Service).

REMARKS.--Water-discharge records good except those for winter period, which are poor. No known regulation or diversions upstream.

AVERAGE DISCHARGE.--6 years, 142 ft³/s (4.021 m³/s), 24.72 in/yr (628 mm/yr), 102,900 acre-ft/yr (127 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,980 ft³/s (56.1 m³/s) June 18, 1974, gage height, 6.70 ft (2.042 m); minimum, 0.65 ft³/s (0.018 m³/s) Dec. 3, 1972, gage height, 1.11 ft (0.338 m), result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 940 ft³/s (26.6 m³/s) June 8, gage height, 6.00 ft (1.829 m); minimum, 1.8 ft³/s (0.051 m³/s) Mar. 2, gage height, 2.51 ft (0.765 m), result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	38	27	30	4.0	10	8.0	188	408	545	320	106	77		
2	34	39	32	6.0	12	6.0	165	470	575	299	100	67		
3	33	34	34	8.0	15	8.0	148	465	620	328	96	63		
4	32	31	32	12	20	12	133	445	706	352	94	61		
5	30	28	30	15	23	14	145	400	814	332	92	61		
6	29	30	25	20	22	16	130	372	868	328	90	63		
7	31	31	20	24	21	18	118	360	910	296	86	64		
8	34	28	10	22	20	20	118	352	916	267	82	80		
9	35	25	5.0	20	18	18	116	376	892	324	80	70		
10	34	25	10	18	16	16	128	428	820	279	78	64		
11	32	25	30	19	14	15	145	436	754	240	77	61		
12	32	26	60	19	8.0	15	133	428	676	225	78	61		
13	32	27	58	20	6.0	15	128	408	646	207	86	60		
14	33	32	56	20	10	15	128	520	620	195	80	58		
15	32	32	54	21	15	15	128	590	595	183	90	58		
16	31	29	50	21	20	15	160	640	575	178	110	69		
17	31	29	45	20	16	16	165	646	535	183	108	61		
18	30	25	40	20	16	19	158	635	510	190	104	60		
19	29	15	30	19	18	21	165	635	505	183	96	58		
20	28	10	25	20	16	21	204	682	500	170	100	57		
21	28	8.0	20	21	14	26	246	742	495	165	96	56		
22	27	6.0	25	22	15	36	210	838	490	155	86	56		
23	27	10	20	20	16	51	183	826	495	153	120	56		
24	26	15	10	18	17	112	163	796	480	145	98	54		
25	27	20	8.0	20	16	102	165	718	470	140	80	51		
26	26	25	12	21	14	94	234	640	436	138	72	50		
27	25	30	10	22	12	110	292	585	400	135	72	48		
28	25	35	12	20	10	125	336	575	372	128	70	48		
29	25	38	14	16	---	148	356	570	356	123	70	48		
30	26	35	16	12	---	173	384	560	348	116	70	46		
31	26	---	6.0	8.0	---	190	---	540	---	112	75	---		
TOTAL	928	770.0	829.0	548.0	432.0	1470.0	5490	17086	17924	6589	2742	1786		
MEAN	29.9	25.7	26.7	17.7	15.4	47.4	183	551	597	213	88.5	59.5		
MAX	38	39	60	24	23	190	384	838	916	352	120	80		
MIN	25	6.0	5.0	4.0	6.0	6.0	116	352	348	112	70	46		
CFSM	.38	.33	.34	.23	.20	.61	2.35	7.06	7.65	2.73	1.14	.76		
IN.	.44	.37	.40	.26	.21	.70	2.62	8.15	8.55	3.14	1.31	.85		
AC-FT	1640	1530	1640	1090	857	2920	10890	33890	35550	13070	5440	3540		
CAL YR 1977	TOTAL	26249.0	MEAN	71.9	MAX	485	MIN	2.0	CFSM	.92	IN	12.52	AC-FT	52060
WTR YR 1978	TOTAL	56594.0	MEAN	155	MAX	916	MIN	4.0	CFSM	1.99	IN	26.99	AC-FT	112300

PEND OREILLE RIVER BASIN

12365800 SWIFT CREEK NEAR WHITEFISH, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: September 1977 to current year.

INSTRUMENTATION.--Temperature recorder since September 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 19.0°C Aug. 5, 1978; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 19.0°C Aug. 5; minimum, 0.0°C on many days during November to March.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	.0	.0	.0	.0	.0	.0
2	---	---	---	---	---	---	.0	.0	.0	.0	.0	.0
3	---	---	---	---	---	---	.0	.0	.0	.0	.0	.0
4	---	---	---	---	---	---	.0	.0	.0	.0	.0	.0
5	6.5	3.0	4.5	---	---	---	.0	.0	.0	.0	.0	.0
6	7.5	3.5	5.5	---	---	---	.0	.0	.0	.0	.0	.0
7	6.0	5.0	5.5	---	---	---	.0	.0	.0	.0	.0	.0
8	5.0	4.0	4.5	---	---	---	.0	.0	.0	.0	.0	.0
9	5.5	4.0	4.5	---	.0	---	.0	.0	.0	.0	.0	.0
10	5.0	1.5	3.5	.0	.5	1.5	.0	.0	.0	.0	.0	.0
11	5.0	1.0	3.0	.0	1.0	2.0	.0	.0	.0	.0	.0	.0
12	5.5	1.5	3.5	.0	2.0	2.5	.0	.0	.0	.0	.0	.0
13	5.5	3.5	4.0	.0	1.5	2.5	.0	.0	.0	.0	.0	.0
14	5.5	2.0	3.5	.0	2.0	2.5	.0	.0	.0	.0	.0	.0
15	5.5	1.5	3.5	.0	1.0	1.5	.0	.0	.0	.0	.0	.0
16	6.0	2.0	4.0	.0	.5	1.0	.0	.0	.0	.0	.0	.0
17	5.5	2.0	4.0	1.5	.0	.5	.0	.0	.0	.0	.0	.0
18	---	---	---	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	---	---	---	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	---	---	---	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	---	---	---	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	---	---	---	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	---	---	---	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	---	---	---	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	---	---	---	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	---	---	---	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	---	---	---	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	---	---	---	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	---	---	---	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	---	---	---	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	---	---	---	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	7.5	1.0	4.0	1.5	.0	.5	.0	.0	.0	.0	.0	.0

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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	2.0	3.0	---	---	---
2	.0	.0	.0	.0	.0	.0	4.5	2.5	3.5	6.0	---	---
3	.0	.0	.0	.0	.0	.0	6.0	2.5	4.0	7.0	4.0	5.5
4	.0	.0	.0	.0	.0	.0	6.5	2.0	4.0	5.5	3.5	4.5
5	.0	.0	.0	.0	.0	.0	5.0	3.0	4.0	7.0	3.0	5.0
6	.0	.0	.0	.0	.0	.0	5.5	2.0	3.5	7.5	4.0	5.5
7	.0	.0	.0	.0	.0	.0	7.0	2.0	4.5	7.5	3.5	5.5
8	.0	.0	.0	.0	.0	.0	6.0	2.5	4.0	9.5	3.5	6.5
9	.0	.0	.0	.0	.0	.0	8.0	1.5	4.5	7.0	5.5	6.0
10	.0	.0	.0	.5	.0	.0	8.0	2.0	5.0	7.0	5.0	5.0
11	.0	.0	.0	1.0	.0	.5	6.5	3.0	4.5	6.5	4.5	5.5
12	.0	.0	.0	1.0	.5	.5	6.5	1.5	3.5	6.0	4.5	5.0
13	.0	.0	.0	1.5	.5	1.0	7.5	1.5	4.5	6.0	4.5	5.5
14	.0	.0	.0	3.0	.5	1.5	5.5	3.0	4.0	7.0	5.0	5.5
15	.0	.0	.0	2.0	.0	.5	8.5	2.5	5.0	6.5	5.0	5.5
16	.0	.0	.0	2.0	.0	1.0	8.0	2.5	5.0	7.5	5.0	6.0
17	.0	.0	.0	4.0	.0	2.0	4.5	2.5	3.5	7.5	5.5	6.5
18	.0	.0	.0	3.5	1.0	2.5	---	---	---	8.0	5.0	6.5
19	.0	.0	.0	3.5	.5	1.5	6.5	1.5	4.5	10.5	5.0	7.5
20	.0	.0	.0	5.0	.5	2.5	5.5	3.5	4.0	10.5	5.5	7.5
21	.0	.0	.0	5.5	1.0	3.0	5.5	2.0	2.5	9.0	6.0	7.5
22	.0	.0	.0	5.0	1.0	3.0	5.0	2.0	3.0	8.0	6.0	7.0
23	.0	.0	.0	5.5	2.0	3.5	4.5	1.5	3.0	6.0	4.5	5.0
24	.0	.0	.0	3.5	.5	2.0	7.0	1.5	4.0	6.5	5.0	5.5
25	.0	.0	.0	3.5	1.5	2.5	8.0	2.5	5.0	7.5	4.5	6.0
26	.0	.0	.0	---	---	---	5.5	4.0	5.0	7.5	5.0	6.5
27	.0	.0	.0	---	---	---	6.0	3.5	4.5	8.0	5.5	6.5
28	.0	.0	.0	---	---	---	---	---	---	9.0	6.0	7.0
29	---	---	---	---	---	---	---	---	---	7.5	5.5	6.5
30	---	---	---	---	---	---	---	---	---	7.5	5.5	6.5
31	---	---	---	---	---	---	---	---	---	9.0	5.5	7.5
MONTH	.0	.0	.0	5.5	.0	1.0	8.5	1.5	4.0	10.5	3.0	6.0
JUNE				JULY			AUGUST			SEPTEMBER		
1	11.0	5.5	8.0	17.5	12.5	14.5	17.5	11.0	14.0	14.0	10.0	12.0
2	11.5	6.0	8.5	18.0	13.0	15.5	17.5	10.5	14.0	15.5	8.5	12.0
3	12.0	6.5	9.0	16.5	14.0	15.0	18.0	10.0	14.0	15.5	9.5	12.5
4	12.5	7.0	9.5	15.5	13.0	14.0	18.5	10.5	14.0	16.5	10.0	13.0
5	12.0	7.0	9.5	15.0	13.5	14.0	19.0	11.5	15.0	13.0	10.5	11.5
6	11.5	7.5	9.5	14.5	10.0	13.0	15.5	11.0	13.5	14.0	10.5	12.0
7	11.5	7.0	9.0	12.5	9.5	11.0	18.0	10.5	14.0	14.0	11.0	12.5
8	11.0	7.5	9.0	13.5	8.5	10.5	16.0	11.5	15.0	12.5	9.5	11.0
9	9.0	7.5	8.0	14.0	9.5	11.5	17.0	12.0	15.0	15.0	9.0	11.5
10	9.0	6.5	7.5	12.5	10.0	11.0	17.0	12.0	14.5	12.0	10.0	11.0
11	9.0	7.0	8.0	11.0	8.0	9.5	16.5	10.5	13.5	10.0	9.0	9.5
12	10.5	6.0	8.0	13.5	8.0	10.5	13.5	10.5	11.5	11.0	8.5	10.0
13	10.0	7.5	8.5	14.5	8.5	11.5	13.5	10.0	11.5	9.5	8.0	9.0
14	9.5	6.5	8.0	15.0	9.5	12.0	15.0	10.0	11.5	11.5	8.5	10.0
15	---	---	---	15.0	10.5	12.5	11.5	10.5	10.5	10.5	8.0	9.0
16	---	---	---	14.5	11.5	13.0	12.5	9.5	10.5	9.5	6.0	7.5
17	---	---	---	13.0	10.5	11.5	12.0	9.0	10.5	10.0	4.5	7.0
18	---	---	---	11.5	9.5	10.5	13.0	9.5	11.0	7.5	4.0	6.0
19	---	---	---	12.5	8.5	10.5	12.0	9.0	10.5	10.5	5.5	7.5
20	---	---	---	13.5	9.0	11.0	10.5	8.5	9.5	10.0	5.0	7.5
21	16.0	---	---	13.5	9.5	11.5	12.5	9.0	10.5	9.0	6.0	7.5
22	16.0	11.0	13.5	14.5	10.5	12.5	10.5	8.5	9.5	8.5	6.0	7.0
23	15.0	11.5	13.5	15.0	11.0	13.0	13.0	9.0	10.5	9.5	7.5	8.5
24	14.5	11.0	13.0	15.5	11.5	13.5	13.5	8.0	10.5	12.5	6.5	9.0
25	13.5	12.0	12.5	15.5	12.0	14.0	12.0	8.5	10.0	13.0	7.0	10.0
26	16.0	11.5	13.0	17.5	12.0	15.0	13.5	7.0	10.0	13.0	7.0	10.0
27	17.0	11.0	13.5	17.5	11.5	14.0	13.0	7.5	10.0	11.5	8.0	9.5
28	18.0	12.0	14.5	17.0	10.5	13.5	14.5	8.0	11.0	9.0	7.0	8.0
29	17.0	13.0	15.0	18.0	10.5	14.0	15.5	8.5	11.5	11.0	7.5	9.0
30	16.0	12.5	14.0	18.0	10.5	14.0	14.5	8.5	11.5	9.5	6.0	8.0
31	---	---	---	18.0	11.5	14.5	13.0	10.5	11.5	---	---	---
MONTH	18.0	5.5	10.5	18.0	8.0	12.5	19.0	7.0	12.0	16.5	4.0	9.5
YEAR	19.0	.0	5.0									

12366000 WHITEFISH RIVER NEAR KALISPELL, MT

LOCATION.--Lat 48°19'13", long 114°16'39", in SW¼SE¼NW¼ sec.34, T.30 N., R.21 W., Flathead County, Hydrologic Unit 17010210, on right bank 160 ft (49 m) upstream from road bridge, 8.0 mi (12.9 km) north of Kalispell and 8.3 mi (13.4 km) upstream from mouth.

DRAINAGE AREA.--170 mi² (440 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July to November 1928, April 1929 to September 1950, annual maximum, water year 1964, October 1972 to current year. Prior to 1964, published as Whitefish Creek near Kalispell.

GAGE.--Water-stage recorder. Datum of gage is 2,969.83 ft (905.204 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 16, 1930, nonrecording gage at site 200 ft (61 m) downstream at datum 10.00 ft (3.048 m) lower. Oct. 16, 1930, to Sept. 30, 1950, water-stage recorder on left bank at same datum.

REMARKS.--Water-discharge records fair except those for winter period, which are poor. Some regulation by Whitefish Lake. Diversions for irrigation of about 650 acres (2.6 km²) above station.

AVERAGE DISCHARGE.--27 years (1929-50, 1972-78), 192 ft³/s (5.437 m³/s), 139,100 acre-ft/yr (172 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,580 ft³/s (44.7 m³/s) June 24, 1974; gage height, 4.91 ft (1.497 m); minimum, 4.5 ft³/s (0.13 m³/s) Oct. 18, 1934, gage height, 0.83 ft (0.253 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 863 ft³/s (24.4 m³/s) June 11, gage height, 3.55 ft (1.082 m); minimum daily, 47 ft³/s (1.33 m³/s) Jan. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	48	65	47	57	58	195	468	708	499	170	135
2	63	50	63	48	57	56	198	499	695	480	164	135
3	63	50	61	50	57	56	200	527	686	476	164	135
4	61	50	61	51	59	57	198	539	695	476	156	133
5	61	50	59	53	60	58	203	539	717	484	153	130
6	59	48	57	55	63	58	206	527	748	472	151	128
7	59	48	57	57	65	58	203	519	780	457	143	128
8	59	48	55	59	63	60	203	515	807	438	140	128
9	59	48	55	59	62	60	203	511	835	423	143	128
10	59	48	55	58	61	61	203	523	849	416	143	123
11	57	48	61	58	60	62	215	543	858	401	138	123
12	57	48	73	60	60	63	215	543	840	383	140	123
13	57	48	88	60	59	61	212	543	826	365	140	120
14	57	50	90	60	58	59	212	563	807	347	138	118
15	57	51	81	60	59	59	212	609	798	330	135	118
16	55	51	75	60	60	57	221	634	784	313	148	118
17	55	51	71	59	61	57	258	660	762	303	148	115
18	53	50	65	58	60	57	267	673	739	300	153	111
19	53	50	63	56	60	59	245	677	712	293	153	108
20	53	50	61	56	60	63	274	686	690	280	153	106
21	51	48	59	58	60	69	347	704	673	271	153	106
22	51	50	57	60	60	75	390	739	656	255	151	104
23	50	50	55	60	59	94	369	775	639	245	161	104
24	50	69	53	60	59	153	354	807	622	236	161	104
25	50	83	51	61	59	170	344	835	609	224	153	104
26	50	86	50	61	59	148	354	816	592	215	148	104
27	48	88	49	61	59	151	386	793	572	209	146	101
28	48	83	49	60	59	148	423	771	551	195	140	99
29	48	77	48	59	---	148	430	753	531	189	140	99
30	48	73	48	58	---	161	449	748	519	183	138	97
31	48	---	48	57	---	178	---	730	---	181	138	---
TOTAL	1704	1692	1883	1779	1675	2674	8189	19769	21300	10339	4602	3485
MEAN	55.0	56.4	60.7	57.4	59.8	86.3	273	638	710	334	148	116
MAX	65	88	90	61	65	178	449	835	858	499	170	135
MIN	48	48	48	47	57	56	195	468	519	181	135	97
AC-FT	3380	3360	3730	3530	3320	5300	16240	39210	42250	20510	9130	6910
CAL YR 1977	TOTAL	38109	MEAN 104	MAX 422	MIN 26	AC-FT	75590					
WTR YR 1978	TOTAL	79091	MEAN 217	MAX 858	MIN 47	AC-FT	156900					

12366000 WHITEFISH RIVER NEAR KALISPELL, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: August 1977 to current year.

INSTRUMENTATION.--Temperature recorder since August 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 24.0°C Aug. 8, 9, 1978; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 24.0°C Aug. 8, 9; minimum, 0.0°C on many days during November to March.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	6.0	5.5	5.5	.0	.0	.0	.0	.0	.0
2	---	---	---	5.5	4.5	5.0	.0	.0	.0	.0	.0	.0
3	---	---	---	4.5	3.5	4.0	.0	.5	.5	.0	.0	.0
4	9.5	---	---	4.0	3.0	3.5	1.5	1.0	1.5	.0	.0	.0
5	9.5	8.5	8.5	4.0	3.5	3.5	1.5	.0	.5	.0	.0	.0
6	9.5	8.5	9.0	4.5	4.0	4.0	.0	.0	.0	.0	.0	.0
7	9.5	9.5	9.5	4.5	4.0	4.5	.0	.0	.0	.0	.0	.0
8	9.5	9.0	9.0	4.0	3.0	3.5	.0	.0	.0	.0	.0	.0
9	9.0	8.5	9.0	3.0	2.0	2.5	.0	.0	.0	.0	.0	.0
10	8.5	7.5	7.5	2.5	2.0	2.0	.0	.0	.0	.0	.0	.0
11	7.5	6.5	7.0	.0	3.0	3.0	.0	.0	.0	.0	.0	.0
12	7.5	6.5	6.5	4.0	3.5	4.0	.0	.0	.0	.0	.0	.0
13	8.0	7.5	7.5	4.0	4.0	4.0	.0	.0	.0	.0	.0	.0
14	8.5	8.0	8.0	4.0	4.0	4.0	.0	.0	.0	.0	.0	.0
15	8.5	7.5	8.0	4.0	3.0	3.5	.0	.0	.0	.0	.0	.0
16	8.0	7.5	8.0	3.0	2.5	3.0	.0	.0	.0	.0	.0	.0
17	8.0	7.5	8.0	2.5	2.0	2.5	.0	.0	.0	.0	.0	.0
18	8.0	7.5	7.5	2.0	1.0	1.5	.0	.0	.0	.0	.0	.0
19	8.0	7.5	7.5	1.0	.0	.0	.0	.0	.0	.0	.0	.0
20	8.0	7.5	7.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	8.0	7.5	7.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	7.5	6.5	7.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	7.0	6.0	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	7.0	6.5	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	7.5	7.0	7.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	8.0	7.5	7.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	7.5	6.0	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	6.5	6.0	6.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	6.5	6.5	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	7.0	6.5	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	7.0	6.0	6.5	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	9.5	6.0	7.5	6.0	.0	2.0	1.5	.0	.0	.0	.0	.0

12369200 SWAN RIVER NEAR CONDON, MT

LOCATION.--Lat 47°25'21", long 113°40'12", near center of NW¼ sec.8, T.19 N., R.16 W., Missoula County, Hydrologic Unit 17010211, Flathead National Forest, on right bank 25 ft (7.6 m) downstream from road bridge, 0.5 mi (0.8 km) downstream from Beaver Creek, 4.0 mi (6.4 km) downstream from Lindberg Lake, 8.1 mi (13.0 km) southeast of Condon, and at mile 66.5 (107.0 km).

DRAINAGE AREA.--73.3 mi² (189.8 km²).

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,015 ft (1,224 m), by barometer.

REMARKS.--Records good except those for winter period, which are poor.

AVERAGE DISCHARGE.--6 years, 167 ft³/s (4.729 m³/s), 30.94 in/yr (786 mm/yr), 121,000 acre-ft/yr (149 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,540 ft³/s (43.6 m³/s) June 18, 1974, gage height, 4.88 ft (1.487 m); minimum daily, 22 ft³/s (0.62 m³/s) Dec. 8, 1972; minimum gage height, 1.37 ft (0.418 m) Apr. 11, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 821 ft³/s (23.3 m³/s) June 9, gage height, 3.87 ft (1.180 m); minimum daily, 38 ft³/s (1.08 m³/s) Mar. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	64	97	70	47	40	534	374	294	611	227	110
2	96	66	117	60	48	38	579	390	294	606	215	106
3	94	66	150	65	49	39	507	390	321	606	205	102
4	88	66	146	70	50	40	425	367	367	600	195	98
5	85	64	134	75	49	41	375	330	463	533	185	94
6	82	62	127	80	48	41	327	297	571	550	175	92
7	80	60	120	75	50	42	291	270	707	522	170	104
8	78	58	109	70	51	42	267	249	772	507	165	114
9	87	59	100	68	50	47	249	255	809	510	162	112
10	85	61	96	66	49	48	237	316	761	514	157	110
11	82	60	100	64	48	48	249	386	658	514	150	110
12	78	58	103	62	46	47	252	371	556	480	142	120
13	76	57	99	60	44	47	240	342	503	425	140	124
14	78	58	114	57	45	50	235	348	507	386	136	120
15	78	60	119	56	46	50	232	417	510	382	136	116
16	75	59	117	56	47	50	249	458	491	394	147	112
17	73	59	108	55	47	50	282	425	450	436	150	104
18	72	59	105	54	46	56	273	392	425	446	160	98
19	69	55	100	53	45	61	258	351	476	433	160	94
20	67	50	95	52	44	69	270	357	491	394	155	89
21	66	51	100	51	43	81	312	409	488	357	150	84
22	64	52	100	50	42	98	303	507	503	327	147	80
23	63	53	95	50	41	126	262	522	546	303	152	75
24	63	54	90	50	40	167	256	499	591	291	155	71
25	62	55	85	49	41	189	243	437	664	282	152	67
26	62	80	80	49	41	207	270	378	676	282	147	65
27	62	96	75	49	42	238	330	336	606	273	140	62
28	61	96	80	49	41	280	371	315	571	270	132	60
29	61	106	85	49	---	333	390	321	566	264	124	56
30	61	104	90	49	---	411	390	327	596	252	118	54
31	62	---	80	48	---	505	---	312	---	240	114	---
TOTAL	2308	1952	3216	1811	1280	3581	9480	11444	16235	13040	4863	2803
MEAN	74.5	65.1	104	58.4	45.7	116	316	369	541	421	157	93.4
MAX	98	106	150	80	51	505	579	522	809	611	227	124
MIN	61	50	75	48	40	38	232	249	294	240	114	54
CFSM	1.02	.89	1.42	.80	.62	1.58	4.31	5.03	7.38	5.74	2.14	1.27
IN.	1.17	.99	1.63	.92	.65	1.82	4.81	5.81	8.24	6.62	2.47	1.42
AC-FT	4580	3870	6380	3590	2540	7100	18800	22700	32200	25860	9650	5560
CAL YR 1977	TOTAL	43223	MEAN 118	MAX 592	MIN 23	CFSM 1.61	IN 21.94	AC-FT	85730			
WTR YR 1978	TOTAL	72013	MEAN 197	MAX 809	MIN 38	CFSM 2.69	IN 36.55	AC-FT	142800			

PEND OREILLE RIVER BASIN

12370000 SWAN RIVER NEAR BIGFORK, MT

LOCATION.--Lat 48°01'28", long 113°58'44", near center of S½SW¼ sec.11, T.26 N., R.19 W., Lake County, Hydrologic Unit 17010211, on left bank 0.2 mi (0.3 km) downstream from Johnson Creek, 0.4 mi (0.6 km) downstream from Swan Lake, 5.1 mi (8.2 km) southeast of Bigfork, and at mile 14.0 (22.5 km).

DRAINAGE AREA.--671 mi² (1,738 km²).

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 (933.48 m) above mean sea level (from river-profile survey). Oct. 10, 1910, to May 22, 1911, nonrecording gage at site 10 mi (16 km) upstream at different datum. Apr. 28, 1922, to Oct. 14, 1930, nonrecording gage at site 800 ft (240 m) upstream at datum 1.9 ft (0.58 m) higher.

REMARKS.--Records excellent. Diversions for irrigation of about 360 acres (1.46 km²) above station.

AVERAGE DISCHARGE.--56 years, 1,165 ft³/s (32.99 m³/s), 23.58 in/yr (599 mm/yr), 844,000 acre-ft/yr (1.04 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,890 ft³/s (252 m³/s) June 20, 1974, gage height, 7.34 ft (2.237 m); minimum observed, 193 ft³/s (5.47 m³/s) Jan. 26-29, 1930, gage height, 0.04 ft (0.012 m), site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,320 ft³/s (151 m³/s) June 10, gage height, 5.69 ft (1.734 m); minimum, 384 ft³/s (10.9 m³/s) Nov. 23, gage height, 2.19 ft (0.668 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	575	545	724	575	467	467	3620	2690	2360	3950	1360	893
2	592	539	739	534	467	461	4020	2750	2270	3930	1300	880
3	591	547	771	514	477	440	4350	2820	2240	3920	1260	849
4	595	547	863	519	483	425	4190	2880	2340	3760	1210	825
5	597	540	905	540	480	438	3800	2820	2630	3730	1160	792
6	579	540	929	573	483	451	3410	2680	3170	3710	1120	786
7	610	536	901	590	491	454	3030	2470	3910	3600	1080	812
8	619	532	852	618	497	452	2720	2310	4650	3380	1050	880
9	632	533	807	629	506	458	2500	2160	5080	3230	1020	906
10	652	524	780	618	500	477	2350	2150	5250	3160	991	868
11	648	518	764	606	507	496	2230	2320	5160	3080	957	865
12	631	499	782	591	481	511	2190	2520	4780	2970	925	921
13	606	498	842	580	449	531	2140	2580	4280	2790	919	1020
14	594	486	918	577	444	546	2040	2510	3880	2590	929	1090
15	588	491	1000	574	440	546	1960	2490	3750	2450	922	1110
16	580	496	1070	561	431	542	1920	2590	3710	2340	946	1110
17	579	499	1090	536	441	537	1980	2780	3580	2320	992	1090
18	572	519	1030	537	459	544	2040	2850	3390	2350	1020	1040
19	564	510	988	516	458	586	2040	2780	3210	2360	1030	1010
20	557	465	951	501	458	646	1980	2680	3300	2310	1020	972
21	556	424	852	498	457	733	2090	2660	3320	2230	1020	939
22	552	397	793	503	454	851	2270	2800	3310	2100	1020	898
23	547	404	792	503	451	1030	2310	3120	3400	1980	1070	864
24	528	420	762	496	454	1280	2250	3460	3620	1860	1100	841
25	529	449	723	488	461	1610	2110	3490	3910	1770	1090	812
26	533	493	694	487	459	1810	2030	3270	4250	1700	1070	789
27	536	565	673	488	460	1980	2070	2960	4450	1620	1030	765
28	529	619	653	484	472	2260	2260	2700	4260	1580	1010	747
29	528	646	633	486	---	2530	2470	2510	4010	1520	961	730
30	530	690	628	486	---	2810	2630	2460	3940	1470	924	721
31	531	---	607	474	---	3170	---	2430	---	1410	905	---
TOTAL	17660	15471	25516	16682	13087	30072	77000	83690	111410	81070	32411	26825
MEAN	576	516	823	538	467	970	2567	2700	3714	2615	1046	894
MAX	652	690	1090	629	507	3170	4350	3490	5250	3950	1360	1110
MIN	528	397	607	474	431	425	1920	2150	2240	1410	905	721
CFSM	.86	.77	1.23	.80	.70	1.45	3.83	4.02	5.54	3.90	1.56	1.33
IN.	.99	.86	1.41	.92	.73	1.67	4.27	4.64	6.18	4.49	1.80	1.49
AC-FT	35430	30690	50610	33090	25960	59650	152700	166000	221000	160800	64290	53210
CAL YR 1977 TOTAL	310370			850	MAX 3340	MIN 345	CFSM 1.27	IN 17.21	AC-FT 615600			
WTR YR 1978 TOTAL	531094			MEAN 1455	MAX 5250	MIN 397	CFSM 2.17	IN 29.44	AC-FT 1053000			

12371500 FLATHEAD LAKE AT SOMERS, MT

LOCATION.--Lat 48°04'22", long 114°13'30", in NE&NE&SE& sec.26, T.27 N., R.21 W., Flathead County, Hydrologic Unit 17010208, at steamboat dock at Somers.

DRAINAGE AREA.--7,086 mi² (18,353 km²).

PERIOD OF RECORD.--April to August 1900, daily lake elevations only, at site near Holt, 6 mi (10 km) east of Somers (datum unknown). August 1908 to November 1909 (fragmentary), January 1910 to current year. Monthend contents only for some periods, published in WSP 1316. Prior to April 1923, published as "at Polson." Oct. 1, 1941, to current year, unpublished daily lake elevations at Polson are available in files of Helena district office.

GAGE.--Water-stage recorder. Datum of gage is at Somers datum. Subtract 1.00 ft (0.305 m) to convert Somers datum to National Geodetic Vertical Datum of 1929, supplementary adjustment of 1947. July 1 to Dec. 12, 1923, nonrecording gage at same site and datum.

REMARKS.--Natural storage in Flathead Lake increased by construction of Kerr Dam 4 mi (6 km) downstream from natural lake outlet; storage began Apr. 11, 1938. Usable capacity, 1,791,000 acre-ft (2.21 km³) at controlled spillway elevation 2,893.00 ft (881.786 m). Dead storage unknown below 2,878 ft (877.2 m). elevation of natural outlet. Minimum operating level, 572,300 acre-ft (706 hm³) elevation, 2,883.00 ft (878.738 m), for on-site power generation. 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 (2.72 km³) June 19, 1933, elevation, 2,896.26 ft (882.780 m); minimum, 347,000 acre-ft (428 hm³) Dec. 5, 1936, elevation, 2,881.07 ft (878.150 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Lake reached an elevation of 2,900 ft (883.9 m) during flood in June 1894.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,806,000 acre-ft (2.23 km³) July 19, elevation, 2,893.12 ft (881.823 m); minimum, 611,400 acre-ft (754 hm³) Mar. 10, elevation, 2,883.33 ft (878.839 m).

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

2,883	572,300	2,888	1,172,000
2,884	690,700	2,890	1,417,000
2,886	930,300	2,892	1,665,000
		2,894	1,917,000

ELEVATION, IN FEET, AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
INSTANTANEOUS OBSERVATION AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2892.45	2891.65	2889.98	2888.15	2886.00	2883.85	2884.24	2885.40	2890.48	2892.93	2892.70	2892.95
2	2892.38	2891.55	2889.98	2888.02	2885.93	2883.77	2884.39	2885.60	2890.47	2892.98	2892.72	2892.90
3	2892.40	2891.52	2889.90	2887.92	2885.96	2883.74	2884.47	2885.62	2890.50	2892.97	2892.66	2892.87
4	2892.43	2891.50	2889.84	2887.80	2885.66	2883.66	2884.60	2886.05	2890.60	2892.97	2892.69	2892.92
5	2892.37	2891.55	2889.78	2887.70	2885.70	2883.60	2884.65	2886.22	2890.77	2892.99	2892.68	2892.78
6	2892.38	2891.60	2889.85	2887.62	2885.63	2883.57	2884.64	2886.37	2890.96	2892.98	2892.63	2892.78
7	2892.42	2891.62	2889.73	2887.47	2885.60	2883.48	2884.71	2886.50	2891.25	2892.94	2892.60	2892.83
8	2892.43	2891.63	2889.63	2887.41	2885.55	2883.43	2884.73	2886.59	2891.48	2892.89	2892.56	2892.82
9	2892.39	2891.64	2889.64	2887.34	2885.50	2883.37	2884.75	2886.65	2891.73	2892.83	2892.59	2892.77
10	2892.35	2891.65	2889.60	2887.27	2885.37	2883.34	2884.72	2886.80	2891.97	2892.61	2892.61	2892.73
11	2892.36	2891.65	2889.60	2887.29	2885.27	2883.36	2884.66	2886.98	2892.10	2892.84	2892.62	2892.77
12	2892.40	2891.50	2889.50	2887.31	2885.13	2883.37	2884.67	2887.14	2892.18	2892.86	2892.60	2892.75
13	2892.42	2891.40	2889.50	2887.30	2885.01	2883.35	2884.65	2887.28	2892.28	2892.86	2892.58	2892.75
14	2892.43	2891.30	2889.45	2887.25	2884.94	2883.37	2884.67	2887.43	2892.45	2892.86	2892.59	2892.77
15	2892.36	2891.17	2889.45	2887.12	2884.88	2883.40	2884.67	2887.65	2892.61	2892.91	2892.62	2892.75
16	2892.32	2891.00	2889.38	2887.03	2884.78	2883.44	2884.74	2887.85	2892.78	2892.97	2892.62	2892.71
17	2892.22	2890.92	2889.35	2886.97	2884.69	2883.42	2884.73	2888.05	2892.84	2893.04	2892.70	2892.65
18	2892.18	2890.80	2889.32	2886.96	2884.55	2883.49	2884.68	2888.25	2892.75	2893.10	2892.71	2892.65
19	2892.15	2890.65	2889.24	2886.92	2884.47	2883.52	2884.66	2888.59	2892.81	2893.06	2892.75	2892.67
20	2892.10	2890.46	2889.15	2886.90	2884.37	2883.52	2884.75	2888.57	2892.85	2893.00	2892.77	2892.65
21	2892.11	2890.35	2889.07	2886.82	2884.32	2883.52	2884.80	2888.80	2892.89	2893.01	2892.79	2892.64
22	2892.10	2890.30	2889.00	2886.68	2884.28	2883.53	2884.80	2889.08	2892.93	2892.95	2892.86	2892.64
23	2892.04	2890.32	2888.95	2886.58	2884.24	2883.55	2884.82	2889.42	2892.99	2892.94	2892.87	2892.59
24	2891.95	2890.32	2888.87	2886.51	2884.19	2883.59	2884.85	2889.68	2893.00	2892.95	2892.91	2892.54
25	2891.93	2890.35	2888.78	2886.48	2884.15	2883.67	2884.83	2889.95	2893.08	2892.98	2892.96	2892.53
26	2891.84	2890.23	2888.70	2886.44	2884.06	2883.72	2884.85	2890.16	2893.00	2892.95	2892.97	2892.55
27	2891.79	2890.17	2888.60	2886.39	2883.98	2883.76	2884.90	2890.24	2892.94	2892.95	2892.95	2892.53
28	2891.78	2890.12	2888.50	2886.32	2883.92	2883.85	2884.95	2890.29	2892.90	2892.95	2892.94	2892.48
29	2891.76	2890.04	2888.45	2886.16	---	2883.89	2885.06	2890.35	2892.88	2892.92	2892.95	2892.41
30	2891.70	2889.95	2888.37	2886.06	---	2883.96	2885.21	2890.42	2892.90	2892.85	2892.95	2892.37
31	2891.59	---	2888.27	2886.01	---	2884.04	---	2890.45	---	2892.80	2892.95	---
MAX	2892.45	2891.65	2889.98	2888.15	2886.00	2884.04	2885.21	2890.45	2893.08	2893.10	2892.97	2892.95
MIN	2891.59	2889.95	2888.27	2886.01	2883.92	2883.34	2884.24	2885.40	2890.47	2892.80	2892.56	2892.37
(+)	1,614	1,411	1,205	931.5	681.2	695.5	835.3	1,473	1,778	1,766	1,785	1,712
(++)	-114,000	-203,000	-206,000	-273,500	-250,300	+14,300	+139,800	+637,700	+305,000	-12,000	+19,000	-73,000
CAL YR 1977	...	...	...	...	...	...	...	...	...	...	...	...
WTR YR 1978	...	...	...	...	...	...	...	...	...	...	...	...

† Contents, in thousands of acre-feet, at end of month

†† Change in contents, in acre-feet

PEND OREILLE RIVER BASIN

12372000 FLATHEAD RIVER NEAR POLSON, MT

LOCATION.--Lat 47°40'49", long 114°14'45", in SW¼NE¼SE¼ sec. 11, T.22 N., R.21 W., Lake County, Hydrologic Unit 17010212, on left bank 0.5 mi (0.8 km) downstream from Kerr Dam, 4.0 mi (6.4 km) west of Polson, 5.0 mi (8.0 km) downstream from Flathead Lake, and at mile 71.5 (115.0 km).
DRAINAGE AREA.--7,096 mi² (18,379 km²).

WATER-DISCHARGE RECORDS

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 (820.735 m), National Geodetic Vertical Datum of 1929 (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 (10 km) downstream from present site, all at datum 2,629.20 ft (801.380 m) above mean sea level (from river-profile survey).

REMARKS.--Water-discharge records excellent. Flow regulated by Flathead Lake (Kerr Dam) since April 1938 (see p. 725) and Hungry Horse Reservoir since September 1951 (see p. 710). Diversions above station for irrigation of about 10,000 acres (40 km²). Flathead project pumps can divert up to 12,000 acre-ft (15 hm³) per month when required for irrigation of lands downstream from station.AVERAGE DISCHARGE.--71 years, 11,760 ft³/s (333.0 m³/s), 22.51 in/yr (572 mm/yr), 8,520,000 acre-ft/yr (10.5 km³/yr), adjusted for change in contents in Hungry Horse Reservoir and Flathead Lake.EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,800 ft³/s (2,340 m³/s) May 29, 1928, gage height, 17.2 ft (5.24 m), site and datum then in use; minimum probably less than 5.0 ft³/s (0.14 m³/s) Apr. 13, 1938; minimum daily, 32 ft³/s (0.91 m³/s) Apr. 12, 1938.EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a stage of about 21 ft (6.4 m), present datum; discharge, about 110,000 ft³/s (3,120 m³/s), from lake elevation-discharge study.EXTREMES FOR CURRENT YEAR.--Maximum discharge, 32,300 ft³/s (915 m³/s) June 26, gage height, 12.54 ft (3.822 m); minimum daily, 3,360 ft³/s (95.2 m³/s) Aug. 15.DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7370	11900	6750	8870	11900	7510	6770	9980	18300	23100	11100	7760
2	6810	11600	6730	9450	10100	7170	7100	10500	19100	18800	10400	7550
3	5670	12200	7240	7970	11100	5750	7340	9400	19000	23400	10400	7390
4	7680	12100	6500	8760	12000	6310	8920	8970	19500	24000	6830	7320
5	7860	10400	6280	9960	11900	6770	9140	10600	20900	23800	7930	7390
6	7660	10500	6850	6940	11600	5800	10200	10700	22900	23300	9460	7730
7	7370	11000	6420	10000	11200	5560	9110	11300	24100	24000	7640	7180
8	7340	10500	8770	9610	11200	5640	9380	10600	24200	24100	7930	6000
9	7420	10900	7120	9740	12100	5860	9490	11400	23600	23100	7080	7030
10	7790	11500	6960	9520	11600	5390	9990	11400	24800	20900	7840	7200
11	7400	11000	6760	8680	11700	5480	8800	12200	25700	19800	7660	6920
12	6880	11400	6840	8120	11400	5460	9380	11200	25500	17400	6150	7050
13	6930	11000	6400	9700	10800	5420	8910	11500	23400	16900	7000	6960
14	7090	10900	6950	11800	10300	5560	10400	11200	21600	13700	4430	7620
15	8530	10900	6570	11100	9780	5570	8330	12500	19600	10500	3360	7000
16	7830	11400	6480	11200	10200	5330	9380	14700	19000	11800	3520	7180
17	11700	11700	7070	11600	9870	5250	9490	15600	22400	10000	3950	7560
18	11100	11600	7080	11000	9640	5610	10200	15300	25000	10400	3700	6970
19	11700	12300	7610	11100	9880	5990	10300	15800	22600	17700	4450	7260
20	11300	12300	6470	10600	8920	5600	10100	15300	23100	19700	4610	7220
21	11800	12000	8670	11600	7870	5960	9610	15400	23200	17200	4750	7570
22	11700	11500	8950	11800	8780	6040	10600	16200	23800	15800	5890	7050
23	11800	9010	6500	11200	7870	5870	9130	16500	24500	11200	5440	7820
24	11300	6860	7700	12100	7470	5350	8820	16200	26300	11100	5810	7310
25	11000	7010	7600	11700	7630	5600	10200	13000	27500	10300	7300	7650
26	11400	7260	7950	12100	7870	5870	9910	13800	30400	10100	7480	7730
27	11800	7390	8320	11400	7490	6110	10900	16400	30600	10300	7090	7380
28	11700	6650	8300	11400	7570	5910	10300	16700	30800	10800	7240	6950
29	11500	7820	8070	11800	---	6560	10500	16700	30700	10500	7520	7250
30	11900	7630	8080	11900	---	6720	10800	16500	27300	10400	7210	7110
31	11900	---	8700	11700	---	6780	---	17900	---	11400	7580	---
TOTAL	291030	310430	228690	324420	278840	183800	283500	415450	719400	505500	208750	218110
MEAN †	9388	10350	7377	10470	9959	5929	9450	13400	23980	16310	6734	7270
MAX	11900	12300	8950	12100	12100	7510	10900	17900	30800	24100	11100	7820
MIN	5670	6650	6280	6940	7470	5250	6770	8970	18300	10000	3360	6000
AC-FT	577300	615700	453600	643500	553100	364600	562300	824000	1427000	1003000	414100	432600
‡	-358000	-417000	-140000	-456500	-400300	-21700	+481800	+1,270700	+996000	+164000	+11000	-72000
MEAN †	3667	3339	5100	3041	2751	5577	17550	34070	40720	18980	6913	6060
CFSM †	0.52	0.47	0.72	0.43	0.39	0.79	2.47	4.80	5.74	2.67	0.97	0.85
IN †	0.58	0.53	0.83	0.49	0.40	0.91	2.76	5.53	6.40	3.08	1.12	0.95
AC-FT†	219300	198700	313600	187000	152800	342900	1,044,100	2,094,700	2,423,000	1,167,000	425100	360600
OBSERVED												
CAL YR 1977	TOTAL 2,769,450		MEAN	7588	MAX	12800	MIN	2020	AC-FT	5,493,000	(*)	-725000
WTR YR 1978	TOTAL 3,967,920		MEAN	10870	MAX	30800	MIN	3360	AC-FT	7,871,000	(*)	-1058000
ADJUSTED												
CAL YR 1977	TOTAL 2,403,980		MEAN	6586	CFSM	0.93	IN	12.60	AC-FT	4,768,000		
WTR YR 1978	TOTAL 4,501,540		MEAN	12330	CFSM	1.74	IN	23.59	AC-FT	8,929,000		

†Adjusted for change in contents.

‡Change in contents, in acre-ft, in Hungry Horse Reservoir and Flathead Lake.

12372000 FLATHEAD RIVER NEAR POLSON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: June 1977 to current year.

INSTRUMENTATION.--Temperature recorder since June 1977.

REMARKS.--Temperature recorder inoperative Jan. 25 to Mar. 8, Apr. 8-26, June 2-15.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 23.0°C Aug. 8-12, 1978; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 23.0°C Aug. 8-12; minimum, 0.0°C on many days during December to January.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	13.0	12.5	13.0	8.5	8.0	8.5	3.0	2.5	2.5	.5	.5	.5
2	13.0	12.5	12.5	8.0	7.5	8.0	2.5	2.5	2.5	.5	.0	.5
3	12.5	12.5	12.5	7.5	7.5	7.5	3.0	2.5	3.0	.5	.0	.5
4	12.5	12.0	12.5	7.5	7.0	7.5	3.5	3.0	3.0	.5	.0	.5
5	12.5	12.0	12.0	7.0	6.5	7.0	3.0	2.5	3.0	.5	.5	.5
6	12.0	12.0	12.0	6.5	6.5	6.5	2.5	2.5	2.5	1.0	.5	.5
7	12.0	11.5	12.0	6.5	6.5	6.5	2.5	1.5	2.0	1.0	.5	.5
8	11.5	11.5	11.5	6.5	5.5	6.0	1.5	1.0	1.0	1.0	1.0	1.0
9	11.5	11.0	11.0	5.5	5.5	5.5	.5	.0	.5	1.0	1.0	1.0
10	11.0	10.5	11.0	5.5	5.5	5.5	.5	.0	.5	1.5	1.0	1.5
11	10.5	10.5	10.5	6.0	5.5	5.5	1.0	.5	.5	1.5	1.5	1.5
12	10.5	10.5	10.5	6.0	5.5	5.5	1.0	.5	1.0	1.5	1.5	1.5
13	10.5	10.5	10.5	6.0	5.5	6.0	1.5	1.0	1.0	1.5	1.5	1.5
14	10.5	10.5	10.5	5.5	5.5	5.5	1.5	.5	1.5	1.5	1.5	1.5
15	10.5	10.5	10.5	5.5	5.0	5.0	1.5	1.0	1.5	1.5	1.5	1.5
16	11.0	10.5	10.5	5.0	4.5	5.0	1.0	1.0	1.0	1.5	1.5	1.5
17	11.0	10.5	10.5	5.0	4.5	4.5	1.0	1.0	1.0	1.5	1.0	1.5
18	11.0	10.5	11.0	4.5	3.5	4.0	1.5	1.0	1.5	1.5	1.0	1.0
19	11.0	10.5	11.0	3.5	2.5	3.0	1.5	1.5	1.5	1.0	1.0	1.0
20	11.0	11.0	11.0	2.5	1.5	2.0	1.5	1.0	1.5	1.0	1.0	1.0
21	11.0	11.0	11.0	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
22	11.0	10.5	11.0	1.0	.5	.5	1.0	.5	1.0	1.0	1.0	1.0
23	11.0	10.5	11.0	.5	.5	.5	.5	.5	.5	1.0	1.0	1.0
24	11.0	10.5	10.5	.5	.5	.5	.5	.0	.0	1.0	1.0	1.0
25	11.0	10.5	10.5	1.0	.5	.5	.0	.0	.0	---	1.0	---
26	10.5	10.5	10.5	1.5	1.0	1.0	.0	.0	.0	---	---	---
27	10.5	10.0	10.0	2.0	1.5	1.5	.0	.0	.0	---	---	---
28	10.0	9.5	10.0	2.0	2.0	2.0	.5	.0	.0	---	---	---
29	9.5	9.5	9.5	2.5	2.0	2.0	.5	.5	.5	---	---	---
30	9.5	9.0	9.5	2.5	2.5	2.5	.5	.5	.5	---	---	---
31	9.0	8.5	9.0	---	---	---	.5	.5	.5	---	---	---
MONTH	13.0	8.5	11.0	8.5	.5	4.0	3.5	.0	1.0	1.5	.0	1.0

12372000 FLATHEAD RIVER NEAR POLSON, MT--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	---	---	---	---	---	---	7.0	6.0	6.5	8.5	8.0	8.0
2	---	---	---	---	---	---	7.5	7.0	7.0	9.5	9.0	9.0
3	---	---	---	---	---	---	7.0	6.0	7.0	9.5	8.0	8.5
4	---	---	---	---	---	---	6.5	6.0	6.5	8.5	7.0	8.0
5	---	---	---	---	---	---	6.0	5.0	5.5	7.5	6.5	7.0
6	---	---	---	---	---	---	5.0	4.5	4.5	7.5	7.0	7.5
7	---	---	---	---	---	---	4.5	4.5	4.5	8.5	7.5	8.0
8	---	---	---	2.0	---	---	---	---	---	8.5	8.0	8.0
9	---	---	---	2.0	1.5	2.0	---	---	---	8.5	8.5	8.5
10	---	---	---	2.0	1.5	2.0	---	---	---	8.5	8.0	8.0
11	---	---	---	2.5	1.5	2.0	---	---	---	8.0	7.0	8.0
12	---	---	---	2.5	2.0	2.0	---	---	---	7.0	7.0	7.0
13	---	---	---	2.5	2.0	2.5	---	---	---	7.0	7.0	7.0
14	---	---	---	2.5	2.0	2.5	---	---	---	7.5	7.0	7.0
15	---	---	---	2.5	2.0	2.5	---	---	---	8.0	7.5	8.0
16	---	---	---	3.0	2.0	2.5	---	---	---	8.5	8.0	8.5
17	---	---	---	3.0	2.5	2.5	---	---	---	6.5	8.0	8.0
18	---	---	---	3.5	2.5	3.0	---	---	---	8.0	7.5	7.5
19	---	---	---	3.5	3.0	3.5	---	---	---	8.0	7.5	7.5
20	---	---	---	4.0	3.5	3.5	---	---	---	9.0	8.0	8.5
21	---	---	---	4.0	3.5	4.0	---	---	---	9.5	9.0	9.5
22	---	---	---	4.5	4.0	4.0	---	---	---	9.5	9.0	9.5
23	---	---	---	4.5	4.0	4.5	---	---	---	9.5	8.5	9.0
24	---	---	---	5.0	4.0	4.5	---	---	---	8.5	7.5	8.0
25	---	---	---	4.5	4.0	4.5	---	---	---	8.0	8.0	8.0
26	---	---	---	4.0	3.5	4.0	7.5	---	---	8.5	8.0	8.5
27	---	---	---	5.0	4.0	4.5	6.5	8.0	8.0	9.0	8.5	9.0
28	---	---	---	5.5	4.5	5.0	8.5	8.0	8.0	9.0	9.0	9.0
29	---	---	---	6.0	5.5	6.0	8.0	7.0	7.5	9.0	9.0	9.0
30	---	---	---	6.5	5.5	6.0	7.5	7.0	7.5	9.5	9.0	9.5
31	---	---	---	6.5	6.0	6.0	---	---	---	9.5	9.0	9.0
MONTH	---	---	---	6.5	1.5	3.5	8.5	4.5	6.5	9.5	6.5	8.0
JUNE				JULY			AUGUST			SEPTEMBER		
1	10.0	9.5	9.5	16.0	15.0	15.5	22.5	22.0	22.0	18.5	18.0	18.0
2	---	---	---	17.0	16.0	16.0	22.0	22.0	22.0	18.5	18.5	18.5
3	---	---	---	17.5	17.0	17.0	22.0	22.0	22.0	19.0	18.5	19.0
4	---	---	---	17.5	17.0	17.0	22.5	22.0	22.0	19.5	19.0	19.0
5	---	---	---	17.0	16.5	17.0	22.5	22.0	22.5	19.5	19.0	19.5
6	---	---	---	17.5	16.5	17.0	22.5	22.5	22.5	19.5	19.0	19.0
7	---	---	---	18.0	17.5	17.5	22.5	22.5	22.5	19.0	19.0	19.0
8	---	---	---	18.0	17.0	17.5	23.0	22.5	22.5	19.0	18.5	18.5
9	---	---	---	18.0	17.5	17.5	23.0	22.5	23.0	18.5	18.0	18.0
10	---	---	---	18.5	18.0	18.0	23.0	23.0	23.0	18.0	17.5	18.0
11	---	---	---	18.5	18.0	18.0	23.0	23.0	23.0	17.5	17.5	17.5
12	---	---	---	18.5	18.0	18.5	23.0	22.5	22.5	17.5	17.0	17.0
13	---	---	---	19.0	18.5	19.0	22.5	22.0	22.5	17.0	16.5	16.5
14	---	---	---	19.0	19.0	19.0	22.0	21.5	22.0	16.5	16.0	16.0
15	---	---	---	19.0	19.0	19.0	21.5	21.0	21.5	16.0	16.0	16.0
16	12.0	12.0	12.0	20.0	19.0	19.5	21.0	20.5	21.0	16.0	15.0	15.5
17	12.5	12.0	12.0	20.0	19.5	19.5	20.5	20.0	20.5	15.0	14.5	15.0
18	13.0	12.5	12.5	19.5	19.0	19.5	20.0	19.0	19.5	14.5	14.5	14.5
19	13.0	12.0	12.5	19.0	18.5	19.0	19.5	18.5	19.0	14.5	14.0	14.0
20	13.5	12.0	12.5	19.0	18.5	19.0	19.0	18.5	18.5	14.0	13.5	13.5
21	14.5	13.5	13.5	19.0	18.5	19.0	18.5	18.0	18.5	13.5	13.5	13.5
22	14.5	14.0	14.0	19.0	19.0	19.0	18.0	18.0	18.0	13.5	13.0	13.0
23	15.0	13.5	14.0	19.5	19.0	19.5	18.0	17.5	17.5	13.0	13.0	13.0
24	15.5	15.0	15.5	20.0	19.5	20.0	17.5	17.5	17.5	13.5	13.0	13.0
25	15.5	14.5	15.0	20.5	20.0	20.0	17.5	17.0	17.0	13.5	13.0	13.5
26	14.5	14.0	14.0	20.5	20.5	20.5	17.5	17.0	17.0	14.0	13.5	13.5
27	15.5	14.5	15.0	21.0	20.5	21.0	17.5	17.0	17.5	14.0	14.0	14.0
28	15.5	15.0	15.5	21.5	21.0	21.5	17.5	17.5	17.5	14.0	14.0	14.0
29	16.0	15.5	15.5	21.5	21.5	21.5	18.0	17.5	18.0	14.0	13.5	14.0
30	16.0	15.5	15.5	22.0	21.5	22.0	18.0	18.0	18.0	14.0	13.5	13.5
31	---	---	---	22.0	22.0	22.0	18.5	18.0	18.0	---	---	---
MONTH	16.0	9.5	13.5	22.0	15.0	19.0	23.0	17.0	20.5	19.5	13.0	16.0
YEAR	23.0	.0	10.0									

12389000 CLARK FORK NEAR PLAINS, MT

LOCATION.--Lat 47°25'47", long 114°51'18", in E½SW¼ sec.1, T.19 N., R.26 W., Sanders County, Hydrologic Unit 17010213, on right bank 2.4 mi (3.9 km) southeast of Plains, 6.0 mi (9.7 km) downstream from Flathead River, and at mile 239.0 (384.6 km).

DRAINAGE AREA.--19,958 mi² (51,691 km²).

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.

GAGE.--Water-stage recorder. Datum of gage is 2,449.11 ft (746.489 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Nov. 28, 1911, nonrecording gage at site 50 ft (15 m) upstream at same datum.

REMARKS.--Water-discharge records excellent. Flow partially regulated by Hungry Horse Reservoir (see p.710) and by Flathead Lake (see p.725). Diversions for irrigation of about 335,000 acres (1,360 km²) above station.

AVERAGE DISCHARGE.--68 years, 20,010 ft³/s (566.7 m³/s) 14,500,000 acre-ft/yr June 5, 1948, gage height, 19.17 ft (5.843 m); minimum, 3,200 ft³/s (90.6 m³/s) Feb. 8, 1936, Dec. 10, 1940; minimum gage height, 2.70 ft (0.823 m), from partly estimated gage-height record, Sept. 2, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 66,700 ft³/s (1,890 m³/s) June 9, gage height, 12.49 ft (3.807 m); minimum, 7,030 ft³/s (199 m³/s) Aug. 16, gage height, 3.85 ft (1.173 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10500	15500	12300	11700	15000	11500	25700	30400	40900	49000	16900	11600
2	10800	15400	11700	11500	15000	11400	27300	30300	40800	44900	16500	11800
3	10300	15500	13300	11300	13200	10400	27700	32400	41400	41500	15700	11600
4	9410	15800	14700	10900	14600	9160	26200	31700	42800	45600	15200	11300
5	11000	15500	14000	12900	15500	9510	25700	30700	40400	45300	11900	11400
6	11200	13800	13100	14000	15300	10200	24900	30800	53200	45500	12300	11400
7	11200	14400	12900	13400	15000	9490	24500	29400	59300	45500	13800	11600
8	10600	14500	12200	15800	14700	9250	22300	28800	63800	45200	11900	11400
9	10800	14200	14400	15300	15200	9800	22000	27600	65700	45200	12100	10800
10	11000	14500	12200	15300	15600	10200	21500	28300	65500	45800	11200	11500
11	11200	14700	11800	14700	15100	10200	21600	30100	65100	41500	11700	11700
12	10700	14500	11600	13500	15300	10700	20400	32400	62300	37500	10400	11800
13	10100	14700	12200	12600	14700	10600	21300	32000	56200	34300	9940	12400
14	10400	14300	12600	14100	14500	10300	21200	31500	50500	31600	10600	12900
15	10300	14400	13900	15600	13900	10400	21400	31900	49900	26400	8460	13800
16	11600	14500	14500	15200	13200	10100	19700	37200	47200	24000	7350	13100
17	12100	15000	14000	15000	13400	9450	20900	41100	45300	24600	7650	13400
18	14800	15400	14000	15100	13300	9870	21500	41300	48500	22700	8300	13400
19	14400	15300	13500	15100	12900	11700	21500	39700	47300	23600	8460	12700
20	15000	15100	13400	14600	12600	13400	21700	40600	46400	31000	8810	12600
21	14700	14600	16200	14200	12000	13900	22300	40800	46300	29500	9150	12900
22	14800	14100	14500	15200	11700	14500	22600	43200	46300	27000	9320	13100
23	15100	13900	13400	15400	11900	15500	22800	45700	46600	24200	10700	12600
24	14500	11100	11700	14900	11500	16600	21100	48300	48200	19900	10000	13000
25	14300	10100	13500	15500	11200	16800	20200	47100	51600	19000	10300	12600
26	14800	10600	13900	15000	11600	16900	21900	42000	55800	17800	11700	12800
27	14800	11700	13400	15700	11900	16700	22700	41500	56600	17200	11700	12600
28	15500	12200	13100	15000	11600	17200	26400	41100	53700	16900	11300	12300
29	15000	11700	12600	14900	---	18400	27800	39800	52700	17100	11500	11900
30	15200	12600	11200	15400	---	20900	29500	40200	53200	16900	11600	11900
31	15700	---	12000	15300	---	23500	---	40300	---	16500	11300	---
TOTAL	391810	419600	407800	444100	381400	399010	696300	1128400	1549500	970900	348560	368100
MEAN	12640	13990	13150	14330	13620	12870	23210	36400	51650	31320	11240	12270
MAX	15700	15800	16200	15800	15600	23500	29500	48300	65700	49000	16900	13800
MIN	9410	10100	11200	10900	11200	9160	19700	27800	40800	16500	7350	10800
AC-FT	777200	832300	808900	880900	756500	791400	1381000	2238000	3073000	1926000	691400	730100
CAL YR 1977	TOTAL	4230030	MEAN	11590	MAX	20200	MIN	5150	AC-FT	8390000		
WTR YR 1978	TOTAL	7505480	MEAN	20560	MAX	65700	MIN	7350	AC-FT	14890000		

PEND OREILLE RIVER BASIN

12389500 THOMPSON RIVER NEAR THOMPSON FALLS, MT

LOCATION.--Lat 47°35'31", long 115°13'43", in NW¼NE¼SE¼ sec.7, T.21 N., R.28 W., Sanders County, Hydrologic Unit 17010213, Lolo National Forest, on right bank 1.3 mi (2.1 km) upstream from mouth and 5.5 mi (8.8 km) east of Thompson Falls.

DRAINAGE AREA.--642 mi² (1,663 km²).

WATER-DISCHARGE RECORDS

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 (740.655 m) National Geodetic Vertical Datum of 1929 (Bureau of Public Roads bench mark). October 1911 to September 1916, nonrecording gage at site 0.2 mi (0.3 km) upstream at different datum.

REMARKS.--Water-discharge records good. Minor diversions above station for irrigation; acreage unknown. Diversion from headwaters of Alder Creek in SW¼ sec.16, T.23 N., R.25 W., to supplement water supply for storage in Upper Dry Fork Reservoir in Little Bitterroot River basin.

AVERAGE DISCHARGE.--22 years, 485 ft³/s (13.74 m³/s), 10.26 in/yr (261 mm/yr), 351,400 acre-ft/yr (433 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,080 ft³/s (172 m³/s) June 9, 1964, gage height, 8.53 ft (2.600 m); minimum, 60 ft³/s (1.70 m³/s) Nov. 20, 1977, gage height, 1.96 ft (0.597 m), result of freezeup; minimum gage height, 1.01 ft (0.308 m) Dec. 17, 1964, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May to June 1948 reached a discharge of 6,190 ft³/s (175 m³/s), by slope-area measurement of peak flow at site 0.2 mi (0.3 km) downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,800 ft³/s (51.0 m³/s) Mar. 31, gage height, 4.74 ft (1.445 m); minimum, 60 ft³/s (1.70 m³/s) Nov. 20, gage height, 1.96 ft (0.597 m), result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	127	116	182	162	149	196	1740	1280	1070	645	315	245
2	122	132	241	171	156	167	1570	1350	1090	616	309	238
3	118	127	525	186	165	167	1350	1440	1200	603	304	233
4	116	121	502	205	162	200	1170	1400	1380	646	299	229
5	115	116	372	209	159	197	1050	1280	1570	640	293	226
6	115	118	329	212	164	191	943	1140	1710	623	285	230
7	118	120	309	201	166	189	865	1040	1720	594	280	245
8	118	116	259	196	174	194	812	984	1630	595	275	248
9	121	112	241	198	173	214	766	976	1560	600	270	238
10	118	115	230	195	176	241	739	1190	1410	603	266	230
11	116	115	263	193	173	257	773	1410	1260	576	261	226
12	115	115	305	193	152	267	777	1360	1130	550	263	245
13	115	115	342	189	135	267	757	1260	1050	524	284	252
14	115	123	488	169	174	263	737	1290	987	499	276	239
15	113	128	533	187	170	250	713	1430	942	478	282	236
16	112	126	511	187	166	254	728	1570	892	475	306	232
17	112	122	448	184	159	258	749	1510	847	466	294	231
18	112	117	407	180	166	301	724	1410	824	455	285	230
19	112	100	361	176	162	413	707	1340	829	445	276	226
20	112	71	280	174	162	495	754	1380	813	429	281	223
21	111	85	250	172	162	557	825	1530	789	413	283	220
22	110	105	281	174	164	622	818	1730	780	398	291	217
23	111	110	301	168	171	746	796	1690	786	387	298	213
24	109	111	265	147	179	968	756	1570	782	375	277	210
25	119	121	215	176	185	993	728	1380	791	363	265	208
26	119	239	225	169	190	939	803	1240	765	354	260	205
27	117	229	225	163	195	1040	1030	1120	718	352	255	202
28	115	191	219	159	205	1190	1310	1110	683	344	250	201
29	114	198	220	164	---	1280	1340	1130	668	337	245	201
30	117	201	214	153	---	1490	1310	1120	663	329	242	201
31	120	---	175	149	---	1750	---	1120	---	321	246	---
TOTAL	3584	3917	9718	5583	4714	16556	28140	40780	31339	15035	8616	6780
MEAN	116	131	313	180	168	534	938	1315	1045	485	278	226
MAX	127	239	533	212	205	1750	1740	1730	1720	646	315	252
MIN	109	71	175	147	135	167	707	976	663	321	242	201
CFSM	.18	.20	.49	.28	.26	.83	1.46	2.05	1.63	.76	.43	.35
IN.	.21	.23	.56	.32	.27	.96	1.63	2.36	1.82	.87	.50	.39
AC-FT	7110	7770	19280	11070	9350	32840	55820	80890	62160	29820	17090	13450
CAL YR 1977	TOTAL	66623	MEAN 183	MAX 533	MIN 71	CFSM .29	IN 3.86	AC-FT 132100				
WTR YR 1978	TOTAL	174762	MEAN 479	MAX 1750	MIN 71	CFSM .75	IN 10.13	AC-FT 346600				

12389500 THOMPSON RIVER NEAR THOMPSON FALLS, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: June 1977 to current year.

INSTRUMENTATION.--Temperature recorder since June 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 21.0°C July 23, 1977, minimum, 0.0°C on several days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 18.0°C July 27, Aug. 5, 8; minimum, 0.0°C on several days during January to March.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	9.5	8.0	9.0	5.5	5.0	5.0	2.0	1.5	2.0	.5	.0	.5
2	11.0	7.0	8.5	6.0	5.0	5.5	3.5	1.5	2.5	.5	.0	.5
3	10.0	6.5	8.0	5.0	4.0	4.5	3.5	3.0	3.5	.5	.0	.5
4	9.0	5.0	6.5	5.0	3.5	4.0	3.5	2.5	3.0	.5	.0	.5
5	7.5	5.0	6.0	5.0	4.0	4.5	2.5	2.0	2.0	1.0	.5	.5
6	7.5	5.5	6.5	5.5	5.0	5.0	2.0	.5	1.0	2.5	1.0	2.0
7	8.5	7.5	7.5	5.5	3.5	5.0	2.5	1.5	2.0	2.5	2.0	2.0
8	8.0	7.0	7.5	3.5	2.5	5.0	1.5	1.0	1.0	2.5	2.0	2.5
9	8.5	7.5	8.0	3.5	2.5	3.0	1.0	.5	1.0	3.5	2.5	3.0
10	7.5	5.0	6.0	5.5	3.5	4.5	2.0	.5	1.0	3.0	2.5	2.5
11	7.5	4.0	5.5	5.0	4.0	4.5	3.0	2.0	2.5	2.5	2.0	2.0
12	8.0	4.5	6.0	5.5	4.5	5.0	3.5	2.5	3.0	3.0	2.0	2.5
13	9.5	6.5	7.5	5.0	3.5	4.5	3.5	3.0	3.0	3.0	2.0	2.5
14	8.5	6.0	7.0	5.0	4.5	4.5	3.5	3.0	3.5	2.5	2.0	2.5
15	8.5	5.0	6.5	4.5	4.0	4.0	4.0	3.5	3.5	3.0	2.0	2.5
16	9.0	5.5	7.0	4.0	3.0	3.5	3.5	3.0	3.5	3.0	2.0	2.5
17	8.0	5.5	6.5	4.0	3.5	3.5	3.0	1.5	2.0	3.0	2.5	3.0
18	7.5	5.0	6.0	3.5	1.5	2.5	2.5	2.0	2.5	3.0	2.5	3.0
19	8.0	5.5	6.5	1.5	.5	.5	2.5	2.0	2.0	3.0	2.5	2.5
20	7.5	5.0	6.0	.5	.5	.5	1.5	.5	.5	2.5	2.5	2.5
21	7.0	4.5	5.5	.5	.5	.5	1.0	.5	.5	3.0	2.5	3.0
22	7.0	4.5	5.5	.5	.5	.5	2.0	.5	1.0	3.5	2.5	3.0
23	6.5	4.5	5.5	.5	.5	.5	2.0	1.0	1.5	2.5	1.5	2.0
24	7.5	6.0	6.5	2.0	.5	1.5	1.5	.5	1.0	2.0	1.0	1.5
25	8.0	7.5	7.5	2.0	2.0	2.0	.5	.5	.5	2.5	2.0	2.5
26	8.0	6.5	7.0	3.0	2.0	2.5	1.0	.5	.5	3.0	2.5	2.5
27	6.0	4.0	5.0	3.5	2.5	2.5	1.0	.5	1.0	3.0	2.5	3.0
28	6.5	5.0	5.5	4.0	3.0	3.5	1.0	.5	1.0	2.5	1.5	2.0
29	7.0	6.0	6.5	4.0	3.5	4.0	1.0	1.0	1.0	2.5	2.0	2.0
30	6.5	6.0	6.0	3.0	2.0	2.5	1.5	.5	1.0	2.5	.5	1.5
31	6.0	5.0	5.5	---	---	---	1.0	.5	.5	1.5	1.0	1.0
MONTH	11.0	4.0	6.5	6.0	.5	3.0	4.0	.5	2.0	3.5	.0	2.0

12390700 PROSPECT CREEK AT THOMPSON FALLS, MT

LOCATION.--Lat 47°35'10", long 115°21'15", in lot 12, SE4SE4SE4 sec.7, T.21 N., R.29 W., Sanders County, Hydro-logic Unit 17010213, on right bank 500 ft (150 m) downstream from Dry Creek, 0.5 mi (0.8 km) upstream from mouth, and 0.7 mi (1.1 km) south of Thompson Falls.

DRAINAGE AREA.--182 mi² (471 km²).

PERIOD OF RECORD.--April 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,382.40 ft (726.156 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No known regulation or diversions upstream.

AVERAGE DISCHARGE.--22 years, 262 ft³/s (7.420 m³/s), 19.55 in/yr (497 mm/yr), 189,800 acre-ft/yr (234 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,490 ft³/s (155 m³/s) Jan. 16, 1977, gage height, 9.86 ft (3.005 m); minimum, 29 ft³/s (0.82 m³/s) Jan. 5, 1970 (result of freezeup), Jan. 2, 1977; minimum gage height, 0.33 ft (0.101 m) Jan. 2, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,310 ft³/s (37.1 m³/s) Apr. 1, gage height, 4.83 ft (1.472 m); minimum, 33 ft³/s (0.93 m³/s) Nov. 21, gage height, 0.40 ft (0.122 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	36	50	134	96	121	1270	745	546	266	105	78
2	35	39	168	133	96	117	1170	789	562	248	103	77
3	35	37	644	133	96	115	991	827	678	243	101	76
4	35	36	534	127	96	117	838	788	807	240	100	76
5	35	36	397	129	94	119	725	707	906	223	98	76
6	35	35	337	136	97	117	633	631	982	208	96	77
7	35	36	312	127	98	115	568	579	972	199	94	79
8	35	36	267	125	100	117	517	549	902	196	93	76
9	36	36	242	123	101	126	476	571	851	184	92	75
10	35	37	228	122	101	133	451	712	766	180	90	74
11	35	37	236	121	101	141	466	859	669	172	89	74
12	35	37	275	119	101	151	469	807	599	164	92	75
13	35	37	315	117	99	156	460	735	555	157	98	73
14	35	39	459	117	99	160	447	754	520	151	93	72
15	34	40	600	116	101	156	431	865	483	147	94	72
16	34	40	593	116	102	156	431	914	446	145	97	72
17	34	39	497	115	100	159	426	852	416	142	92	71
18	34	39	414	112	99	172	412	776	400	138	91	71
19	34	38	352	111	99	249	404	743	403	134	88	70
20	34	37	305	110	99	365	441	818	390	130	89	70
21	34	36	272	108	100	443	464	926	374	127	87	69
22	34	39	258	108	101	495	461	1060	366	124	92	69
23	34	39	244	105	104	657	455	969	371	121	91	68
24	34	39	218	103	109	828	427	835	364	118	86	68
25	36	42	194	102	111	796	415	711	365	115	84	67
26	37	51	180	103	114	701	445	618	338	113	82	67
27	35	47	168	101	119	745	613	563	310	115	81	67
28	35	47	158	100	122	888	814	570	291	114	80	65
29	34	52	153	99	---	950	833	603	289	111	79	64
30	35	51	151	97	---	1080	779	600	280	109	78	66
31	37	---	141	96	---	1250	---	568	---	107	79	---
TOTAL	1081	1190	9362	3565	2855	11895	17732	23044	16221	4943	2814	2154
MEAN	34.9	39.7	302	115	102	384	591	743	541	159	90.8	71.8
MAX	37	52	644	136	122	1250	1270	1060	982	266	105	79
MIN	34	35	50	96	94	115	404	549	280	107	78	64
CFSM	.19	.22	1.66	.63	.56	2.11	3.25	4.08	2.97	.87	.50	.40
IN.	.22	.24	1.91	.73	.58	2.43	3.62	4.71	3.32	1.01	.58	.44
AC-FT	2140	2360	18570	7070	5660	23590	35170	45710	32170	9800	5580	4270
CAL YR 1977 TOTAL	38354			MEAN 105	MAX 644	MIN 34	CFSM .58	IN 7.84	AC-FT 76080			
WTR YR 1978 TOTAL	96856			MEAN 265	MAX 1270	MIN 34	CFSM 1.46	IN 19.80	AC-FT 192100			

PEND OREILLE RIVER BASIN

12391400 CLARK FORK BELOW NOXON RAPIDS DAM, NEAR NOXON, MT

LOCATION.--Lat 47°57'40", long 115°43'58", in SW¼ sec.33, T.26 N., R.32 W., Sanders County, Hydrologic Unit 17010213, at Noxon Rapids Dam 1 mi (2 km) upstream from Rock Creek, 3 mi (5 km) southeast of Noxon, and at mile 169.7 (273.0 km).

DRAINAGE AREA.--21,833 mi² (56,547 km²).

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

GAGE.--Plant generator rating for discharge through powerplant. Water-stage recorder on reservoir determines head on taintor gates. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by The Washington Water Power Co.).

REMARKS.--Records good. Flow regulated by Hungry Horse Reservoir (see p. 710) and Flathead Lake (see p. 725). Diversions for irrigation of about 350,000 acres (1,420 km²) above station. Some sub-surface flow is indicated by comparison with records for adjacent gaging stations. Figures of discharge given herein are combined flows through turbines and spillway.

COOPERATION.--Records collected by The Washington Water Power Co., under general supervision of the Geological Survey, in connection with a Federal Power Commission project.

AVERAGE DISCHARGE.--18 years, 21,640 ft³/s (612.8 m³/s), 15,680,000 acre-ft/yr (19.3 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 124,900 ft³/s (3,540 m³/s) June 12, 1964; minimum daily, 80 ft³/s (2.27 m³/s) Oct. 16, 1960, Aug. 26, 1962, Aug. 18, 25, 31, Sept. 1, 1963, Sept. 11, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 65,600 ft³/s (1,860 m³/s) June 11; minimum daily, 5,150 ft³/s (146 m³/s) Aug. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	5610	13100	12000	8580	14900	15200	27000	21600	47400	47400	18500	12000		
2	6500	16100	13500	9940	12300	14500	24800	27100	47200	45100	16700	10800		
3	11700	15500	15600	8820	18400	14100	27100	31000	46400	40200	17000	9740		
4	12400	16800	14500	10500	15600	8640	28900	36800	47000	44000	18400	11000		
5	10200	16200	14000	11900	9620	13500	28500	32700	47000	43900	12100	10200		
6	10500	9940	17200	15000	16200	12500	28000	31000	47100	44800	5730	11500		
7	16000	12100	12700	12900	16000	11800	27300	32500	46500	44400	16400	15500		
8	5760	13400	11900	10300	13900	11500	28600	31100	52100	43500	12700	10500		
9	7790	10600	14300	17300	16200	12800	29100	31100	55100	43300	11600	11600		
10	10200	14300	12700	18500	13200	11900	26200	30200	63100	43000	13600	11600		
11	11600	16400	13700	13300	16500	12800	26400	29800	65600	41600	14800	13300		
12	11200	15200	14300	19500	13600	13000	23600	29000	63300	39500	9940	12100		
13	9570	11800	11600	13700	17800	13300	20800	26700	57300	37200	5150	11200		
14	10300	14000	11900	12900	16400	13700	23100	31400	50300	29900	7940	13200		
15	11300	13800	19700	10000	17900	13400	16000	35500	48200	26300	8520	10200		
16	11900	16100	18300	14600	17000	11900	20500	44800	44200	26300	9950	13400		
17	11900	12100	13600	16300	16500	14000	30800	44700	45100	24300	7080	11600		
18	12900	11000	12400	15900	14300	13300	29400	41300	44400	25000	7140	14600		
19	15100	14100	18100	16100	12000	12900	27900	44600	47300	25200	7080	10900		
20	16800	17300	18400	14800	13500	15800	30000	44700	45100	28600	10200	13600		
21	16000	17600	12900	14300	12600	17600	30400	44200	44400	30800	7650	13500		
22	11200	15700	11200	13100	14700	17800	27600	45100	44600	28800	9660	14400		
23	6750	11500	13100	17600	14800	20300	28900	45400	44700	26300	9040	16000		
24	14000	8830	14200	13100	14600	16500	28600	45600	45600	23300	12200	7690		
25	14100	7540	12300	15000	14400	13400	28600	45100	49000	15600	11300	15000		
26	14400	10500	9660	16600	14400	10300	23400	45500	52800	15500	10200	14400		
27	16700	10100	12100	15000	14800	16900	24600	45500	55300	20000	12300	9120		
28	16600	13500	11000	15100	14100	17900	23700	45400	53700	19600	12500	10800		
29	15500	12100	11400	14800	---	21100	14900	45600	50300	10600	9630	11700		
30	7230	12800	11100	15700	---	21100	21300	47000	51700	12500	12900	10800		
31	16600	---	13100	13800	---	25400	---	47700	---	16800	13100	---		
TOTAL	368310	400010	422460	434940	416220	458840	776000	1179700	1501800	963300	351010	361950		
MEAN	11880	13330	13630	14030	14870	14800	25870	38050	50060	31070	11320	12070		
MAX	16800	17600	19700	19500	18400	25400	30800	47700	65600	47400	18500	16000		
MIN	5610	7540	9660	8580	9620	8640	14900	21600	44200	10600	5150	7690		
CFSM	.54	.61	.62	.64	.68	.68	1.19	1.74	2.29	1.42	.52	.55		
IN.	.63	.68	.72	.74	.71	.78	1.32	2.01	2.56	1.64	.60	.62		
AC-FT	730500	793400	837900	862700	825600	910100	1539000	2340000	2979000	1911000	696200	717900		
CAL YR 1977	TOTAL	4152530	MEAN	11380	MAX	25800	MIN	80	CFSM	.52	IN	7.08	AC-FT	8237000
WTR YR 1978	TOTAL	7634540	MEAN	20920	MAX	65600	MIN	5150	CFSM	.96	IN	13.01	AC-FT	15140000

LOCATION.--Lat 48°02'50", long 115°50'01", in NW¼NW¼NE¼ sec. 3, T.26 N., R.33 W., Sanders County, Hydrologic Unit 17010213, Kaniksu National Forest, on left bank 1.2 mi (1.9 km) upstream from Cabinet Gorge Reservoir flow line, 1.6 mi (2.6 km) upstream from bridge on State Highway 200, and 4.4 mi (7.1 km) northwest of Noxon.

WATER-DISCHARGE RECORDS

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,770 ft³/s (50.1 m³/s) June 7, gage height, 7.81 m (2.380 m); minimum, 59 ft³/s (2.58 m³/s) Nov. 22, gage height, 4.47 ft (1.362 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP			
1	155	114	255	202	143	155	1140	944	827	657	140	152
2	142	157	331	205	142	143	1350	1010	900	594	183	151
3	135	174	511	210	142	144	1050	1170	981	581	178	145
4	124	157	581	215	142	146	809	978	1330	582	173	140
5	110	147	497	220	142	147	740	855	1550	585	167	136
6	112	140	443	225	142	147	682	746	1710	531	163	139
7	112	137	407	220	142	147	625	679	1700	501	159	152
8	112	130	304	215	147	150	579	654	1700	474	154	172
9	110	130	331	210	150	157	543	718	1620	453	151	197
10	120	128	313	205	152	162	520	1040	1470	452	146	184
11	114	127	323	201	151	166	521	1170	1210	434	142	180
12	112	124	406	196	148	170	520	1110	1020	380	141	178
13	110	120	495	191	139	176	508	990	903	358	144	197
14	110	135	654	189	143	181	497	1130	939	347	141	190
15	109	150	741	136	147	181	483	1470	869	344	152	178
16	106	145	752	183	147	181	480	1630	793	330	215	174
17	103	142	866	180	147	182	490	1530	724	330	227	172
18	103	137	568	177	147	193	471	1360	749	355	206	167
19	101	129	519	173	145	231	460	1300	821	321	191	160
20	99	118	458	170	145	266	470	1360	800	297	187	154
21	98	103	414	167	145	306	512	1480	774	281	205	148
22	96	108	385	167	145	380	515	1090	800	271	208	147
23	94	113	359	165	145	431	502	1680	820	260	194	147
24	93	115	332	161	147	631	479	1460	803	250	183	145
25	90	121	303	159	147	717	468	1170	757	245	173	144
26	99	218	287	157	147	694	536	972	704	240	166	141
27	101	230	268	155	149	742	774	658	658	230	159	136
28	101	237	248	152	154	827	993	374	641	222	153	133
29	108	255	246	149	---	901	1060	950	678	212	147	131
30	112	274	247	147	---	1020	1000	892	630	203	143	129
31	118	---	237	145	---	1200	---	829	---	195	142	---
TOTAL	3431	4559	13071	5697	4082	11284	19402	34611	30332	11459	5283	4719
MEAN	111	152	422	184	146	364	647	1116	1013	370	170	157
MAX	153	274	752	225	154	1260	1190	1690	1760	637	227	197
MIN	93	103	237	145	139	144	460	654	641	195	141	129
CFSM	.80	1.09	3.04	1.32	1.05	2.62	4.66	8.03	7.29	2.66	1.22	1.13
IN.	.92	1.22	3.50	1.52	1.09	5.02	5.19	9.26	8.13	3.07	1.41	1.26
AC=FT	6810	9040	25930	11300	8100	22350	38480	63650	60260	22730	10480	9360
CAL YR 1977	TOTAL	85315	MEAN 228	MAX	1120	MIN 69	CFSM 1.64	IN 22.30	AC=FT	165300		
NIR YR 1978	TOTAL	147980	MEAN 405	MAX	1760	MIN 93	CFSM 2.91	IN 39.60	AC=FT	293500		

PEND OREILLE RIVER BASIN

12391550 BULL RIVER NEAR NOXON, MT--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: June 1977 to current year.

INSTRUMENTATION.--Temperature recorder since June 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 24.0°C, July 16, 1977; minimum, 0.0°C on several days during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 18.0°C, Aug. 5, 7-9; minimum, 0.0°C on several days during November, January and February.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.5	8.0	8.5	6.0	5.0	5.5	2.5	1.0	2.5	.5	.0	.0
2	10.0	7.5	8.0	6.0	5.0	5.5	3.0	1.5	2.5	.5	.0	.0
3	9.5	6.0	7.5	5.0	3.5	4.5	4.0	3.0	3.5	.5	.0	.5
4	9.0	5.0	7.0	5.0	3.5	4.0	3.5	3.0	3.5	.5	.0	.5
5	8.0	5.5	6.5	4.5	3.5	4.0	3.5	3.0	3.0	1.5	.5	1.0
6	8.0	5.5	7.0	4.5	4.5	4.5	3.0	2.0	2.0	3.0	2.0	2.5
7	7.5	7.0	7.0	4.5	4.0	4.5	3.0	2.5	2.5	3.0	2.5	3.0
8	7.5	6.5	7.0	4.5	3.0	3.5	2.5	2.0	2.5	3.0	2.5	2.5
9	8.5	6.5	7.5	4.0	3.0	3.5	2.0	1.0	1.5	3.5	2.5	3.0
10	7.5	4.5	6.0	5.0	4.0	4.5	2.0	.5	1.0	3.0	2.5	2.5
11	7.5	4.5	6.0	5.5	4.5	5.0	3.0	2.0	2.5	3.0	2.0	2.5
12	8.0	4.5	6.0	5.5	5.0	5.0	3.5	3.0	3.5	3.0	2.5	3.0
13	8.0	6.5	7.0	5.5	5.0	5.0	3.5	3.5	3.5	3.5	2.5	3.0
14	8.5	6.0	7.0	5.0	4.5	5.0	4.0	3.5	3.5	3.0	2.5	2.5
15	8.5	5.0	6.5	4.5	4.0	4.5	4.0	3.5	4.0	3.0	2.5	3.0
16	9.0	6.0	7.0	4.5	3.5	4.0	4.0	3.5	3.5	3.0	2.5	3.0
17	8.0	5.5	6.5	4.0	3.5	4.0	3.5	3.0	3.5	3.5	2.5	3.0
18	8.0	5.0	6.5	3.5	2.5	3.0	3.5	3.5	3.5	3.5	3.0	3.5
19	8.5	5.5	7.0	2.0	1.0	1.5	3.5	3.5	3.5	3.5	3.0	3.5
20	8.0	5.0	6.5	1.0	.5	.5	3.5	2.0	2.5	3.5	3.0	3.5
21	7.0	5.0	6.0	.5	.0	.5	2.5	2.0	2.0	4.0	3.5	3.5
22	7.5	5.0	6.0	.5	.0	.5	3.0	2.0	2.5	4.0	3.5	3.5
23	6.5	5.0	5.5	.5	.5	.5	3.0	2.5	3.0	3.5	2.0	3.0
24	7.5	5.5	6.0	1.0	.5	.5	3.0	1.5	2.5	3.0	2.0	2.5
25	7.5	6.5	7.0	1.0	.5	1.0	2.0	1.5	1.5	3.5	2.5	3.0
26	8.0	6.0	7.0	2.0	1.5	2.0	2.0	1.0	1.5	3.5	3.0	3.5
27	6.5	4.0	5.5	3.5	2.0	3.0	1.5	.5	1.0	4.0	3.0	3.5
28	6.5	5.5	6.0	3.5	3.0	3.0	1.0	.5	.5	3.5	3.0	3.5
29	7.0	6.0	6.5	4.0	3.5	3.5	1.0	.5	1.0	3.5	3.0	3.5
30	6.0	6.0	6.0	3.0	2.5	3.0	2.0	.5	1.0	3.5	3.0	3.0
31	6.5	5.5	6.0	---	---	---	1.5	.5	.5	3.0	1.5	2.0
MONTH	10.0	4.0	6.5	6.0	.0	3.5	4.0	.5	2.5	4.0	.0	2.5

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TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	1.5	1.0	1.0	4.0	2.5	3.0	5.0	4.5	5.0	8.5	6.0	7.0
2	1.0	.0	.5	4.0	1.0	2.0	5.5	4.5	5.0	7.0	5.5	6.5
3	2.5	1.5	2.0	3.0	.5	2.0	6.0	4.5	5.0	6.0	5.0	5.5
4	4.0	2.5	3.0	4.0	2.0	3.0	6.5	4.5	5.5	6.5	5.0	5.5
5	4.0	3.0	3.5	4.0	2.5	3.5	6.0	5.0	5.5	7.0	5.5	6.0
6	4.5	4.0	4.0	5.5	3.5	4.5	6.0	4.5	5.0	8.0	5.5	6.5
7	5.0	3.5	4.5	5.0	3.0	4.0	6.5	4.5	5.5	9.0	5.5	7.0
8	5.0	4.0	4.5	5.5	4.5	5.0	6.5	5.0	5.5	9.5	5.5	7.0
9	3.5	3.0	3.5	6.5	4.5	5.5	8.0	4.0	6.0	7.5	6.5	7.0
10	5.0	3.5	4.0	7.0	4.0	5.0	8.0	5.0	6.5	6.5	5.5	6.0
11	4.0	2.5	3.0	6.0	4.0	5.0	6.5	5.5	6.0	6.5	5.5	5.5
12	3.0	1.0	2.0	5.5	4.5	5.0	7.0	4.0	5.5	6.5	5.5	6.0
13	2.5	.5	1.5	5.0	4.5	4.5	7.5	4.5	5.5	6.5	6.0	6.0
14	3.0	1.5	2.0	5.5	4.0	4.5	---	---	---	6.5	6.0	6.0
15	3.5	1.5	2.5	6.5	3.0	4.5	---	---	---	6.0	5.5	6.0
16	4.0	2.5	3.0	6.0	4.0	5.0	---	---	---	6.5	5.5	6.0
17	4.0	2.5	3.0	7.0	4.0	5.5	---	---	---	7.0	6.0	6.5
18	4.0	3.0	3.5	8.5	4.5	6.0	---	---	---	6.5	6.5	7.5
19	4.5	3.5	4.0	6.5	4.5	5.5	---	---	---	9.0	6.5	7.5
20	5.5	4.0	4.5	8.0	4.0	5.5	---	---	---	8.5	6.5	7.5
21	5.0	3.5	4.0	7.0	4.0	5.5	---	---	---	8.0	6.5	7.5
22	5.5	4.0	4.5	7.0	4.5	5.5	---	---	---	7.5	6.5	7.0
23	4.5	4.0	4.0	7.5	4.5	5.5	---	---	---	6.5	6.0	6.5
24	5.0	3.5	4.5	5.5	4.0	4.5	---	---	---	5.0	6.0	6.0
25	5.5	3.5	4.5	4.5	4.0	4.0	---	---	---	7.0	5.5	6.5
26	5.5	4.0	4.5	6.0	4.0	4.5	---	---	---	8.0	6.0	7.0
27	5.0	3.5	4.5	6.5	4.0	5.0	6.5	---	---	8.0	7.0	7.5
28	4.5	3.0	4.0	5.5	4.5	5.0	5.5	5.0	5.5	7.5	6.5	7.0
29	---	---	---	6.5	4.5	5.0	6.0	5.0	5.5	6.5	6.0	6.0
30	---	---	---	5.5	4.5	5.0	7.0	5.5	6.0	7.5	5.5	6.5
31	---	---	---	6.0	4.0	5.0	---	---	---	8.0	6.5	7.0
MONTH	5.5	.0	3.5	8.5	.5	4.5	8.0	4.0	5.5	9.5	5.0	6.5
JUNE				JULY			AUGUST			SEPTEMBER		
1	10.0	6.5	8.0	12.5	9.0	10.5	17.5	11.5	14.5	13.0	10.0	11.5
2	10.0	7.0	8.0	13.5	9.5	11.0	17.5	12.0	14.5	15.0	9.5	12.0
3	9.5	7.0	8.0	11.5	10.0	10.5	17.5	11.5	14.5	15.0	10.0	12.5
4	9.5	7.0	8.0	10.5	9.0	10.0	17.0	11.5	14.5	16.0	10.5	13.0
5	10.0	7.5	8.5	11.5	9.5	10.0	16.0	12.0	15.0	14.0	11.5	12.5
6	10.5	8.5	9.5	13.5	9.0	11.0	17.5	11.5	14.5	13.5	11.5	12.5
7	11.0	9.0	10.0	12.5	10.0	11.5	18.0	11.5	14.5	12.5	11.0	12.0
8	10.5	9.0	9.5	14.5	10.0	11.5	16.0	12.0	15.0	11.0	10.0	10.5
9	9.5	8.5	9.0	14.5	10.5	12.5	18.0	12.0	15.0	15.0	9.0	11.0
10	8.5	7.5	8.0	12.5	10.5	11.5	17.0	12.0	14.5	12.0	10.0	11.0
11	9.0	8.0	8.5	11.0	9.0	9.5	15.5	12.0	14.0	10.5	9.5	10.0
12	9.0	7.5	8.0	13.5	8.0	10.5	14.5	11.5	12.5	11.0	9.0	10.0
13	8.0	7.5	8.0	15.0	9.0	11.5	14.0	11.0	12.0	11.0	9.0	9.5
14	9.0	7.0	8.0	15.5	10.0	12.5	13.0	10.0	11.5	12.5	8.5	10.5
15	8.0	7.0	7.5	14.5	11.0	12.5	11.5	10.0	10.5	11.0	9.0	10.0
16	8.0	6.5	7.5	12.5	10.5	11.5	10.5	9.5	10.0	10.5	8.0	9.0
17	10.0	7.0	8.5	10.5	9.5	10.0	11.0	9.0	10.0	10.0	7.0	8.5
18	11.0	7.5	9.0	13.5	9.0	10.5	12.5	9.0	10.5	9.5	6.5	8.0
19	11.0	8.0	9.5	14.5	9.5	11.5	12.0	9.5	11.0	10.0	6.5	8.0
20	11.5	7.5	9.0	15.5	10.0	12.5	11.0	10.0	10.5	10.0	6.5	8.0
21	11.5	8.5	9.5	15.5	10.0	12.5	13.0	9.5	11.0	8.5	7.5	8.0
22	12.0	8.5	10.0	16.5	10.5	13.0	11.0	9.5	10.5	9.0	7.5	8.0
23	11.0	9.5	10.0	15.5	10.5	13.0	13.0	9.5	11.0	9.5	8.0	8.5
24	11.0	9.0	9.5	17.0	11.0	13.5	13.5	9.0	11.0	11.5	8.0	9.5
25	9.0	8.0	8.5	17.0	10.5	13.5	12.5	9.5	11.0	12.5	8.5	10.0
26	12.0	8.0	9.5	15.5	11.0	13.5	14.0	8.5	11.0	12.5	8.0	10.0
27	13.0	9.0	10.5	13.0	11.5	12.0	14.0	8.5	11.0	10.5	9.0	10.0
28	13.0	9.0	11.0	17.0	10.5	13.5	14.0	8.5	11.5	9.5	8.0	8.5
29	12.5	10.0	11.0	17.5	11.0	14.0	15.0	9.5	12.0	11.0	8.0	9.0
30	11.0	9.5	10.0	17.5	11.0	14.0	13.5	10.0	11.5	9.0	7.5	8.5
31	---	---	---	17.5	11.0	14.0	12.0	10.5	11.0	---	---	---
MONTH	13.0	6.5	9.0	17.5	8.0	12.0	18.0	8.5	12.5	16.0	6.5	10.0
YEAR	18.0	.0	6.5									

PEND OREILLE RIVER BASIN

12392000 CLARK FORK AT WHITEHORSE RAPIDS, NEAR CABINET, ID

LOCATION.--Lat 48°05'18", long 116°04'16", in SW¼NW¼ sec.27, T.55 N., R.3 E., Bonner County, Hydrologic Unit 17010213, on right bank, 0.8 mi (1.3 km) downstream from Cabinet Gorge Dam at cableway, 2.1 mi (3.4 km) downstream from Blue Creek, 6.1 mi (9.8 km) southeast of Clark Fork, and at mile 149.1 (239.9 km). Discharge computed at Whitehorse Rapids, 2.3 mi (3.7 km) downstream.

DRAINAGE AREA.--22,073 mi² (57,169 km²), based on revised area of 22,067 mi² (57,154 km²) for site 0.4 mi (0.6 km) upstream.

PERIOD OF RECORD.--September 1928 to current year. Prior to October 1952, published as "near Heron, MT."

REVISED RECORDS.--WSP 1182: 1936. WSP 1736: 1931, 1936(m), 1937.

GAGE.--Water-stage recorder. Datum of gage is 2,060.00 ft (627.888 m) National Geodetic Vertical Datum of 1929, levels by Washington Water Power Co. See WSP 1934 for history of changes made prior to Sept. 30, 1952. Water-stage recorder at site 0.4 mi (0.6 km) upstream at datum 60.00 ft (18.288 m) 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 January, which are fair. Flow regulated by Hungry Horse Reservoir and Flathead Lake. Extreme diurnal fluctuation caused by powerplant at Cabinet Gorge Dam. Diversions above station for irrigation of about 354,000 acres (143,000 hm²). Discharge measurements indicate about 800 ft³/s (22.7 m³/s) ground-water inflow between Cabinet Gorge Dam and Whitehorse Rapids. Records given herein represent flow at Whitehorse Rapids, computed by adding 600 ft³/s (17.0 m³/s) to observed flows at the measuring cableway, and are considered comparable to records at former site near Heron, except for minor surface inflow from additional drainage area. To determine flow at Cabinet Gorge Dam, 800 ft³/s (22.7 m³/s) should be deducted from discharges published herein.

AVERAGE DISCHARGE.--50 years, 22,410 ft³/s (634.7 m³/s), 16,240,000 acre-ft/yr (20.0 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 153,000 ft³/s (4,333 m³/s) May 29 to June 1, 1948; maximum gage height, 50.97 ft (15.536 m) May 31, 1948, site and datum then in use; minimum observed, 270 ft³/s (7.65 m³/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 ft³/s (21.6 m³/s) Sept. 2, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a discharge of 195,000 ft³/s (5,520 m³/s) from floodmark, elevation 2,137.1 ft (651.39 m) at site about 4 mi (6 km) upstream and 0.1 mi (0.2 km) below "near Heron" site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 71,700 ft³/s (2,031 m³/s) June 10, gage height, 20.55 ft (6.264 m), minimum, 1,040 ft³/s (29.4 m³/s) Oct. 2, gage height, 4.20 ft (1.280 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	JCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6420	16300	14600	10300	17000	17400	30600	26800	52800	53900	18900	14500
2	7050	17000	15200	11400	13300	15300	32000	31500	52800	49500	17700	12300
3	13200	17600	17400	10300	21200	17000	31400	33600	52600	43700	20000	10700
4	14000	17100	16500	12700	17700	9260	30200	41600	53800	48100	20100	13000
5	11800	18300	16400	13400	11100	13500	31700	39300	53700	47900	15700	11700
6	11000	12200	19100	17300	17700	15600	31700	35400	54500	48400	5480	15300
7	16900	12700	14500	15000	17800	13100	31700	35500	53400	48200	17700	16000
8	6820	15500	14100	11900	15300	10800	31800	35400	58500	47500	13600	12800
9	8680	12500	16000	19400	17300	12700	31600	35300	60600	47700	16200	10400
10	10800	15200	14200	20900	15900	13800	30600	35400	67200	47400	14000	16100
11	12300	17600	16500	15800	18200	13300	26200	35200	69100	45900	16100	13000
12	13300	16700	16100	20500	15700	15100	28000	34700	66800	43900	11600	14000
13	10800	13300	13500	15200	21000	14600	21000	33600	62200	40800	8040	10800
14	10800	15900	14600	15100	18100	15400	25900	33700	55200	35500	10900	15900
15	12200	15400	23000	11300	19200	16100	19200	39200	53200	33300	8580	11400
16	13500	17300	21200	16400	18700	12200	21700	51100	48600	27300	10300	15500
17	13200	13700	15500	17900	19000	16400	35100	51000	50500	28700	9620	12200
18	15000	12100	15600	17700	16300	14400	33900	47100	49300	27100	7080	16500
19	16500	16500	20400	18100	12900	19200	32500	50300	52300	26200	8500	13100
20	18000	18000	21800	16700	15400	20100	31900	50700	50400	31800	11400	13600
21	17600	19500	14700	15700	15000	12800	35600	50700	49800	34300	8700	15100
22	12700	16900	13400	15900	16400	22300	30700	51700	49800	32400	11000	16500
23	8000	13200	14100	18600	16700	21400	32900	52400	50100	28600	10300	16600
24	16800	10300	15300	15500	16700	17300	32200	51600	51200	28400	14100	11100
25	15000	8490	14500	17300	15500	15500	32600	50300	53500	17000	12600	16000
26	15900	12200	12700	18100	16700	12500	27400	50700	57300	18800	11400	15300
27	18400	11600	14600	16800	16700	19800	29600	50800	60200	21000	14100	10700
28	18000	14700	12100	16700	16800	23200	27700	50800	58200	21600	14200	12500
29	16900	14400	13800	17000	---	24000	18600	50800	54700	11200	11400	12200
30	9140	13900	12700	16900	---	24100	25100	52700	56100	17500	13200	13200
31	16900	---	15100	15500	---	28600	---	52800	---	18200	14500	---
TOTAL	407610	446090	489400	491300	469300	516760	883200	1341700	1658400	1071800	395000	408000
MEAN	13150	14870	15790	15850	16760	16670	29440	43280	55280	34570	12740	13600
MAX	18400	19500	23000	20900	21200	28600	35600	52800	69100	53900	20100	16600
MIN	6420	8490	12100	10300	11100	9260	18600	26800	48600	11200	5480	10400
AC-FT	808500	884800	970700	974500	930900	1025000	1752000	2661000	3289000	2126000	783500	809300
CAL YR 1977	TOTAL	4728910	MEAN	12960	MAX	28300	MIN	3350	AC-FT	9380000		
WTR YR 1978	TOTAL	8578560	MEAN	23500	MAX	69100	MIN	5480	AC-FT	17020000		

Smaller reservoirs in Pend Oreille River basin in Montana

12325000 GEORGETOWN LAKE.--Lat 46°12'55", long 113°16'40", in SW¼ sec.6, T.5 N., R.13 W., Granite County, Hydrologic Unit 17010202, at dam on Flint Creek, 2 mi (3 km) west of Southern Cross, 8 mi (13 km) south of Philipsburg, and at mile 38.8 (62.4 km). DRAINAGE AREA, 50.1 mi² (129.8 km²). PERIOD OF RECORD, October 1939 to current year. May to July 1948 daily elevations and contents, published in WSP 1080. Records of daily elevations since October 1940 are in files of Helena district office. Nonrecording gage read daily. Datum of gage is at mean sea level (levels by The Montana Power Co.).

Reservoir is formed by masonry and concrete dam. Storage began about 1905 to store water for pumpage into Warm Springs Creek for use of reduction works of Anaconda Copper Mining Co. at Anaconda, or for release through Flint Creek for irrigation, power development, and recreation. Usable capacity, 31,040 acre-ft (38.3 hm³) between elevation 6,398.00 ft (1,950.110 m), bottom of outlet pipes, and 6,429.50 ft (1,959.712 m), maximum design level. Figures given herein represent usable contents. Records furnished by The Montana Power Co. REVISED RECORDS, WSP 1316: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 31,640 acre-ft (39.0 hm³) Oct. 14, Dec. 2, 1975, elevation, 6,429.70 ft (1,959.773 m); minimum observed, 15,990 acre-ft (19.7 hm³) Apr. 28, 29, 1957, elevation, 6,424.15 ft (1,958.081 m).

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 31,400 acre-ft (38.7 hm³) Sept. 13, elevation, 6,429.62 ft (1,959.748 m); minimum observed, 22,910 acre-ft (28.2 hm³) Mar. 20, elevation, 6,426.68 ft (1,958.852 m).

12332500 EAST FORK ROCK CREEK RESERVOIR.--Lat 46°07'54", long 113°22'48", in NE¼ sec.6, T.4 N., R.14 W., Granite County, Hydrologic Unit 17010202, at dam on East Fork Rock Creek, 14 mi (23 km) southwest of Philipsburg, and at mile 9.7 (15.6 km). DRAINAGE AREA, 30.3 mi² (78.5 km²). PERIOD OF RECORD, October 1939 to current year (seasonal records only for most years 1946-60, 1964, 1968). Records for October 1955 to April 1956, published in WSP 1446, have been found to be in error and should not be used. May to August 1948 scattered daily contents, published in WSP 1080. Elevations determined by hand levels from reference points at indefinite intervals. Datum of gage is at mean sea level (levels by Montana Department of Natural Resources and Conservation).

Reservoir is formed by earthfill dam with concrete spillway completed in 1937; storage began in 1936. Usable capacity, 16,040 acre-ft (19.8 hm³) between elevation 5,990.0 ft (1,825.75 m), bottom of outlet, and 6,055.5 ft (1,845.72 m), spillway crest. Dead storage unknown. Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Montana Department of Natural Resources and Conservation. REVISED RECORDS, WSP 1316: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, in excess of 16,000 acre-ft (19.7 hm³) when reservoir was full and spilling at times in several years; no storage at times in 1955, 1961, 1966, 1973, 1977, and 1978.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 15,860 acre-ft (19.6 hm³) July 1, 16, elevation, 6,055.0 ft (1,845.56 m); no usable storage during the winter months.

12336500 NEVADA LAKE.--Lat 46°48'06", long 112°48'42", in NE¼ sec.14, T.12 N., R.10 W., Powell County, Hydrologic Unit 17010203, at dam on Nevada Creek, 7 mi (11 km) west of Finn. DRAINAGE AREA, 145 mi² (376 km²). PERIOD OF RECORD, October 1939 to current year (incomplete 1948, 1950-1958, 1961-62, 1965-66, 1969-70). Nonrecording gage usually read at or near end of month. Prior to October 1976, published as Nevada Creek Reservoir near Finn. Prior to 1961, elevations determined by hand level from spillway. Datum of gage is at mean sea level (levels by Montana Department of Natural Resources and Conservation).

Reservoir is formed by earthfill dam with concrete spillway completed in 1938. Usable capacity, 12,640 acre-ft (15.6 hm³) between elevation, 4,551.5 ft (1,387.50 m), bottom of outlet, and 4,616.0 ft (1,406.96 m), spillway crest. Dead storage, 12 acre-ft (14,800 m³) below elevation, 4,551.5 ft (1,387.50 m). Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Montana Department of Natural Resources and Conservation.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 13,520 acre-ft (16.7 hm³) June 3, 1953, elevation, 4,618.3 ft (1,407.66 m); no storage Aug. 14 to Oct. 31, 1973, Sept. 18, 1977.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 12,640 acre-ft (15.6 hm³) May 16, June 24, 4,616.0 ft (1,406.96 m); minimum contents, 100 acre-ft (123,000 m³) Oct. 1 (estimated).

12342000 PAINTED ROCKS LAKE.--Lat 45°43'06", long 114°16'45", in NE¼SE¼ sec.26, T.1 S., R.22 W., Ravalli County, Hydrologic Unit 17010205, at dam on West Fork Bitterroot River, 7 mi (11 km) upstream from Nez Perce Creek, 16.5 mi (26.5 km) southwest of Conner, 23 mi (37 km) south of Darby, and at mile 19.8 (31.0 km). DRAINAGE AREA, 317 mi² (821 km²). PERIOD OF RECORD, June 1940 to current year (incomplete 1956-58, 1960-61). Prior to December 1958, figures of contents may be total or usable. Records for August 1954, published only in WSP 1736. May to September 1948 scattered daily contents, published in WSP 1080. Prior to October 1959, published as West Fork Bitterroot River Reservoir near Conner. Elevations determined at or near end of month by hand levels from spillway or from staff gage on right wingwall above spillway. Prior to 1959, elevations determined by measuring from floor of control tower. Datum of gage is at mean sea level.

Reservoir is formed by earthfill dam with concrete spillway completed in 1940. Usable capacity, 31,700 acre-ft (39.1 hm³) between elevation 4,625.5 ft (1,409.85 m), bottom of outlet, and 4,725.5 ft (1,440.33 m), spillway crest. Dead storage, 656 acre-ft (809,000 m³) below elevation 4,625.5 ft (1,409.85 m). Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Montana Department of Natural Resources and Conservation prior to December 1958; most monthly readings made by Geological Survey personnel thereafter. REVISED RECORDS, WSP 1316: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 33,930 acre-ft (41.8 hm³) June 18, 1974, elevation, 4,728.7 ft (1,441.31 m); no storage October 1940 to January 1941, March 1952, March, April 1954, Apr. 25, 1973, winter of 1973-74, 1974-75, November, December 1976.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 33,020 acre-ft (40.7 hm³) May 25, elevation, 4,727.4 ft (1,440.91 m); minimum observed, 3,920 acre-ft (4.83 hm³) Feb. 22, elevation, 4,655.6 ft (1,419.03 m).

Smaller reservoirs in Pend Oreille River basin in Montana--Continued

12344500 LAKE COMO.--Lat 46°03'40", long 114°14'00", in NE¼NW¼ sec.32, T.4 N., R.21 W., Ravalli County, Hydrologic Unit 17010205, at dam on Rock Creek, 4 mi (6 km) northwest of Darby, and at mile 3.6 (5.8 km). DRAINAGE AREA, 54.6 mi² (141.4 km²). PERIOD OF RECORD, October 1939 to current year. April to August 1948 scattered daily gage height and contents, published in WSP 1080. Prior to October 1967, published as Como Lake. Nonrecording gage read at or near end of month in winter and more often during irrigation season but only monthend figures supplied. Datum of gage is at mean sea level.

Reservoir is formed by earthfill dam with concrete spillway completed in 1909. Usable capacity, 34,920 acre-ft (43.1 hm³) between elevation 4,188.0 ft (1,276.50 m), bottom of outlet, and 4,242.5 ft (1,293.11 m), spillway crest. Dead storage unknown below elevation 4,188.0 ft (1,276.50 m), elevation of natural lake outlet. Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Bitterroot Irrigation District. REVISED RECORDS, WSP 1316: Drainage area.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 36,920 acre-ft (45.5 hm³) June 30, 1957, June 30, 1960, July 1, 1963, June 1, 1964, elevation, 4,244.5 ft (1,293.72 m); no storage at times in several years.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 35,220 acre-ft (43.4 hm³) June 30, elevation, 4,242.8 ft (1,293.21 m); minimum observed, 799 acre-ft (985,000 m³) Oct. 3, elevation, 4,192.0 ft (1,277.72 m).

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 datum 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", in SE¼SE¼SW¼ sec.16, T.27 N., R.24 W., Flathead County, Hydrologic Unit 71010212, at dam on Little Bitterroot River, 2 mi (3 km) southwest of Marion and at mile 70.3 (113.1 km). DRAINAGE AREA, 31.8 mi² (82.4 km²). 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 (32.6 hm³) between elevation 3,897.98 ft (1,188.104 m) and 3,906.48 ft (1,190.695 m). No dead storage. Prior to 1960, usable capacity, 24,000 acre-ft (29.6 hm³).

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 26,880 acre-ft (33.1 hm³) May 31, 1959, elevation, 3,906.60 ft (1,190.732 m); no storage at times in 1939-46.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 6,100 acre-ft (7.52 hm³) Aug. 31, Sept. 30, elevation, 3,900.58 ft (1,188.897 m); minimum observed, 1,550 acre-ft (1.91 hm³) Oct. 31, Nov. 30, elevation, 3,898.73 ft (1,188.333 m).

12373500 HUBBART RESERVOIR.--Lat 47°55'43", long 114°43'53", in SE¼NE¼ sec.18, T.25 N., R.24 W., Flathead County, Hydrologic Unit 17010212, at dam on Little Bitterroot River, 9 mi (15 km) northwest of Niarada and at mile 55.8 (89.8 km). DRAINAGE AREA, 114 mi² (295 km²). PERIOD OF RECORD, December 1939, April 1940, September 1940 to current year.

Reservoir is formed by concrete variable-radius dam; storage began in 1924. Usable capacity, 12,120 acre-ft (14.9 hm³) between elevation 3,140.0 ft (957.07 m) and 3,210.0 ft (981.51 m). No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 13,050 acre-ft (16.1 hm³) May 31, 1959, elevation, 3,220.92 ft (987.736 m); no storage September to December 1959, Sept. 30, Oct. 1, 1973.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 9,700 acre-ft (12.0 hm³) July 31, elevation, 3,213.4 ft (979.44 m); minimum observed, 550 acre-ft (678,000 m³) Oct. 31, Nov. 30, elevation, 3,170.5 ft (966.37 m).

12375000 UPPER DRY FORK RESERVOIR.--Lat 47°44'55", long 114°40'53", in SE¼SE¼SW¼ sec.16, T.23 N., R.24 W., Sanders County, Hydrologic Unit 17010212, at dam on Dry Fork Creek, 4 mi (6 km) northwest of Lonepine. DRAINAGE AREA, 8.53 mi² (22.09 km²). 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 (3.46 hm³) between elevation 2,900.0 ft (883.92 m) and 2,928.5 ft (892.61 m). No dead storage. Prior to 1960, usable capacity, 2,700 acre-ft (3.33 hm³). Natural flow of Alder Creek in Thompson River basin is diverted in SW¼ 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, 2,940 acre-ft (3.63 hm³) June 30, 1971, June 30, 1976, elevation, 2,928.9 ft (892.73 m); no storage at times in 1940, 1942, 1943.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 2,910 acre-ft (3.59 hm³) May 31, elevation, 2,928.8 ft (892.70 m); minimum observed, 200 acre-ft (247,000 m³) Oct. 31, Nov. 30, elevation, 2911.5 ft (887.43 m).

12375500 DRY FORK RESERVOIR.--Lat 47°42'00", long 114°40'02", in SW¼NW¼NW¼ sec.3, T.22 N., R.24 W., Sanders County, Hydrologic Unit 17010202, at dam on Dry Fork Creek, 1 mi (2 km) west of Lonepine. DRAINAGE AREA, 17.8 mi² (46.1 km²). 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, 3,860 acre-ft (4.76 hm³) between elevation 2,830.5 ft (862.74 m) and 2,856.3 ft (870.60 m). No dead storage. Prior to 1960, usable capacity, 4,000 acre-ft (4.93 hm³).

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 4,080 acre-ft (5.03 hm³) Apr. 30, 1942, elevation, 2,856.91 ft (870.786 m); no storage Aug. 31, 1944, Aug. 31, Sept. 30, 1946, Oct. 31 1951.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 3,820 acre-ft (4.71 hm³) Apr. 30, May 31, elevation, 2,856.2 ft (870.57 m); minimum observed, 765 acre-ft (943,000 m³) Oct. 31, Nov. 30, elevation, 2,843.2 ft (866.61 m).

Smaller reservoirs in Pend Oreille River basin in Montana

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 datum, 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 maximums for individual reservoirs, published in WSP 1080.

- 12371000 TURTLE LAKE.--Lat 47°40'19", long 114°04'32", in SW¼NW¼NE¼ sec.18, T.22 N., R.19 W., at outlet works 4 mi (6 km) 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 (1.11 hm³) between elevation 3,061.0 ft (932.99 m) and 3,090.5 ft (941.98 m). No dead storage.
EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 899 acre-ft (1.11 hm³) June 30, 1956, June 30, 1964, elevation, 3,090.5 ft (941.98 m); no storage at times in July 1941, August, September 1944, October 1957, July, August, September 1977.
EXTREMES FOR CURRENT YEAR: Maximum contents observed, 774 acre-ft (954,000 m³) June 30, elevation, 3,088.5 ft (941.37 m); minimum observed, 05 acre-ft (6,170 m³) Oct. 31, Nov. 30, elevation, 3,061.5 ft (933.15 m).
- 12376700 LOWER CROW RESERVOIR.--Lat 47°30'09", long 114°13'35", in SW¼SE¼SE¼ sec.11, T.20 N., R.21 W., at outlet works on Crow Creek, 5.2 mi (8.4 km) northwest of Charlo, and at mile 3.44 (5.53 km); storage began in 1933. Usable capacity, 10,350 acre-ft (12.8 hm³) between elevation 2,800 ft (853.4 m) and 2,877.0 ft (876.91 m). No dead storage.
EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 10,770 acre-ft (13.3 hm³) May 21, 22, 1948, elevation, 2,878.2 ft (877.28 m); no storage Sept. 30, 1963.
EXTREMES FOR CURRENT YEAR: Maximum contents observed, 10,350 acre-ft (12.8 hm³) June 30, elevation, 2,877.0 ft (876.91 m); minimum observed, 6,350 acre-ft (7.83 hm³) Oct. 31, elevation, 2,863.0 ft (872.64 m).
- 12377200 MISSION RESERVOIR.--Lat 47°18'54", long 114°01'15", in NW¼SW¼SE¼ sec.15, T.18 N. R.19 W., at outlet works on Mission Creek, 4 mi (6 km) east of St. Ignatius and at mile 16.7 (26.9 km); storage began in 1935. Usable capacity, 7,250 acre-ft (8.94 hm³) between elevation 3,340.7 ft (1,018.25 m) and 3,406.0 ft (1,038.15 m).
EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 8,370 acre-ft (10.3 hm³) June 30, 1970, June 30, 1976, elevation, 3,409.8 ft (1,039.31 m); no storage at times during September 1949, February, March 1964.
EXTREMES FOR CURRENT YEAR: Maximum contents observed, 8,140 acre-ft (10.0 hm³) June 30, elevation, 3,409.0 ft (1,039.06 m); minimum observed, 429 acre-ft (529,000 m³) Feb. 28, elevation, 3,372.6 ft (1,027.97 m).
- 12377300 ST. MARYS LAKE.--Lat 47°15'58", long 113°56'08", in SW¼NE¼NE¼ sec.6, T.17 N., R.18 W., at outlet works on Dry Creek, 8 mi (13 km) 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, 23,300 acre-ft (28.7 hm³) between elevation 3,911.5 ft (1,192.23 m) and 4,025.0 ft (1,226.82 m), not including contents of natural lake. No dead storage.
EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 23,510 acre-ft (29.0 hm³) June 30, 1976, June 30, 1978, elevation, 4,025.7 ft (1,227.03 m); no storage Sept. 30, 1969.
EXTREMES FOR CURRENT YEAR: Maximum contents observed, 23,510 acre-ft (29.0 hm³) June 30, elevation, 4,025.7 ft (1,227.03 m); minimum observed, 1,510 acre-ft (1.86 hm³) Oct. 31, elevation, 3,921.3 ft (1,195.21 m).
- 12377900 PABLO RESERVOIR.--Lat 47°38'25", long 114°08'33", in SW¼SW¼NE¼ sec.27, T.22 N., R.20 W., at outlet works 3 mi (5 km) south of Polson, 3 mi (5 km) northwest of Pablo, fed entirely by various canals, some water supplied by Flathead pumping plant; storage began in 1914. Usable capacity, 27,100 acre-ft (33.4 hm³) between elevation 3,179 ft (969.0 m), gate sill, and 3,210.2 ft (978.47 m). No dead storage.
EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 28,120 acre-ft (34.7 hm³) June 30, 1968, elevation, 3,210.77 ft (978.643 m); no storage at times in several years.
EXTREMES FOR CURRENT YEAR: Maximum contents observed, 28,000 acre-ft (34.5 hm³) June 30, elevation, 3,210.7 ft (978.62 m); minimum observed, 11,850 acre-ft (14.6 hm³) Oct. 31, elevation, 3,200.9 ft (975.63 m).
- 12378200 McDONALD RESERVOIR.--Lat 47°25'31", long 113°59'27", in SE¼NE¼NE¼ sec.10, T.19 N., R.19 W., at outlet works on Post Creek, 9 mi (15 km) east of Charlo, and at mile 12.4 (20.0 km); storage began in 1919. Usable capacity, 8,220 acre-ft (10.1 hm³) between elevation 3,545.0 ft (1,080.52 m) and 3,598.0 ft (1,096.67 m), not including contents of natural lake. No dead storage.
EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 8,270 acre-ft (10.2 hm³) June 30, 1977, elevation, 3,598.2 ft (1,096.73 m); no storage Aug. 31, 1961, Aug. 30, 1966, Oct. 31, 1971, Apr. 30, 1972.
EXTREMES FOR CURRENT YEAR: Maximum contents observed, 8,230 acre-ft (10.1 hm³) July 31, elevation, 3,598.0 ft (1,096.67 m); minimum observed, 448 acre-ft (552,000 m³) Oct. 31, elevation, 3,549.6 ft (1,081.92 m).
- 12379700 KICKING HORSE RESERVOIR.--Lat 47°27'25", long 114°04'35", in SE¼NE¼NE¼ sec.36, T.20 N., R.20 W., at outlet works 4 mi (6 km) northeast of Charlo, fed entirely by various canals; storage began in 1930. Usable capacity, 8,350 acre-ft (10.3 hm³) between elevation 3,042.0 ft (927.20 m) and 3,061.94 ft (933.279 m). Dead storage, 70 acre-ft (86,300 m³) below elevation 3,042.0 ft (927.20 m).
EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 10,320 acre-ft (12.7 hm³) June 30, 1976, elevation, 3,064.4 ft (934.03 m); no storage Aug. 31, 1961.
EXTREMES FOR CURRENT YEAR: Maximum contents observed, 9,520 acre-ft (11.7 hm³) May 31, elevation, 3,063.4 ft (933.72 m); minimum observed, 4,000 acre-ft (4.93 hm³) Mar. 31, elevation, 3,055.7 ft (931.38 m).

Smaller reservoirs in Pend Oreille River basin in Montana--Continued

MISSION VALLEY RESERVOIRS--Continued

12380000 NINEPIPE RESERVOIR.--Lat 47°27'20", long 114°08'08", in NE¼NW¼NW¼ sec.34, T.20 N., R.20 W., at outlet works 2 mi (3 km) northeast of Charlo, fed entirely by various canals; storage began in 1911. Usable capacity, 14,870 acre-ft (18.3 hm³) between elevation 2,895.4 ft (882.52 m) and 3,010.0 ft (917.45 m). No dead storage.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 16,950 acre-ft (20.9 hm³) June 30, 1974, elevation, 3,012.3 ft (918.15 m); no storage Aug. 31, 1961.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 15,000 acre-ft (18.5 hm³) May 31, June 30, elevation, 3,010.1 ft (917.48 m); minimum observed, 4,950 acre-ft (6.10 hm³) Oct. 31, elevation, 3,002.2 ft (915.07 m).

12380500 LOWER JOCKO LAKE.--Lat 47°12'10", long 113°45'35", in NW¼SW¼NW¼ sec.27, T.17 N., R.17 W., Missoula County, Hydrologic Unit 17010212, at dam on Jocko River, 15 mi (24 km) east of Arlee, and at mile 39.3 (63.1 km). DRAINAGE AREA, 7.39 mi² (19.14 km²). 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 mean sea level (levels by Bureau of Indian Affairs).

Reservoir is formed by earthfill dam; storage began in 1937. Usable capacity, 5,380 acre-ft (7.87 hm³) between elevation 4,267.0 ft (1,300.58 m) and 4,340.0 ft (1,322.83 m). Prior to 1960, usable capacity, 7,600 acre-ft (9.37 hm³) at elevation 4,350 ft (1,325.9 m). Dead storage unknown below elevation 4,267 ft (1,300.6 m), elevation of natural lake outlet. Transmountain diversion takes water from Placid Creek in Clearwater River basin in SW¼ 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 (8.26 hm³) June 9, 1948, elevation, 4,342.7 ft (1,323.65 m); no storage at times.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 5,540 acre-ft (6.83 hm³) June 30, elevation, 4,332.6 ft (1,320.58 m); no storage most of year.

12390000 THOMPSON FALLS RESERVOIR.--Lat 47°35'42", long 115°21'36", in NE¼ sec.7, T.21 N., R.29 W., Sanders County, Hydrologic Unit 17010213, at dam on Clark Fork at Thompson Falls, at mile 208.0 (334.7 km). DRAINAGE AREA, 20,968 mi² (54,307 km²). 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 mean 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 (18.5 hm³) between elevation 2,380.0 ft (725.42 m), spillway crest, and 2,396.0 ft (730.30 m), top of flashboards. Dead storage unknown. Figures given herein represent usable contents. Water is used for power development and recreation. Records furnished by The Montana Power Company.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 16,060 acre-ft (19.8 hm³) Nov. 30, 1949, elevation, 2,396.7 ft (730.51 m); no storage July 31, 1958.

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 14,390 acre-ft (17.7 hm³) Oct. 31, Sept. 30, elevation, 2,395.6 ft (730.18 m); minimum observed, 3,130 acre-ft (3.86 hm³) May 31, elevation, 2,385.1 ft (726.98 m).

12391300 NOXON RAPIDS RESERVOIR.--Lat 47°57'38", long 115°44'00", in NE¼SW¼SW¼ sec.33, T.26 N., R.32 W., Sanders County, Hydrologic Unit 17010213, at dam on Clark Fork, 3 mi (5 km) southeast of Noxon, 7.2 mi (11.6 km) upstream from Bull River, and at mile 169.7 (273.0 km). DRAINAGE AREA, 21,833 mi² (56,547 km²). 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 mean 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 (413 hm³) between elevation 2,270.00 ft (691.896 m), minimum operating level, and 2,331.00 ft (710.489 m). Figures given herein represent usable contents. Water is used for power and production, flood control, and recreation. Records furnished by The Washington Water Power Company.

EXTREMES FOR PERIOD OF RECORD: Maximum contents, 335,400 acre-ft (414 hm³) Apr. 7, 1960, elevation, 2,331.10 ft (710.519 m); minimum since first filling, 26,380 acre-ft (32.5 hm³) May 10, 1967, elevation, 2,277.15 ft (694.075 m).

EXTREMES FOR CURRENT YEAR: Maximum contents, 333,900 acre-ft (412 hm³) June 29, July 5, elevation, 2,330.91 ft (710.461 m); minimum 185,200 acre-ft (228 hm³) Apr. 25, elevation, 2,309.80 ft (704.027 m).

Smaller reservoirs in Pend Oreille River basin in Montana--Continued

Monthend contents, in acre-ft, water year October 1977 to September 1978

Date	Georgetown Lake	East Fork Rock Creek Reservoir	Nevada Creek Reservoir	Painted Rocks Lake	Lake Como	Camas Reservoir	Mission Valley Reservoirs
Sept. 30	27,710	0	c 100	a 17,320	a 679	3,200	26,740
Oct. 31	27,770	-	a 1,140	a 13,380	b 4,230	3,070	30,860
Nov. 30	28,250	-	808	a 10,680	a 7,060	3,070	35,070
Dec. 31	27,170	-	a 1,060	a 8,700	a 11,660	3,390	35,240
Jan. 31	24,970	-	a 840	a 5,940	13,510	1,910	39,970
Feb. 28	23,860	-	b 1,010	a 4,210	a 13,110	3,340	38,310
Mar. 31	23,360	-	7,520	a 11,850	13,990	8,840	51,560
Apr. 30	24,580	-	a 11,930	a 32,390	a 21,580	15,080	70,610
May 31	27,470	9,530	a 12,640	a 32,960	a 28,510	17,240	94,820
June 30	30,090	b 15,860	b 11,450	a 32,600	35,220	21,190	103,000
July 31	31,100	b 12,150	12,370	a 31,950	a 31,860	20,350	97,210
Aug. 31	30,860	b 8,310	9,510	a 30,700	a 16,170	18,000	71,290
Sept. 30	30,680	b 8,030	a 5,470	a 26,640	a 6,650	16,720	66,650

Date	Lower Jocko Lake	Thompson Falls Reservoir	Noxon Rapids Reservoir
Sept. 30	0	12,030	315,300
Oct. 31	0	14,390	319,600
Nov. 30	0	10,880	325,100
Dec. 31	--	10,150	316,500
Jan. 31	--	11,010	321,200
Feb. 20	--	12,980	258,600
Mar. 31	0	13,960	255,000
Apr. 30	374	10,760	250,300
May 31	4,480	3,130	266,300
June 30	5,540	4,150	333,700
July 31	4,760	7,360	324,400
Aug. 31	2,570	14,240	322,000
Sept. 30	0	14,390	327,500

a Interpolated.

b Figure of contents for first day of following month.

c Estimate

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or floodflow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a second table.

Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain, but it is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (ft)	Dis-charge (ft ³ /s)
Part 6 CLARK CANYON BASIN							
06015430	Clark Canyon near Dillon	Lat 45°00'56", long 112°50'10", in SE¼SW¼ sec.28, T.9 S., R.10 W., Beaverhead County, Hydrologic Unit 10020002, at culvert on county road 1.6 mi (2.6 km) north of Interstate Highway 15 and junction to Clark Canyon Dam, 17.0 mi (27.4 km) southwest of Dillon.	18.0	1969 1974-78	a 5-20-78	3.60 2.55	b 88 43
RUBY RIVER BASIN							
06019400	Sweetwater Creek near Alder	Lat 45°04'39", long 112°13'32", in NW¼SW¼ sec.4, T.9 S., R.4 W., Madison County, Hydrologic Unit 10020003, at bridge on county road 0.6 mi (1.0 km) upstream from small reservoir, 18 mi (29 km) south of Alder.	81.5	1977 1974-78	----- 4-01-78	----- 1.89	c278 57
06019800	Idaho Creek near Alder	Lat 45°11'51", long 112°08'20", in center of sec.30, T.7 S., R.4 W., Madison County, Hydrologic Unit 10020003, at bridge on county road 9 mi (15 km) south of Alder.	11.0	1960-78	4-01-78	.62	27
BIG HOLE RIVER BASIN							
06025100	Quartz Hill Gulch near Wise River	Lat 45°46'35", long 112°51'41", in NE¼SE¼ sec.5, T.1 S., R.10 W., Beaverhead County, Hydrologic Unit 10020004, 210 ft (64 m) upstream from State Highway 43, 4.2 mi (6.8 km) east of Wise River.	14.3	1974-78	4-01-78	1.38	8
FISH CREEK BASIN							
06027700	Fish Creek near Silver Star	Lat 45°46'18", long 112°14'56", in NW¼ sec.8, T.1 S., R.5 W., Silver Bow County, Hydrologic Unit 10020005, at bridge on county road, 6 mi (10 km) north of Silver Star.	38.9	1959-78	3-31-78	1.97	250
TRIBUTARY BETWEEN FISH CREEK AND BOULDER RIVER							
06030300	Jefferson River tributary No. 2 near Whitehall	Lat 45°52'48", long 111°58'28", in SE¼ sec.33, T.2 N., R.3 W., Jefferson County, Hydrologic Unit 10020005, at culvert on State Highway 281, 6 mi (10 km) east of Whitehall.	4.50	1958-78	3-07-78	-1.01	10
BOULDER RIVER BASIN							
06031950	Cataract Creek near Basin	Lat 46°17'10", long 112°14'33", in NW¼SW¼ sec.9, T.6 N., R.5 W., Jefferson County, Hydrologic Unit 10020006, on bridge on county road 200 ft (61.0 m) upstream from Big Limber Gulch, 2.1 mi (3.4 km) northeast of Basin.	30.6	1973-78	5-22-78	2.83	370

See footnotes at end of table, p. 760

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (ft)	Dis-charge (ft ³ /s)
MADISON RIVER BASIN							
06038550	Cabin Creek near West Yellowstone	Lat 44°52'19", long 111°20'29", in NW¼ sec.15, T.11 W., R.3 E., Gallatin County, Hydrologic Unit 10020007, at Cabin Creek Campground on U.S. Highway 191, 19 mi (31 km) northwest of West Yellowstone.	30.3	1974-78	6-10-78	2.54	460
GALLATIN RIVER BASIN							
06043300	Logger Creek near Gallatin Gateway	Lat 45°27'17", long 111°14'38", in SW¼ sec.28, T.4 S., R.4 E., Gallatin County, Hydrologic Unit 10020008, at culvert on U.S. Highway 191, 10 mi (16 km) south of Gallatin Gateway.	2.48	1959-78	6-10-78	.61	13
06046500	Rocky Creek near Bozeman	Lat 45°39'17", long 110°56'33", in NE¼ sec.23, T.2 S., R.6 E., Gallatin County, Hydrologic Unit 10020008, 5 mi (8 km) east of Bozeman.	50.5	1951-53† 1956-57 1959-78	4-01-78	2.47	480
SIXTEENMILE CREEK BASIN							
06053050	Lost Creek near Ringling	Lat 46°45'38", long 110°47'08", in SE¼ sec.24, T.6 N., R.7 E., Meagher County, Hydrologic Unit 10030101, on bridge on U.S. Highway 89, 1 mi (2 km) southwest of Ringling.	9.59	1974-78	3-26-78	2.89	130
DEEP CREEK BASIN							
06056300	Cabin Creek near Townsend	Lat 46°20'00", long 111°13'05", in NW¼ sec.27, T.7 N., R.4 E., Broadwater County, Hydrologic Unit 10030101, 100 ft (30 m) upstream from mouth, 14.5 mi (23.3 km) east of Townsend.	11.8	1960-78	5-10-78	1.39	52
SPOKANE CREEK BASIN							
06058700	Mitchell Gulch near East Helena	Lat 46°34'20", long 111°49'21", in NW¼ sec.2, T.9 N., R.2 W., Lewis and Clark County Hydrologic Unit 10030101, at culvert on U.S. Highway 12, 4.7 mi (7.6 km) east of East Helena.	8.09	1959-78	3-20-78	.46	82
WEGNER CREEK BASIN							
06071600	Wegner Creek at Craig	Lat 47°04'35", long 111°57'17", in NW¼ sec.11, T.15 N., R.3 W., Lewis and Clark County, Hydrologic Unit 10030102, at bridge on U.S. Highway 91, 0.9 mi (1.4 km) east of Craig.	35.7	1960-78	5-18-78	.75	120
DEARBORN RIVER BASIN							
06073600	Black Rock Creek near Augusta	Lat 47°17'28", long 112°09'46", in NE¼NW¼ sec.30, T.18 N., R.4 W., Lewis and Clark County, Hydrologic Unit 10030102, at culvert 0.1 mi (0.2 km) north of Bowmans Corner on U.S. Highway 287, 17.5 mi (28.2 km) southeast of Augusta.	5.54	1974-78	3-17-78	6.90	380
SMITH RIVER BASIN							
06076700	Sheep Creek near Neihart	Lat 46°47'59", long 110°42'10", in SE¼ sec.15, T.12 N., R.8 E., Meagher County, Hydrologic Unit 10030103, at culvert on U.S. Highway 89, 10 mi (16 km) south of Neihart.	5.23	1960-78	5-17-78	1.55	70
06077300	Trout Creek near Eden	Lat 47°07'10", long 111°22'19", in NE¼SE¼ sec.29, T.15 N., R.3 E., Cascade County, Hydrologic Unit 10030103 at bridge on county road at old town site of Millegan, 18.0 mi (29.0 km) south of Eden.	13.2	1974-78	5-08-78	d3.44	b 54

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (ft)	Dis-charge (ft ³ /s)
SMITH RIVER BASIN--Continued							
06077800	Goodman Coulee near Eden	Lat 47°19'29", long 111°25'35", in center of sec.12, T.18 N., R.2 E., Cascade County, Hydrologic Unit 10030103, at culvert on county road, 8 mi (13 km) northwest of Eden.	22.1	1959-78	3-19-78	d6.58	b150
BELT CREEK BASIN							
06090550	Little Otter Creek near Raynesford	Lat 47°15'05", long 110°43'50", in SW¼NW¼ sec.8, T.17 N., R.8 E., Judith Basin County, Hydrologic Unit 10030105, at culvert on Secondary Highway 427, 1.0 mi (1.6 km) south of Raynesford.	41.7	1974-78	3-20-78	5.05	96
SHONKIN CREEK BASIN							
06090810	Ninemile Coulee near Fort Benton	Lat 47°42'01", long 110°42'12", in SE¼SE¼ sec.34, T.23 N., R.8 E., Chouteau County, Hydrologic Unit 10030102, at culverts on county road, 8.5 mi (13.7 km) south of Missouri River bridge at Fort Benton.	19.1	1972-78	3-21-78	5.04	126
MARIAS RIVER BASIN							
06097100	Blacktail Creek near Heart Butte	Lat 48°14'56", long 112°47'19", in NW¼NW¼ sec.28, T.29 N., R.9 W., Pondera County, Hydrologic Unit 10030201, at bridge on county road, 3.3 mi (5.3 km) southeast of Heart Butte.	16.4	1975-78	7-07-78	5.20	1,000
06098700	Powell Coulee near Browning	Lat 48°45'01", long 112°45'21", in SE¼NE¼ sec.34, T.35 N., R.9 W., Glacier County, Hydrologic Unit 10030202, at culvert on Secondary Highway 444, 18 mi (29 km) north-east of Browning.	12.7	1974-78	3-18-78	d11.06	340
06100300	Lone Man Coulee near Valier	Lat 48°14'10", long 112°13'49", in SE¼ sec.27, T.29 N., R.5 W., Pondera County, Hydrologic Unit 10030203, at culvert on county road, 5 mi (8 km) south of Valier.	14.1	1960-78	3-19-78	7.96	500
06101520	Favot Coulee tributary near Ledger	Lat 48°15'47", long 111°42'09", in SE¼SW¼ sec.14, T.29 N., R.1 W., Pondera County, Hydrologic Unit 10030203, at culvert on Highway 366, 0.3 mi (0.5 km) east of Higgins School, 5.5 mi (8.9 km) east of Ledger.	.86	1974-78	3-29-78	3.50	54
06101700	Fey Coulee tributary near Chester	Lat 48°27'31", long 111°04'47", near center of east line of sec.9, T.31 N., R.5 E., Liberty County, Hydrologic Unit 10030203, at culvert on county road, 6.5 mi (10.5 km) southwest of Chester.	2.47	1963-78	3-31-78	5.26	97
06105800	Bruce Coulee tributary near Choteau	Lat 47°44'07", long 112°15'05", near center of sec.21, T.23 N., R.5 W., Teton County, Hydrologic Unit 10030205, at bridge on county road 1.2 mi (1.9 km) west of State Highway 287, 6 mi (10 km) southwest of Choteau.	1.70	1963-78	7-02-78	2.37	142
LITTLE SANDY CREEK BASIN							
06109530	Little Sandy Creek tributary near Virgelle	Lat 48°05'15", long 109°56'34", in NW¼NW¼ sec.21, T.27 N., R.14 E., Choteau County, Hydrologic Unit 10040101, at culvert on county road, 10 mi (16 km) southeast of Big Sandy.	.80	1972 1974-78	3-29-78	1.65	4

See footnotes at end of table, p. 760

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (ft)	Dis- charge (ft ³ /s)
ALKALI COULEE BASIN							
06109560	Alkali Coulee tributary near Virgelle	Lat 48°03'19", long 110°05'21", in SW¼NW¼ sec.21, T.27 N., R.14 E., Choteau County, Hydrologic Unit 10040101, on bridge on county road, 9.1 mi (14.6 km) southeast of Big Sandy.	0.96	1974-78	3-28-78	2.07	11
JUDITH RIVER BASIN							
06111700	Mill Creek near Lewistown	Lat 46°59'44", long 109°26'49", in NE¼ sec.9, T.14 N., R.18 E., Fergus County, Hydrologic Unit 10040105, at culverts on county road, 5 mi (8 km) south of Lewistown.	3.53	1960-78	7-04-78	4.49	57
06112800	Bull Creek tributary near Hilger	Lat 47°15'10", long 109°21'51", in NW¼NE¼ sec.12, T.17 N., R.18 E., Fergus County, Hydrologic Unit 10040103, at culvert on county road, 0.4 mi (0.6 km) west of Hilger.	.99	1974-78	7-04-78	4.66	78
06114550	Wolf Creek tributary near Coffee Creek	Lat 47°17'56", long 110°07'57", in NE¼NE¼ sec.25, T.18 N., R.12 E., Judith Basin County, Hydrologic Unit 10040103, at culverts on county road 4 mi (6 km) southwest of Coffee Creek.	1.73	1974-78	7-04-78	5.55	780
DOG CREEK BASIN							
06114900	Taffy Creek tributary near Winifred	Lat 47°39'06", long 109°15'33", in SW¼NW¼ sec.26, T.22 N., R.19 E., Fergus County, Hydrologic Unit 10040101, at culvert on county road, 8.5 mi (13.7 km) northeast of Winifred.	2.47	1974-78	5-18-78	5.94	134
DUVAL CREEK BASIN							
06115300	Duval Creek near Landusky	Lat 47°45'17", long 108°42'23", in center of sec.13, T.23 N., R.23 E., Phillips County, Hydrologic Unit 10040104, at culvert on U.S. Highway 191, 10.0 road mi (16.1 km) north of Fred Robinson Bridge, 11 mi (18 km) southwest of Landusky.	3.31	1963-78	7-04-78	3.89	80
MUSSELSHELL RIVER BASIN							
06117800	Dirty Creek near Martinsdale	Lat 46°33'00", long 110°18'52", in SW¼SW¼ sec.11, T.9 N., R.11 E., Meagher County, Hydrologic Unit 10040201, at culvert on county road, 6.5 mi (10.5 km) north of Martinsdale.	2.82	1972 1974-78	3-29-78	5.69	195
06120800	Antelope Creek tributary No. 2 near Harlowton	Lat 46°27'47", long 109°49'29", in SE¼ sec.10, T.8 N., R.15 E., Wheatland County, Hydrologic Unit 10040201, at E.S. Bacon ranch, 1.5 mi (2.4 km) north of Harlowton.	21.2	1956-78	3-21-78	2.87	427
06123200	Spring Creek tributary near Harlowton	Lat 46°11'35", long 109°54'10", in NW¼NW¼ sec.18, T.5 N., R.15 E., Sweet Grass County, Hydrologic Unit 10040201, at culverts on U.S. Highway 191, 17 mi (27 km) south of Harlowton.	2.10	1971 1973-78	7-04-78	1.70	11
06124600	East Fork Roberts Creek tributary near Judith Gap	Lat 46°40'51", long 109°40'24", in SE¼SW¼ sec.26, T.11 N., R.16 E., Wheatland County, Hydrologic Unit 10040201, at culvert on Secondary Highway 248, 3.5 mi (5.6 km) east of Judith Gap.	.74	1974-78	3-30-78	3.59	69
06125520	Swimming Woman Creek tributary near Living Springs	Lat 46°36'24", long 109°21'33", in SW¼SW¼ sec.20, T.10 N., R.19 E., Golden Valley County, Hydrologic Unit 10040201, at culvert on county road, 8 mi (13 km) northeast of Living Springs.	1.73	1974-78	1978	-----	(e)

See footnotes at end of table, p. 760

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (ft)	Dis- charge (ft ³ /s)
MUSSELSHELL RIVER BASIN--Continued							
06125680	Big Coulee Creek tributary near Cushman	Lat 46°14'50", long 109°01'58", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.24, T.6 N., R.21 E., Golden Valley County, Hydrologic Unit 10040201, at culvert on county road, 3.0 mi (4.8 km) south of Cushman.	1.23	1974-78	3-27-78	2.54	16
06127505	Fish Creek near Musselshell	Lat 46°27'25", long 108°06'36", in NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.9, T.8 N., R.29 E., Musselshell County, Hydrologic Unit 10040202, at culvert on county road, 4.5 mi (7.2 km) southwest of Musselshell.	17.8	1974-78	3-21-78	3.27	32
06127520	Home Creek near Sumatra	Lat 46°38'14", long 107°37'12", in SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.7, T.10 N., R.33 E., Rosebud County, Hydrologic Unit 10040202, 100 ft (305 m) upstream from U.S. Highway 12, 3.7 mi (6.0 km) northwest of Sumatra.	1.98	1973-78	3-26-78	2.71	126
06127570	Butts Coulee near Melstone	Lat 46°38'49", long 107°49'15", in center of E $\frac{1}{4}$ sec.9, T.10 N., R.31 E., Musselshell County, Hydrologic Unit 10040202, at culvert on county road, 4 mi (6 km) northeast of Melstone.	5.96	1963-78	3-27-78	5.49	165
06127585	Little Wall Creek tributary near Flatwillow	Lat 46°45'36", long 108°36'24", in SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 32, T.12 N., R.25 E., Petroleum County, Hydrologic Unit 10040202, U.S. Highway 87, 11 mi (18 km) southwest of Flatwillow.	3.95	1974-78	3-29-78	2.23	15
06128500	South Fork Bear Creek tributary near Roy	Lat 47°13'44", long 108°47'54", in SW $\frac{1}{4}$ sec.16, T.17 N., R.23 E., Fergus County, Hydrologic Unit 10040204, at culvert on State Highway 19, 10.5 mi (16.9 km) southeast of Roy.	5.40	1962-78	3-21-78	4.07	118
06129800	Gorman Coulee tributary near Cat Creek	Lat 47°00'45", long 108°05'33", in SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.31, T.15 N., R.29 E., Petroleum County, Hydrologic Unit 10040204, at culvert on State Highway 200, 6 mi (10 km) southwest of Cat Creek.	.81	1955-78	3-29-78	2.10	85
06130610	Bair Coulee near Mosby	Lat 47°03'15", long 107°36'43", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.23, T.15 N., R.32 E., Garfield County, Hydrologic Unit 10040205, at bridge on U.S. Highway 200, 9.0 mi (14.5 km) northeast of Mosby.	1.79	1974-78	7-03-78	3.90	800
06130620	Blood Creek tributary near Valentine	Lat 47°20'12", long 108°27'48", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.7, T.18 N., R.26 E., Fergus County, Hydrologic Unit 10040205, at culvert on county road, 3.0 mi (4.8 km) northeast of Valentine.	1.97	1974-78	6-25-78	3.57	39
BIG DRY CREEK BASIN							
06130850	Second Creek tributary No. 2 near Jordan	Lat 47°12'23", long 106°48'56", in NE $\frac{1}{4}$ sec. 25, T.17 N., R.38 E., Garfield County, Hydrologic Unit 10040105, at culvert on State Highway 22, 9.5 mi (15.3 km) southeast of Jordan.	2.08	1958-78	3-22-78	2.32	30

See footnotes at end of table, p. 760

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (ft)	Dis-charge (ft ³ /s)
BIG DRY CREEK BASIN --Continued							
06130915	Russian Coulee near Jordan	Lat 47°19'58", long 106°42'39", in NE¼SW¼ sec.11, T.18 N., R.39 E., Garfield County, Hydrologic Unit 10040105 at bridge on U.S. Highway 200, 9.4 mi (15.1 km) east of Jordan.	3.45	1974-78	7-03-78	4.34	75
06130925	Thompson Creek tributary near Cohagen	Lat 46°57'05", long 106°27'38", in NW¼SW¼ sec.19, T.14 N., R.42 E., Garfield County, Hydrologic Unit 10040106, 100 ft (30.5 m) downstream from bridge, 10.5 mi (16.9 km) south-east of Cohagen.	1.23	1974-78	3-29-78	1.80	15
06130940	Spring Creek tributary near Van Norman	Lat 47°14'58", long 106°18'21", in NW¼NE¼ sec.12, T.17 N., R.42 E., Garfield County, Hydrologic Unit 10040106, at culvert on county road, 8 mi (13 km) southeast of Van Norman.	1.39	1974-78	3-21-78	5.00	59
TIMBER CREEK BASIN							
06131100	Timber Creek tributary near Van Norman	Lat 47°23'32", long 106°10'15", in SE¼NE¼ sec.23, T.19 N., R.43 E., McCone County, Hydrologic Unit 10040104, at culvert on State Highway 24, 12 mi (19 km) east of Van Norman.	.74	1974-78	3-24-78	2.48	40
McGUIRE CREEK BASIN							
06131300	McGuire Creek tributary near Van Norman	Lat 47°36'22", long 106°09'12", in NE¼SE¼ sec.2, T.211 N., R.43 E., McCone County, Hydrologic Unit 10040104, at culvert on State Highway 24, 20.5 mi (33.0 km) northeast of Van Norman.	.74	1974-78	7-04-78	7.10	270
MILK RIVER BASIN							
06132400	Dry Fork Milk River near Babb	Lat 48°49'50", long 113°12'02", in SE¼ sec.32, T.36 N., R.12 W., Glacier County, Hydrologic Unit 10050001, at bridge on State Highway 464, 11 mi (18 km) east of Babb.	17.9	1962-78	3-28-78	4.56	g
06134800	Van Cleeve Coulee tributary near Sunburst	Lat 48°53'05", long 111°49'20", on north line of NE¼ sec.14, T.36 N., R.2 W., Toole County, Hydrologic Unit 10030203, at culvert on county road, 3.7 road mi (6.0 km) east of the interchange on Interstate 15 at Sunburst.	10.8	1963-78	3-29-78	3.85	98
06136400	Spring Coulee tributary near Simpson	Lat 48°56'36", long 110°12'51", in SW¼SW¼ sec.24, T.37 N., R.12 E., Hill County, Hydrologic Unit 10050002, at culvert on Highway 232, 1.3 mi (2.1 km) northwest of Simpson, 38 mi (61 km) northwest of Havre.	2.49	1972-78	3-27-78	2.83	21
06137600	Sage Creek tributary No. 2 near Joplin	Lat 48°54'38", long 110°46'20", in NE¼NE¼ sec.2, T.36 N., R.7 E., Liberty County, Hydrologic Unit 10050006, at culvert on Highway 224, 25.2 mi (40.5 km) north of Joplin.	2.21	1974-78	3-27-78	3.10	56
06138700	South Fork Spring Coulee near Havre	Lat 48°24'33", long 109°49'44", in NE¼ sec.31, T.31 N., R.15 E., Hill County, Hydrologic Unit 10050005, at culvert on county road 12 mi (19 km) southwest of Havre.	6.47	1960-78	7-04-78	3.02	53
06153400	Fifteenmile Creek tributary near Zurich	Lat 48°38'36", long 109°02'50", in SE¼SE¼ sec.1, T.33 N., R.21 E., Blaine County, Hydrologic Unit 10050004, at culvert on county road, 4.3 mi (6.9 km) north of Zurich.	1.40	1974-78	3-29-78	4.91	70

See footnotes at end of table, p. 760

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Annual maximum		
					Date	Gage height (ft)	Dis- charge (ft ³ /s)
MILK RIVER BASIN--Continued							
06154350	Peoples Creek tributary near Lloyd	Lat 48°11'33", long 109°18'25", in SW¼SE¼ sec.8, T.28 N., R.19 E., Blaine County, Hydrologic Unit 10050009, at culvert on county road, 8 mi (13 km) south of Lloyd.	2.51	1974-78	4-15-78	4.42	10
06155300	Disjardin Coulee near Malta	Lat 48°16'33", long 107°57'49", in SE¼NW¼ sec.16, T.29 N., R.29 E., Phillips County, Hydrologic Unit 10050004, at bridge on U.S. high- way 191, 8 mi (13 km) southwest of Malta.	3.67	1956-78	7-04-78	.75	27
06155600	Murray Coulee tributary near Hogeland	Lat 48°47'16", long 108°44'50", in SW¼SE¼ sec.17, T.35 N., R.23 E., Blaine County, Hydrologic Unit 10050010, at culverts on county road, 6.5 mi (10.5 km) south- west of Hogeland.	1.77	1974-78	3-29-78	3.28	86
06156100	Lush Coulee near Whitewater	Lat 48°41'10", long 107°41'25", in SE¼SE¼ sec.20, T.34 N., R.31 E., Phillips County, Hydrologic Unit 10050011, at culverts on county road, 6 mi (10 km) southwest of Whitewater.	9.58	1972 1974-78	3-26-78	2.23	59
06164600	Beaver Creek tributary near Zortman	Lat 47°55'38", long 108°21'07", in NE¼NE¼ sec. 15, T.25 N., R.26 E., Phillips County, Hydrologic Unit 10050014, at bridge on State High- way 191, 8 mi (13 km) east of Zortman.	3.89	1974-78	5-18-78	2.94	255
06165200	Beaver Creek tributary No. 2 near Malta	Lat 48°14'34", long 107°32'58", in SW¼NE¼ sec.27, T.29 N., R.32 E., Phillips County, Hydrologic Unit 10050014, at culvert on county road, 17 mi (27 km) southeast of Malta.	1.95	1974-78	7-03-78	1.28	2
06172300	Unger Coulee near Vandalia	Lat 48°22'11", long 106°47'37", in SW¼ sec.9, T.30 N., R.38 E., Valley County, Hydrologic Unit 10050012, at bridge on U.S. Highway 2, 4.5 mi (7.2 km) northeast of Vandalia.	11.1	1958-78	5-28-78	d2.94	b140
06173300	Willow Creek tributary near Fort Peck	Lat 47°53'36", long 106°53'22", in SE¼NE¼ sec.25, T.24 N., R.37 E., Valley County, Hydrologic Unit 10050012, at culvert on county road, 21.5 mi (34.6 km) south- west of Fort Peck.	.86	1972 1974-78	5-19-78	4.56	63
06174300	Milk River tributary No. 3 near Glasgow	Lat 48°12'17", long 106°33'05", in SW¼SW¼ sec.3, T.28 N., R.40 E., Valley County, Hydrologic Unit 10050012, at culvert on county road, 4 mi (6 km) northeast of Glasgow.	1.82	1974-78	3-25-78	d4.73	b 83
06174600	Snow Coulee at Opheim	Lat 48°50'27", long 106°24'47", in SE¼SE¼ sec.25, T.36 N., R.40 E., Valley County, Hydrologic Unit 10050016, at culvert on FAS Route 247, 1 mi (2 km) south of Opheim.	2.95	1972 1974-78	3-29-78	4.11	170

See footnotes at end of table, p. 760

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (ft)	Dis- charge (ft ³ /s)
WOLF CREEK BASIN							
06175700	East Fork Wolf Creek near Lustre	Lat 48°24'58", long 105°47'51", in SE¼ sec.30, T.31 N., R.46 E., Valley County, Hydrologic Unit 10060001, at culverts on county road 4 mi (6 km) east of Lustre.	9.61	1956-78	3-26-78	d5.72	b 80
06175900	Wolf Creek tributary No. 2 near Wolf Point	Lat 48°12'05", long 105°44'45", in sec.11, T.28 N., R.46 E., Roosevelt County, Hydrologic Unit 10060001, at bridge on county road, 9.5 mi (15.3 km) northwest of Wolf Point.	6.10	1955-78	7-04-78	3.87	90
TRIBUTARY BETWEEN WOLF CREEK AND TULE CREEK							
06176950	Missouri River tributary No. 6 near Wolf Point	Lat 48°03'23", long 105°33'22", in NW¼NW¼ sec.32, T.27 N., R.48 E., McCone County, Hydrologic Unit 10060001, at upstream end of culvert on county road, 5 mi (8 km) southwest of Wolf Point.	.08	1973-78	5-07-78	4.02	16
TULE CREEK BASIN							
06177020	Tule Creek tributary near Wolf Point	Lat 48°14'40", long 105°29'31", in SE¼SE¼ sec.21, T.29 N., R.48 E., Roosevelt County, Hydrologic Unit 10060001, at upstream end of culvert 12.5 mi (20.1 km) northeast of Wolf Point.	.74	1974-78	3-23-78	1.67	23
REDWATER RIVER BASIN							
06177050	East Fork Duck Creek near Brockway	Lat 47°11'14", long 105°47'09", in sec.31, T.17 N., R.47 E., McCone County, Hydrologic Unit 10060002, at bridge on county road 8 mi (13 km) south of Brockway.	12.4	1955-78	3-25-78	3.49	475
06177700	Cow Creek tributary near Vida	Lat 47°42'34", long 105°29'24", in SE¼ sec.36, T.23 N., R.48 E., McCone County, Hydrologic Unit 10060002, at bridge on State Highway 13, 8.8 mi (14.2 km) south of Vida.	1.71	1963-77	7-03-78	2.77	310
06177720	West Fork Sullivan Creek near Richey	Lat 47°31'47", long 105°13'43", in NW¼NW¼ sec.4, T.20 N., R.51 E., Dawson County, Hydrologic Unit 10060002, at culvert on county road, 11 mi (18 km) southwest of Richey.	13.8	1974-78	3-22-78	d4.75	b 10
06177800	Wolf Creek tributary near Vida	Lat 47°54'49", long 105°29'53", in SE¼ sec.15, T.25 N., R.48 E., McCone County, Hydrologic Unit 10060002, at bridge on State Highway 13, 5.5 mi (8.8 km) north of Vida.	.91	1962-78	7-03-78	.99	23
06177820	North Fork Creek tributary near Richey	Lat 47°52'28", long 104°56'10", in SE¼NE¼ sec.36, T.25 N., R.52 E., Richland County, Hydrologic Unit 10060002, at culvert on county road, 17 mi (27 km) northeast of Richey.	.74	1974-78	3-24-78	5.23	105
POPLAR RIVER BASIN							
06179100	Butte Creek tributary near Four Buttes	Lat 48°49'33", long 105°35'08", in SE¼SE¼ sec.5, T.35 N., R.47 E., Daniels County, Hydrologic Unit 10060003, at upstream end of culvert on FAS Route 248, 1 mi (2 km) east of Four Buttes.	1.57	1972 1974-78	7-04-78	1.53	18

See footnotes at end of table, p. 760

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Annual maximum		
					Date	Gage height (ft)	Dis-charge (ft ³ /s)
BIG MUDDY CREEK BASIN							
06182700	Middle Fork Big Muddy Creek near Flaxville	Lat 48°48'08", long 105°06'48", in SW¼NE¼ sec.12, T.35 N., R.50 E., Daniels County, Hydrologic Unit 10060006, at bridge on State Highway 5, 2.8 mi (4.5 km) east of Flaxville.	2.88	1972 1974-78	3-24-78	2.01	28
06183300	Spring Creek near Plentywood	Lat 48°48'45", long 104°28'16", in SE¼ sec.1, T.35 N., R.55 E., Sheridan County, Hydrologic Unit 10060006, at culvert on county road 5 mi (8 km) northeast of Plentywood.	7.05	1955-78	7-04-78	1.52	32
06184200	Lost Creek tributary near Homestead	Lat 48°24'09", long 104°29'49", in NW¼NW¼ sec.31, T.31 N., R.56 E., Sheridan County, Hydrologic Unit 10060006, at bridge on State Highway 16, 2.3 mi (3.7 km) south-east of Homestead.	1.90	1972 1974-78	7-05-78	8.67	247
TRIBUTARY BETWEEN BIG MUDDY CREEK AND YELLOWSTONE RIVER							
06185400	Missouri River tributary No. 5 at Culbertson	Lat 48°09'31", long 104°30'55", in SE¼ sec.20, T.28 N., R.56 E., Roosevelt County, Hydrologic Unit 10060005, at culvert on State Highway 16, at Culbertson Rodeo Grounds.	3.67	1963-78	3-25-78	2.57	125
YELLOWSTONE RIVER BASIN							
06201700	Hump Creek near Reed Point	Lat 45°42'33", long 109°35'35", in NE¼ sec.35, T.1 S., R.17 E., Sweet Grass County, Hydrologic Unit 10070004, at bridge on Interstate Highway 90 and U.S. Highway 10, 2 mi (3 km) west of Reed Point.	7.61	1960-78	5-18-78	2.96	295
06205100	Allen Creek near Park City	Lat 45°35'43", long 109°03'22", in NE¼ sec.7, T.3 S., R.22 E., Stillwater County, Hydrologic Unit 10040004, about 200 ft (61 m) upstream from Cove ditch flume, 7 mi (11 km) west of Park City.	7.17	1961-78	5-18-78	3.46	410
06207600	Jack Creek tributary near Belfry	Lat 45°09'44", long 108°49'24", in SE¼SE¼ sec.6, T.8 S., R.24 E., Carbon County, Hydrologic Unit 10070006, on railroad bridge 100 ft (30.5 m) upstream from U.S. Highway 310, 9 mi (14 km) east of Belfry.	.85	1975-78	5-18-78	2.23	27
06214150	Mills Creek at Rapelje	Lat 45°58'03", long 109°15'17", in SE¼NE¼ sec.32, T.3 N., R.20 E., Stillwater County, Hydrologic Unit 10070004, at culvert on Secondary Highway 306, 0.4 mi (0.6 km) south of Rapelje.	3.32	1974-78	6-15-78	1.83	9
06216200	West Wets Creek near Billings	Lat 45°37'38", long 108°24'14", in SW¼ sec.28, T.2 S., R.27 E., Yellowstone County, Hydrologic Unit 10070008, at bridge on county road, 19 mi (31 km) southeast of Billings.	8.80	1955-78	5-19-78	6.81	545
06217300	Twelvemile Creek near Shepherd	Lat 45°55'16", long 108°27'44", in NW¼SW¼ sec.14, T.2 N., R.26 E., Yellowstone County, Hydrologic Unit 10070007, at bridge on U.S. Highway 87, 6.0 mi (9.7 km) west of Shepherd.	9.05	1973-78	5-18-78	3.04	250

See footnotes at end of table, p. 760

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Annual maximum		
					Date	Gage height (ft)	Dis- charge (ft ³ /s)
YELLOWSTONE RIVER BASIN--Continued							
06217700	Crooked Creek tributary near Shepherd	Lat 46°04'23", long 108°30'09", in SW¼ sec.21, T.4 N., R.26 E., Yellowstone County, Hydrologic Unit 10070007, at bridge on county road, 1.7 mi (2.7 km) west of U.S. Highway 87 between Billings and Roundup, 12 mi (19 km) north- west of Shepherd.	7.21	1962-78	5-18-78	-0.70	7
06290200	Little Bighorn River tributary near Wyola	Lat 45°08'18", long 107°23'08" in SE¼NW¼ sec.14, T.8 S., R.35 E., Big Horn County, Hydrologic Unit 10080016 at private bridge, 0.8 mi (1.3 km) northeast of Wyola.	4.43	1973-78	6-10-77 5-19-78	3.79 3.39	c225 136
06293300	Long Otter Creek near Lodgegrass	Lat 45°26'15", long 107°23'42", near center of line between NE¼ and NW¼ of SE¼ sec.28, T.4 S., R.35 E., Big Horn County, Hydrologic Unit 10080016, at culvert on U.S. Highway 87, 10 mi (16 km) north of Lodgegrass.	11.7	1973-78	1973 1-16-74 4-04-75 5-19-78	2.81 1.65 4.60 8.04	c 53 c 14 c129 298
06294400	Andresen Coulee near Custer	Lat 46°03'53", long 107°32'30", in center of W¼ sec. 30, T.4 N., R.34 E., Yellowstone County, Hydrologic Unit 10080015, at culvert on State High- way 47, 4.5 mi (7.2 km) south of Custer.	2.33	1963-78	5-18-78	.47	5
06294600	Tullock Creek tributary near Hardin	Lat 45°47'52", long 107°15'40", in NW¼NW¼ sec.33, T.1 N., R.36 E., Big Horn County, Hydrologic Unit 10080015, at culvert on State High- way 384, 18 mi (30 km) northeast of Hardin.	8.63	1973-78	5-18-78	1.67	60
06294930	Sarpy Creek tributary near Colstrip	Lat 45°54'54", long 107°07'57", in SW¼SW¼ sec.16, T.2 N., R.37 E., Treasure County, Hydrologic Unit 10100001, at culvert on county road, 25 mi (40 km) west of Colstrip.	4.44	1972-78	3-18-78	4.84	590
06294960	Anderson Creek at Vananda	Lat 46°23'35", long 107°00'27", in SE¼NE¼ sec.6, T.7 N., R.38 E., Rosebud County, Hydrologic Unit 100100002, at bridge on U.S. Highway 12, at Vananda.	5.71	1973-77	1973 ----- 1974 6-21-74 1975 7-31-75 1976 2-24-77 1977 5-15-77 1978 5-18-78	2.44 1.83 4.13 1.78 1.50 2.35	c130 c 69 c420 c 65 c 45 120
06294985	East Fork Armells Creek tributary near Colstrip	Lat 46°04'01", long 106°42'39", in SE¼SE¼ sec.26, T.4 N., R.40 E., Rosebud County, Hydrologic Unit 10100001, at bridge on State High- way 315, 13 mi (21 km) north of Colstrip.	1.87	1973-78	1973 ----- 1976 7-02-76 1977 8-31-77 1978 8-22-78	2.15 2.45 3.55 4.61	c 2 c 5 c 15 88
06295020	Short Creek near Forsyth	Lat 46°17'44", long 106°40'05", in NW¼ sec.12, T.6 N., R.40 E., Rose- bud County, Hydrologic Unit 10100001, at bridge on county road, 2.4 mi (3.9 km) northeast of U.S. Highway 12, 2 mi (3 km) north of Forsyth.	3.23	1962-78	9-13-78	2.11	60
06296115	Reservation Creek near Miles City	Lat 46°22'38", long 105°58'21", in SE¼NE¼ sec.9, T.7 N., R.46 E., Custer County, Hydrologic Unit 10100001, at bridge on county road No. 446, 6.5 mi (10.5 km) south- west of Miles City.	6.29	1973-78	5-18-78	3.88	280
06306900	Spring Creek near Decker	Lat 45°05'09", long 106°50'12", in SW¼NW¼SE¼ sec.33, T.8 S., R.40 E., Big Horn County, Hydrologic Unit 10090101, at bridge on county road, 5 mi (8 km) north of Decker at site of water-quality station.	34.7	1958-78	5-18-78	2.79	225

See footnotes at end of table, p. 760

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Annual maximum		
					Date	Gage height (ft)	Dis- charge (ft ³ /s)
YELLOWSTONE RIVER BASIN--Continued							
06306950	Leaf Rock Creek near Kirby	Lat 45°11'16", long 106°54'50", in center of sec.35, T.7 S., R.39 E., Big Horn County, Hydrologic Unit 10090101, at culvert on county road, 10 mi (16 km) south of Kirby.	6.14	1958-78	3-20-78	1.34	37
06307520	Canyon Creek near Birney	Lat 45°14'28", long 106°40'32", in SW¼ sec.11, T.7 S., R.41 E., Rose- bud County, Hydrologic Unit 10090101 at bridge on county road, 11 mi (18 km) southwest of Birney.	50.2	1972-78	5-18-78	.93	20
06307620	Tie Creek near Birney	Lat 45°28'21", long 106°31'33", in SW¼SE¼ sec.22, T.4 S., R.42 E., Rose- bud County, Hydrologic Unit 10090102, at bridge on State Highway 315, 11 mi (18 km) north of Birney.	18.7	1973-78	3-27-78	1.62	11
06307700	Cow Creek near Fort Howes ranger station, near Otter	Lat 45°17'20", long 106°09'14", in SW¼NW¼ sec.30, T.6 S., R.46 E., Powder River County, Hydrologic Unit 10090102, at bridge on county road, 0.5 mi (0.8 km) north of Fort Howes, 6.6 mi (10.6 km) north of Otter Creek Post Office.	8.37	1972-78	1977 5-31-78	2.17 1.70	c 20 9
06307720	Brian Creek near Ashland	Lat 45°24'37", long 106°09'07", in SW¼SW¼ sec.11, T.5 S., R.45 E., Powder River County, Hydrologic Unit 10090102, at culvert on county road, 9.3 mi (15.0 km) north of Fort Howes, 13.5 mi (21.7 km) south of Ashland.	8.03	1973-78	3-19-78	2.79	50
06307780	Stebbins Creek at mouth, near Ashland	Lat 45°38'27", long 106°17'34", in NW¼ sec.27, T.2 S., R.44 E., Rose- bud County, Hydrologic Unit 10090102, at bridge on county road, 3.5 mi (5.6 km) northwest of Ashland.	19.9	1963-78	3-19-78	3.72	292
06307930	Jack Creek near Volborg	Lat 46°04'55", long 105°51'08", in NE¼NW¼ sec.26, T.4 N., R.47 E., Custer County, Hydrologic Unit 10090102, at bridge on State Highway 332, 19 mi (31 km) north- west of Volborg.	5.47	1973-78	5-18-78	5.62	448
06308100	Sixmile Creek tributary near Epsie	Lat 45°31'27", long 105°45'10", in SW¼SW¼ sec.36, T.3 S., R.48 E., Powder River County, Hydrologic Unit 10090102, at culvert on U.S. Highway 212, 5.2 mi (8.4 km) northwest of Epsie.	.24	1973-78	5-18-78	4.30	73
06308200	Basin Creek tributary near Volborg	Lat 45°53'11", long 105°41'12", in NW¼ sec.31, T.2 N., R.49 E., Custer County, Hydrologic Unit 10090102, at culvert on county road, 3.5 mi (5.6 km) north of Volborg.	.14	1955-78	3-19-78	1.46	18
06308330	Deer Creek tributary near Volborg	Lat 46°02'04", long 105°31'15", in extreme southwest corner of sec.4, T.3 N., R.50 E., Custer County Hydrologic Unit 10090102, at culvert on county road, 16 mi (26 km) northeast of Volborg.	1.65	1973-78	5-18-78	4.26	75
06308340	La Grange Creek near Volborg	Lat 46°06'17", long 105°33'20", in NE¼NW¼ sec.18, T.4 N., R.50 E., Custer County, Hydrologic Unit 10090102, at culvert near mile post 27 on U.S. Highway 312, 19 mi (31 km) north of Volborg.	3.66	1973-78	5-18-78	5.17	182

See footnotes at end of table, p. 760

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (ft)	Dis- charge (ft ³ /s)
YELLOWSTONE RIVER BASIN--Continued							
06309060	North Sunday Creek tributary No. 2 near Angela	Lat 46°34'00", long 106°03'51", in NE¼ sec.4, T.9 N., R.45 E., Custer County, Hydrologic Unit 10100001, at culvert on State Highway 22, 13 mi (21 km) southeast of Angela.	0.34	1962-78	5-18-78	2.83	58
06309078	Tree Creek near Kinsey	Lat 46°33'17", long 105°47'48", in NE¼NW¼ sec.10, T.9 N., R.47 E., Custer County, Hydrologic Unit 10100001, at culvert on county road, 6.5 mi (10.5 km) west of Kinsey.	4.13	1972 1974-78	5-19-78	8.04	860
06309080	Deep Creek near Kinsey	Lat 46°33'25", long 105°37'12", in SE¼SE¼ sec.1, T.9 N., R.48 E., Custer County, Hydrologic Unit 10100001, at culvert on Interstate Highway 94, and U.S. Highway 10, 2 mi (3 km) southeast of Kinsey.	11.5	1962-78	3-21-78	6.48	650
06324700	Sand Creek near Broadus	Lat 45°25'48", long 105°26'28", in SE¼ sec.5, T.5 S., R.51 E., Powder River County, Hydrologic Unit 10090207, at culverts on Moorhead road 1.8 mi (2.9 km) southwest of Broadus.	10.6	1955-78	3-20-78	d4.46	b 80
06234995	Badger Creek at Biddle	Lat 45°05'46", long 105°20'17", (revised), in SW¼NW¼ sec. 34 T.8 S., R.52 E., Powder River County, Hydrologic Unit 10090209, at culvert on State Highway 59, 0.2 mi (0.3 km) south of Biddle.	6.06	1972-78	3-20-78	2.98	75
06325400	East Fork Little Powder River tributary near Hammond	Lat 45°18'04", long 105°05'50", in NW¼SE¼ sec.22, T.6 S., R.54 E., Powder River County, Hydrologic Unit 10090208, at culvert on State Highway 212, 10 mi (16 km) north- west of Hammond.	3.45	1974-78	6-25-78	7.03	140
06325700	Powder River tributary near Powderville	Lat 45°48'46", long 105°03'51", in NE¼NE¼ sec.25, T.1 N., R.3 E., Custer County, Hydrologic Unit 10090209, at culvert on county road, 4.5 mi (7.2 km) north of Powderville.	3.20	1973-78	10-7-77	2.90	40
06325950	Cut Coulee near Mizpah	Lat 46°08'38", long 105°10'05", in NE¼SE¼ sec.36, T.5 N., R.52 E., Custer County, Hydrologic Unit 10090209, at culvert on county road, 8.5 mi (13.7 km) south- east of Mizpah.	2.23	1973-78	5-18-78	4.17	103
06326510	Locate Creek tributary near Locate	Lat 46°25'52", long 105°10'51", in SW¼SE¼ sec.23, T.8 N., R.52 E., Custer County, Hydrologic Unit 10090209, at culvert on U.S. Highway 12, 5.5 mi (8.9 km) east of Locate.	.91	1973-78 1974 1975 1976 1978	5-30-74 5-05-75 8-05-76 7-19-78	1.47 2.90 5.31 6.00	c 8 c 31 c103 130
06326550	Cherry Creek tributary near Terry	Lat 46°51'18", long 105°20'26", in NE¼SW¼ sec.25, T.13 N., R.50 E., Prairie County, Hydrologic Unit 10100004, at bridge on abandoned part of State Highway 253, 4.8 mi (7.7 km) north of Terry.	2.52	1973-78	5-30-78	4.97	466
06326580	Lame Jones Creek tributary near Willard	Lat 46°11'40", long 104°33'05", in SE¼SE¼ sec.11, T.5 N., R.57 E., Fallon County, Hydrologic Unit 10100005, at culvert on county road, 8.8 mi (14.2 km) west of Willard.	.49	1974-78	3-26-78	1.54	4

See footnotes at end of table, p. 760

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum	
						Gage height (ft)	Dis-charge (ft ³ /s)
YELLOWSTONE RIVER BASIN--Continued							
06326600	O'Fallon Creek near Ismay	Lat 46°25'17", long 104°45'40", near center of east edge of sec.30, T.8 N., R.56 E., Fallon County, Hydrologic Unit 10100005, at bridge on U.S. Highway 12, 6.5 mi (10.5 km) southeast of Ismay at site of continuous-record station.	669	1962-78 1977 1978	4-10-77 3-22-78	1.20 d8.19	c 75 b3100
06326800	Pennel Creek near Baker	Lat 46°29'57", long 104°14'17", in center of south edge of sec.36, T.9 N., R.59 E., Fallon County, Hydrologic Unit 10100005, at culvert on State Highway 7, 8 mi (13 km) north of Baker.	1.00	1962-78	5-07-78	2.83	45
06326940	Spring Creek tributary near Fallon	Lat 46°48'06", long 104°59'25", in NE¼NE¼ sec.13, T.12 N., R.53 E., Prairie County, Hydrologic Unit 10100004, at culvert on county road, 6.8 mi (10.9 km) southeast of Fallon.	3.10	1972-78	3-21-78	d5.26	b 20
06326950	Yellowstone River tributary No. 5 near Marsh	Lat 46°57'11", long 104°53'53", in SW¼ sec.21, T.14 N., R.54 E., Dawson County, Hydrologic Unit 10100004, at culvert on Interstate Highway 94 and U.S. Highway 10, 2.4 mi (3.9 km) northeast of Cracker Box Creek, 5 mi (8 km) northeast of Marsh.	.87	1962-78	3-21-78	d4.67	b 50
06326960	Timber Fork Creek tributary near Lindsay	Lat 47°10'55", long 105°10'16", in SW¼SW¼ sec.36, T.17 N., R.51 E., Dawson County, Hydrologic Unit 10100004, at culvert on county road, 3.3 mi (5.3 km) southwest of Lindsay.	1.23	1974-78	3-25-78	2.72	35
06327550	South Fork Horse Creek tributary near Wibaux	Lat 46°48'09", long 104°22'55", in SW¼SE¼ sec.11, T.17 N., R.51 E., Wibaux County, Hydrologic Unit 10100004, at culvert on county road, 16.0 mi (25.7 km) southwest of Wibaux.	1.73	1973-78	7-04-78	3.66	65
06327720	Griffith Creek tributary near Glendive	Lat 47°06'20", long 104°35'48", in NE¼NW¼ sec.35, T.16 N., R.56 E., Dawson County, Hydrologic Unit 10100004, at culvert on Interstate Highway 94, 0.5 mi (0.8 km) east of Glendive.	3.48	1965 1974-78	3-22-78	3.08	27
06327790	Krug Creek tributary No. 2 near Wibaux	Lat 47°00'23", long 104°18'13", in NW¼NW¼ sec.6, T.14 N., R.59 E., Wibaux County, Hydrologic Unit 10100004, at culvert on county road at Interstate Highway 94 interchange, 5.5 mi (8.9 km) west of Wibaux.	.49	1974-78	6-29-78	1.98	13
06328100	Yellowstone River tributary No. 6 near Glendive	Lat 47°09'26", long 104°39'14", in NW¼SW¼ sec.8, T.16 N., R.56 E., Dawson County, Hydrologic Unit 10100004, at bridge on county road to Belle Prairie, 3 mi (5 km) northeast of Glendive.	2.93	1974-78	3-25-78	1.19	4
06328400	Thirteenmile Creek tributary near Bloomfield	Lat 47°24'46", long 104°49'58", in SE¼SE¼ sec.9, T.19 N., R.54 E., Dawson County, Hydrologic Unit 10100004, at culvert on county road, 3.9 mi (6.3 km) east of Bloomfield.	.67	1972 1974-78	1978	--	(h)
06329350	Alkali Creek tributary near Sidney	Lat 47°30'34", long 104°07'03", in SW¼NE¼ sec. 7, T.20 N., R.60 E., Richland County, Hydrologic Unit 10100004, at culvert on county road, 14.2 mi (22.8 km) southeast of Sidney.	.49	1974-78	3-20-78	d5.97	b 30

See footnotes at end of table, p. 760

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum Gage height (ft)	Dis-charge (ft ³ /s)	
YELLOWSTONE RIVER BASIN--Continued								
06329510	Fox Creek tributary near Lambert	Lat 47°38'58", long 104°36'52", in NW¼SW¼ sec.24, T.22 N., R.55 E., Richland County, Hydrologic Unit 10100004, at bridge on county road, 2.2 mi (3.5 km) south of Lambert.	5.07	1972 1974-78	1972 1974 1975 1977 1978	5.18 2.52 3.21 2.48 7.06	c 59 c 2 c 7 c 1 390	
06329570	First Hay Creek near Sidney	Lat 47°50'08", long 104°16'16", in SE¼ sec.16, T.24 N., R.58 E., Richland County, Hydrologic Unit 10100004, at bridge on State Highway 16, 4.1 road mi (6.6 km) north of "Dryland Crop and Soils Research Station" sign, 10 mi (16 km) northwest of Sidney.	29.1	1963-78	3-25-78	.54	5	
LITTLE MISSOURI RIVER BASIN								
06334100	Wolf Creek near Hammond	Lat 45°09'53", long 104°45'20", in SE¼ sec.5, T.8 S., R.57 E., Carter County, Hydrologic Unit 10110201, at culvert on U.S. Highway 212, 8 mi (13 km) southeast of Hammond.	9.09	1955-78	5-18-78	3.93	275	
06334330	Little Missouri River tributary near Albion	Lat 45°12'42", long 104°15'41", in SW¼NW¼ sec..21, T.7 S., R.61 E., Carter County, Hydrologic Unit 10110201, at culvert on FAS Route 270, 1.8 mi (2.9 km) north of Albion.	.74	1972-78	1972 1978	-- 3-22-78	4.50 2.42	57 15
06334610	Box Elder Creek tributary near Albion	Lat 45°23'20", long 104°28'38", in SE¼ sec.19, T.5 S., R.59 E., Carter County, Hydrologic Unit 1010202 on State Highway 323, 17 mi (27 km) northwest of Albion.	.73	1973-78	5-20-78	5.84	62	
06334625	Coal Creek near Mill Iron	Lat 45°54'15", long 104°21'42", in NW¼SW¼ sec.26, T.2 N., R.59 E., Carter County, Hydrologic Unit 10110202, at culvert on county road, 8 mi (13 km) northwest of Mill Iron.	.74	1974-78	3-27-78	1.75	7	
06334720	Soda Creek tributary near Webster	Lat 46°00'34", long 104°05'30", in NE¼ sec. 23, T.3 N., R.61 E., Fallon County, Hydrologic Unit 10110202, at culvert on county road, 0.3 mi (0.5 km) south of Soda Creek, 8 mi (13 km) southeast of Webster.	2.22	1962-78	3-27-78	4.67	84	
Part 12 KOOTENAI RIVER BASIN								
12300400	Cayuse Creek near Trego	Lat 48°36'33", long 115°01'42", in SW¼SW¼NE¼ sec.24, T.33 N., R.27 W., Lincoln County, Hydrologic Unit 17010101, at culvert on Forest Service road, 9.8 mi (15.8 km) southwest of Trego.	5.29	1972-78	3-31-78	(h)	b 15	
12300800	Deep Creek near Fortine	Lat 48°45'41", long 114°52'32", in SW¼ sec.30, T.35 N., R.25 W., Lincoln County, Hydrologic Unit 17010101, at culvert on county road, 1.2 mi (1.9 km) east of Fortine.	18.9	1959-78	3-31-78	3.33	175	
12301993	Wolf Creek tributary near Libby	Lat 48°23'52", long 114°55'05", in NW¼NE¼NE¼ sec.4, T.30 N., R.26 W., Lincoln County, Hydrologic Unit 17010102, at Burlington Northern railroad culvert, 0.3 mi (0.5 km) upstream from mouth, 28.8 mi (46.3 km) east of Libby.	2.76	1974-78	3-31-78	.39	8	
12301997	Richards Creek near Libby	Lat 48°15'31", long 115°11'57", in SE¼NW¼SE¼ sec.20, T.29 N., R.28 W.; Lincoln County, Hydrologic Unit 17010102, at bridge on county road, 0.1 mi (0.2 km) upstream from mouth, 18.5 mi (29.8 km) south-east of Libby.	9.50	1973-78	3-31-78	.53	8	

See footnotes at end of table, p. 760

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum	
						Gage height (ft)	Dis-charge (ft ³ /s)
KOOTENAI RIVER BASIN--Continued							
12302400	Shaughnessy Creek near Libby	Lat 48°18'11", long 115°35'37", in W½ sec.5, T.29 N., R.31 W., Lincoln County, Hydrologic Unit 17010101, at culvert on county road, 6.5 mi (10.5 km) southwest of Libby.	1.16	1959-78	5-18-78	1.42	2
12303400	Ross Creek near Troy	Lat 48°12'26", long 115°52'08", in SE¼NE¼ sec.8, T.28 N., R.33 W., Lincoln County, Hydrologic Unit 17010101, at bridge on forest service road, 11.3 mi (18.2 km) north of Heron, 17.5 mi (28.2 km) south of Troy at site of water-quality station.	23.8	1972-78	1972 6-07-78	7.5 3.72	3200 640
12303440	Camp Creek near Troy	Lat 48°18'46", long 115°50'35", in SW¼SE¼ sec.32, T.30 N., R.33 W., Lincoln County, Hydrologic Unit 17010101, at bridge on Forest Service road, 12.6 mi (20.3 km) south of Troy.	11.3	1972-78	6-05-78	1.58	175
12304060	Blacktail Creek near Yaak	Lat 48°57'03", long 115°32'27", in SW¼SW¼ sec.20, T.37 N., R.30 W., Lincoln County, Hydrologic Unit 17010103, at bridge on Forest Service road, 200 ft (61 m) up-stream from mouth, 10.3 mi (16.6 km) northeast of Yaak.	8.66	1964 1972-78	5-15-78	1.11	65
12304120	Zulu Creek near Yaak	Lat 48°43'49", long 115°38'30", in NW¼NW¼ sec.8, T.34 N., R.31 W., Lincoln County, Hydrologic Unit 17010103, at culvert on South Fork Yaak River road, 8.5 mi (13.7 km) south of Yaak.	5.27	1972-78	5-15-78	1.29	46
12304300	Cyclone Creek near Yaak	Lat 48°45'01", long 115°54'06", in SE¼ sec.32, T.35 N., R.33 W., Lincoln County, Hydrologic Unit 17010103, at bridge, 0.2 mi (0.3 km) upstream from mouth, 10.5 mi (16.9 km) southwest of Yaak.	5.71	1960-78	5-15-78	.94	103
PEND OREILLE RIVER BASIN							
12323300	Smith Gulch near Silver Bow	Lat 45°57'26", long 112°39'45", in N¼ sec.1, T.2 N., R.9 W., Silver Bow County, Hydrologic Unit 17010201, at culvert on Interstate Highway 15 and U.S. Highway 91, 4 mi (6 km) south of Silver Bow.	4.36	1959-78	4-01-78	3.30	17
12324250	Cottonwood Creek at Deer Lodge	Lat 46°23'59", long 112°43'02", in NE¼SW¼ sec.33, T.8 N., R.9 W., Powell County, Hydrologic Unit 17010201, at culverts on county road and U.S. Highway 10 in Deer Lodge.	45.4	1975-78	6-07-78	3.53	430
12324700	Clark Fork tributary near Drummond	Lat 46°36'58", long 113°02'08", in SW¼ sec.18, T.10 N., R.11 W., Powell County, Hydrologic Unit 17010201, 0.5 mi (0.8 km) upstream from Interstate Highway 90 and U.S. Highway 10, 6.5 mi (10.5 km) east of Drummond.	4.61	1958-78	3-19-78	1.54	72
12331700	Edwards Gulch at Drummond	Lat 46°40'25", long 113°08'31", in SW¼SW¼ sec.29, T.11 N., R.12 W., Granite County, Hydrologic Unit 17010201, at culvert on private road, 0.4 mi (0.6 km) north of Interstate Highway 90 and U.S. Highway 10 at Drummond.	4.69	1960-62 1974-78	6-20-74 7-05-78	(a) d1.96	318 b 5
12338600	Monture Creek at Forest Service boundary, near Ovando	Lat 47°05'37", long 113°09'10", in SW¼SW¼ sec.32, T.16 N., R.12 W., Powell County, Hydrologic Unit 17010203, 800 ft (240 m) up-stream from Forest Service boundary, 5.2 mi (8.4 km) north of Ovando.	105	1964 1974-78	6-08-78	--	1580

See footnotes at end of table, p. 760

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Date	Annual maximum	
						Gage height (ft)	Dis-charge (ft ³ /s)
PEND OREILLE RIVER BASIN--Continued							
12339300	Deer Creek near Seeley Lake	Lat 47°12'37", long 113°32'27", in SE¼SW¼ sec.20, T.17 N., R.15 W., Missoula County, Hydrologic Unit 17010203, at bridge on county road, 3.5 mi (5.6 km) northwest of Seeley Lake.	19.8	1974-78	4-02-78	2.31	215
12339900	West Twin Creek near Bonner	Lat 46°54'44", long 113°42'50", in SW¼ sec.2, T.13 N., R.17 W., Missoula County, Hydrologic Unit 17010203, at bridge on State Highway 200, 8 mi (13 km) east of Bonner.	7.33	1959-78	3-31-78	.90	42
12342950	Trapper Creek near Conner	Lat 45°53'43", long 114°10'51", in SE¼SE¼ sec.27, T.2 N., R.21 W., Ravalli County, Hydrologic Unit 17010205, at bridge on State Highway 473, 4.5 mi (7.2 km) south-west of Conner.	28.5	1974-78	6-08-78	2.05	470
12344300	Burke Gulch near Darby	Lat 46°01'28", long 114°08'45", in S½ sec.12, T.3 N., R.21 W., Ravalli County, Hydrologic Unit 17010205, 1 mi (2 km) upstream from mouth, 1.5 mi (2.4 km) east of Darby.	6.28	1958-78	5-22-78	1.28	8
12345850	Sleeping Child Creek near Hamilton	Lat 46°07'58", long 114°03'26", in SE¼SW¼NW¼ sec.2, T.4 N., R.20 W., Ravalli County, Hydrologic Unit 17010205, Bitterroot National Forest, on right bank 5.8 mi (9.3 km) upstream from mouth and 10.8 mi (17.4 km) southeast of Hamilton.	62.6	1958-59† 1973-77† 1978	6-08-78	4.13	482
12353250	Ninemile Creek near Alberton	Lat 47°11'09", long 114°35'13", in SE¼SE¼ sec.36, T.17 N., R.24 W., Missoula County, Hydrologic Unit 17010204, 400 ft (122 m) upstream from large right bank diversion, 14.2 mi (22.8 km) northwest of Alberton.	50.2	1972 1974-78	3-31-78	1.73	345
12353800	Thompson Creek near Superior	Lat 47°11'55", long 114°55'00", in SW¼ sec.28, T.17 N., R.26 W., Mineral County, Hydrologic Unit 17010204, 1.2 mi (1.9 km) west of Superior.	11.8	1961-78	4-01-78	.14	68
12355350	Big Creek at Big Creek ranger station, near Columbia Falls	Lat 48°36'07", long 114°09'55", in SW¼SW¼ sec.22, T.33 N., R.20 W., Flathead County, Hydrologic Unit 17010206, Flathead National Forest, at Big Creek ranger station, 0.4 mi (0.6 km) up-stream from mouth, 16.0 mi (25.7 km) north of Columbia Falls.	82.1	1964 1973-78	6-06-78	4.78	1300
12356500	Bear Creek near Essex	Lat 48°16'56", long 113°25'23", in SE¼NW¼NE¼ sec.16 T.29 N., R.14 W., Flathead County, Hydrologic Unit 17010207, 1.1 mi (1.8 km) upstream from bridge on U.S. Highway 2, 8.5 mi (13.7 km) northeast of Essex at site of former gaging station.	20.4	1946-52† 1964 1975-78	6-05-78	4.12	325
12369250	Holland Creek near Condon	Lat 47°26'20", long 113°40'11", in NE¼NW¼ sec. 5, T.19 N., R.16 W., Missoula County, Hydrologic Unit 17010211, at bridge on State Highway 209, 6.8 mi (10.9 km) south of Condon.	22.3	1974-78	6-09-78	2.22	265
12370500	Dayton Creek near Proctor	Lat 47°54'59", long 114°20'14", in NW¼ sec.20, T.25 N., R.21 W., Lake County, Hydrologic Unit 17010208, at culvert on county road, 2.5 mi (4.0 km) northwest of Proctor.	18.5	1959-78	3-31-78	3.21	102

See footnotes at end of table, p. 760

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (mi ²)	Period of record	Annual maximum		
					Date	Gage height (ft)	Dis- charge (ft ³ /s)
PEND OREILLE RIVER BASIN--Continued							
12389150	McGregor Creek tributary near Marion	Lat 48°01'44", long 114°55'54", in NW¼NE¼ sec.10, T.26 N., R.26 W., Flathead County, Hydrologic Unit 17010213, 250 ft (76 m) upstream from forest service road, 0.4 mi (0.6 km) upstream from mouth, 13.4 mi (21.7 km) southwest of Marion.	2.55	1972-78	3-31-78	(h)	b 6
12391100	White Pine Creek near Trout Creek	Lat 47°44'19", long 115°40'27", in SW¼SW¼NW¼ sec.23, T.23 N., R.32 W., Sanders County, Hydrologic Unit 17010213, Kaniksu National Forest at bridge, 7.5 mi (12.1 km) south- west of Trout Creek.	8.75	1974-78	6-07-78	3.67	128
12391200	Canyon Creek near Trout Creek	Lat 47°51'16", long 115°29'57", in SW¼NW¼ sec.7, T.25 N., R.30 W., Sanders County, Hydrologic Unit 17010213, at bridge on forest service road, 4.6 mi (7.4 km) northeast of Trout Creek.	8.64	1972 1974-78	4-01-78	2.28	140
12391430	Skeleton Creek near Noxon	Lat 47°57'47", long 115°53'18", in SW¼SW¼ sec.32, T.26 N., R.33 W., Sanders County, Hydrologic Unit 17010213, at culvert on forest service road, 0.4 mi (0.6 km) upstream from West Fork Pilgrim Creek, 5.7 mi (9.2 km) south- west of Noxon.	2.10	1973-78	5-16-78	1.49	23
12391525	Snake Creek near Noxon	Lat 48°07'24", long 115°45'10", in SW¼SW¼ sec.5, T.27 N., R.32 W., Sanders County, Hydrologic Unit 17010213, at culvert on forest service road, 9.0 mi (14.5 km) north of Noxon.	3.11	1972-78	5-15-78	1.70	24

- ‡ Operated as a continuous-record station.
 a Peak occurred prior to installation of gage.
 b About.
 c Revised.
 d Backwater.
 e No evidence of flow during year.
 f Previously published as 1961 to current year.
 g Not determined.
 h Peak discharge did not reach bottom of gage.

Measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations are given in the following table.

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Spring directly tributary to Beaverhead River						
Gordon Spring 450018112510701	Beaverhead River	Lat 45°00'18", long 112°51'07", in NW¼SE¼ sec.32, T.9 S., R.10 W., Beaverhead County, at culvert in old railroad grade, just downstream from Clark Canyon Dam, 10.5 mi (16.9 km) east of Grant.		1962, 1964-75, 1976	8- 1-78	26.6
Madison River basin						
Madison River 06037500	Jefferson River	Lat 44°39'24", long 111°04'00", in SW¼ sec.36, T.13 S., R.5 E., (unsurveyed) Yellowstone National Park, on left bank 0.3 mi (0.5 km) upstream from Riverside ranger station, 1.6 mi (2.6 km) east of West Yellowstone and west boundary of Yellowstone National Park, 12.5 mi (20.1 km) downstream from confluence of Firehole and Gibbon Rivers, and at mile 120 (193 km) at site of former gaging station.	420	1913-21† 1922-73†	10- 4-77	370
Missouri River basin						
Sevenmile Creek 06064000	Tenmile Creek	Lat 46°38'13", long 112°05'00", on section line between sections 10 and 11, T.10 N., R.4 W., Lewis and Clark County, 1.4 mi (2.3 km) upstream from Tenmile Creek, and 4 mi (6 km) northwest of Helena.			5-23-78 6-12-78 7-10-78 8-10-78 9- 8-78	16.4 6.41 6.58 .90 3.54
Missouri River main stem						
Missouri River 06074000	Mississippi River	Lat 47°16'10", long 111°41'45", in NW¼SE¼ sec.35, T.18 N., R.1 W., Cascade County, on downstream side of county bridge at Cascade, 26 mi (42 km) upstream from Smith River at site of former gaging station.	18,493	1902-15† 1953, 1967, 1976	4- 6-78	6,570
Smith River basin						
Smith River 472332111265501	Missouri River	Lat 47°23'32", long 111°26'55", on section line between SW¼SW¼, sec.14 and NW¼NW¼ sec.23, T.19 N., R.2 E., Cascade County, at county bridge on Highway 330 approximately 3 mi (5 km) above mouth.		1976	5-11-78	1,620
Missouri River main stem						
Missouri River 472550111300601	Mississippi River	Lat 47°25'50", long 111°30'06", in NW¼SE¼ NE¼ sec.5, T.19 N., R.2 E., Cascade County, at bridge on county highway 0.2 mi (0.3 km) east of Ulm.			5-10-78	10,600
Marias River basin						
Birch Creek 481935112324901	Marias River	Lat 48°19'35", long 112°32'49", in SE¼SW¼ sec.29, T.30 N., R.7 W., Pondera County 150 ft (457 m) downstream from bridge on U.S. Highway 89, 10 mi (16 km) north of Dupuyer.		1977	10- 5-77 11-15-77 12-28-77 3-21-78 5- 1-78 6- 1-78 7- 7-78 8- 9-78 9- 7-78	6.16 14.6 14.3 47.4 7.89 8.54 50.9 5.60 11.2
North Fork Cut Bank Creek 483630113171001	Two Medicine River	Lat 48°36'30", long 113°17'10", in NE¼NW¼ NE¼ sec.22, T.33 N., R.13 W., Glacier County, at bridge on U.S. Highway 89, 4.4 mi (7.1 km) north of Kiowa, and 14 mi (23 km) northwest of Browning.		1920, 1922	10- 6-77 11-16-77 12-29-77 2- 7-78 3- 1-78 3-22-78 5- 1-78 5-31-78 7- 6-78 8- 9-78 9- 7-78	38.1 25.9 20.2 12.3 10.8 12.5 225 253 330 64.7 56.2

See footnotes at end of table, p. 782

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Measurements Discharge (cfs)
Marias River basin--continued						
South Fork Cut Bank Creek 483324113161001	North Fork Cut Bank Creek	Lat 48°33'24", long 113°16'10", in SE¼ SE¼ sec.3, T.32 N., R.13 W., Glacier County, at bridge on U.S. Highway 89, 0.7 mi (1.1 km) north of Kiowa, and 12 mi (19 km) west of Browning.			10- 6-77 11-16-77 12-29-77 2- 7-78 3- 1-78 3-22-78 5- 1-78 5-31-78 7- 6-78 8- 9-78 9- 7-78	12.5 6.06 4.68 3.66 3.80 10.2 92.0 93.1 120 19.9 18.9
Arrow Creek basin						
McCarthy Creek 471516110292001	Missouri River	Lat 47°15'16", long 110°29'20", in SE¼ NW¼ sec.8, T.17 N., R.10 E., Judith Basin County, at bridge on Highway 200, 0.5 mi (0.8 km) east of Geyser.			7- 4-78	a 536
Dog Creek basin						
Dog Creek 472743109211301	Missouri River	Lat 47°27'43", long 109°21'13", in NW¼ NE¼ sec.31, T.20 N., R.19 E., Fergus County, at culverts on FAS 236, 0.1 mi (0.2 km) south of Suffolk.			7- 4-78	b1,430
Musselshell River basin						
Careless Creek 462143109160201	Musselshell River	Lat 46°21'43", long 109°16'02", in NE¼ SE¼ sec.18, T.7 N., R.20 E., Golden Valley County, at bridge on FAS 299, 0.5 mi (0.8 km) south of Franklin, and 4.5 mi (7.2 km) north of Ryegate.			3-22-78	c6,010
Rehder Creek 06126450	Musselshell River	Lat 46°18'41", long 108°29'03", in NE¼ SW¼ sec.33, T.7 N., R.26 E., Musselshell County, 100 ft (30 m) upstream from mouth, and 6.5 mi (10.5 km) southeast of Klein at site of water-quality station.	23.1		10-25-77 11-23-77 12-13-77 1-25-78 3-17-78 3-22-78 3-27-78 4-29-78 5-16-78 5-18-78 6-15-78 7-14-78 8-17-78 9-13-78	0 0 0 0 0 0 0 0 0 0 0 0 0 0
Half Breed Creek 461913108290801	Musselshell River	Lat 46°19'13", long 108°29'08", in SW¼ NW¼ sec.33, T.7 N., R.26 E., Musselshell County, 1 mi (2 km) downstream from Rehder Creek, 9 mi (14 km) south of Roundup.			6-29-78 9-26-78	.13 .15
Half Breed Creek 462109108291001	Musselshell River	Lat 46°21'09", long 108°29'10", in SW¼ SW¼ sec.16, T.7 N., R.26 E., Musselshell County, 2 mi (3 km) below Rehder Creek, 7 mi (11 km) south of Roundup.			6-29-78 9-26-78	.77 .45
Half Breed Creek 462227108310201	Musselshell River	Lat 46°22'27", long 108°31'02", in SW¼ NE¼ sec.7, T.7 N., R.26 E., Musselshell County, 3 mi (5 km) south of Klein, 5 mi (8 km) south of Roundup.			6-29-78 9-26-78	.92 .93
Half Breed Creek 462445108331301	Musselshell River	Lat 46°24'45", long 108°33'13", in SE¼ SW¼ sec.26, T.8 N., R.24 E., Musselshell County, 1 mi (2 km) northwest of Klein, 2 mi (3 km) southwest of Roundup.			6-29-78 9-26-78	1.22 .88
Half Breed Creek 462536108341901	Musselshell River	Lat 46°25'36", long 108°34'19", is SE¼ SE¼ sec.22, T.8 N., R.25 E., Musselshell County, near mouth, 2 mi (3 km) northwest of Klein, 2 mi (3 km) southwest of Roundup.			6-29-78 9-26-78	1.28 1.17

See footnotes at end of table, p. 782

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Musselshell River basin--continued						
East Parrot Creek 06127150	Parrot Creek	Lat 46°22'55", long 108°20'15", in SW¼ SW¼ sec.3, T.7 N., R.27 E., Musselshell County, Hydrologic Unit 10040202, 5.15 mi (8.29 km) upstream from mouth, 11 mi (18 km) southeast of Roundup, at site of water-quality station.			10-25-77	0
					11-17-77	0
					12-13-77	0
					1-26-78	0
					3-27-78	0
					4-20-78	0
					4-29-78	0
					5-17-78	0
					5-18-78	0
					6-15-78	0
					7-14-78	0
					8-17-78	0
					9-13-78	0
West Parrot Creek 06127160	Parrot Creek	Lat 46°25'57", long 108°25'07", in NW¼NE¼SW¼ sec.24, T.8 N., R.26 E., Musselshell County, 1.0 mi (1.6 km) upstream from mouth, and 4.5 mi (7.2 km) east of Roundup at site of water quality station.			10-25-77	0
					11-17-77	0
					12-13-77	0
					1-26-78	0
					3-17-78	0
					3-27-78	d .01
					4-20-78	d .01
					4-29-78	d .01
					5-17-78	d .10
					5-18-78	d .05
					6-15-78	d .10
					7-14-78	d .01
					8-17-78	d .01
9-13-78	d .01					
Fattig Creek 06127300	Musselshell River	Lat 46°29'58", long 108°16'40", in NE¼ NE¼NE¼ sec.24, T.7 N., R.27 E., Musselshell County, approximately 5 mi (8 km) upstream from Carters Coulee, and 11.5 mi (18.5 km) south of Delphia at site of water-quality station.			10-25-77	0
					11-17-77	0
					12-13-77	0
					1-26-78	0
					3-17-78	0
					4-20-78	0
					4-29-78	0
					5-17-78	0
					5-18-78	d .10
					6-15-78	d .01
					7-14-78	d .01
					8-17-78	d .01
					9-13-78	d .31
Big Dry Creek basin						
Crow Rock Creek 06130934	Little Dry Creek	Lat 47°03'45", long 106°14'11", in SE¼SE¼ SE¼ sec.11, T.15 N., R.43 E., Garfield County, on right bank, at county road 2.6 mi (4.2 km) upstream from mouth, 16.5 mi (26.6 km) north of Rock Springs at site of water-quality station.			3-24-78	0
					3-31-78	36.3
					4-25-78	.10
					5-10-78	0
					5-26-78	.40
					6- 5-78	1.93
					6- 9-78	13.4
					7-17-78	.23
Timber Creek basin						
Timber Creek 06131120	Fort Peck Lake	Lat 47°24'20", long 106°10'25", SE¼SE¼NE¼ sec.13, T.19 N., R.43 E., McCone County at State Highway 24 bridge, about 9 mi (15 km) south of Nelson Creek at site of water-quality station.			10-18-77	0
					11- 8-77	0
					1-13-78	0
					3-23-78	57
					4-17-78	1.94
					5- 8-78	3.35
					6- 7-78	5.54
					7-10-78	4.66
					8- 8-78	.48
					9-14-78	.89
Milk River basin						
Big Sandy Creek 481024109493201	Milk River	Lat 48°10'24", long 109°49'32", in NW¼ SE¼NW¼ sec.20, T.28 N., R.15 E., Choteau County, 1000 ft (305 m) downstream from reservation boundary, 6 mi (10 km)south of Rocky Boy.			10-20-77	2.63
					11-17-77	2.33
					1-12-78	2.78
					2-23-78	3.0
					3-29-78	9.12
					5- 2-78	42
					6- 2-78	38.2
					7-14-78	13.3
					9-12-78	30.3

See footnotes at end of table, p. 782

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date Discharge (cfs)
Milk River basin--continued					
Big Sandy Creek 481308110042601	Milk River	Lat 48°13'08", long 110°04'26", in NE¼ NE¼NE¼ sec.5, T.28 N., R.13 E., Choteau County, at bridge on Highway 87, 2 mi (3 km) north of Big Sandy.			3-31-78 171 4- 5-78 42.3
Beaver Creek 481427109390601	Milk River	Lat 48°14'27", long 109°39'06", in NW¼ NW¼SE¼ sec.29, T.29 N., R.16 E., Hill County, 2 mi (3 km) east of reservation boundary, 6 mi (10 km) east of Rocky Boy.			10-20-77 1.2 11-17-77 2.23 1-12-78 2.09 2-23-78 2.17 3-28-78 15.4 4- 2-78 68.1 6- 2-78 39.8 7-14-78 8.77 9-12-78 28.3
Lodge Pole Creek 480152108315501	South Fork Peoples Creek	Lat 48°01'52", long 108°31'55", in SE¼ SE¼SW¼ sec.5, T.26 N., R.25 E., Blaine County, south of town (Lodge Pole) at culvert of county road, 8 mi (13 km) northeast of Hays.		1973	10-19-77 .76 11-15-77 .87 12-15-77 .83 1-19-78 .36 2-22-78 .34 3-23-78 .74 4-12-78 .53 5-17-78 8.36 6- 7-78 14.9 7-17-78 3.88 8-30-78 3.28 9-15-78 27.1
Redwater River basin					
Horse Creek 06177520	Redwater River	Lat 47°25'29", long 105°36'54", in NW¼ NW¼ sec.9, T.19 N., R.48 E., McCone County, at bridge on county road 1 mi (2 km) north of Circle at site of water-quality station.		1976-77	10-19-77 .03 11- 8-77 d .10 12-13-77 0 1-12-78 0 2-22-78 0 3-22-78 150 4-25-78 1.04 5- 9-78 2.39 6- 8-78 1.64 7-12-78 1.79 8- 9-78 .27 9-13-78 .66
Poplar River basin					
Poplar River 490005105460001	Missouri River	Lat 49°00'00", long 105°46'00", in NE¼ NW¼NE¼ sec.3, T.37 N., R.45 E., Daniels County, at international boundary, upstream from Lost Creek, 22 mi (35 km) northwest of Scobey.		1977	10-19-77 k 3.84
Coal Creek 485807105471001	Middle Fork Poplar River	Lat 48°58'07", long 105°47'10", in NW¼NE¼ NE¼NE¼ sec.16, T.37 N., R.45 E., Daniels County, at county road bridge 1.8 mi (2.9 km) southeast of Carbert, and 21 mi (34 km) northwest of Scobey.			10-19-77 k 1.41
Poplar River 485507105363601	Missouri River	Lat 48°55'07", long 105°36'36", in SW¼SW¼ NW¼ sec.36, T.37 N., R.46 E., Daniels County, 0.7 mi (1.1 km) south of Silver Lake, at bridge 7.5 mi (12.1 km) north of Four Buttes, and 12 mi (19 km) north- west of Scobey.		1977	10-19-77 k 5.52
Poplar River 06178150	Missouri River	Lat 48°52'23", long 105°29'50", in NE¼SE¼ sec.13, T.36 N., R.47 E., 200 ft (161 m) upstream from county road crossing, 6 mi (10 km) upstream from East Fork, 6.4 mi (10.3 km) northwest of Scobey at site of water-quality station.		1975-77	10-17-77 6.5 10-19-77 6.47 11- 7-77 8.2 12-14-77 d 6 1- 9-78 5.08 1-10-78 0 2-15-78 0 4-26-78 34 5-26-78 29 6-13-78 13.6 7-18-78 16.3 8-16-78 1.87 9-21-78 30

See footnotes at end of table, p. 782

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Poplar River basin--continued						
East Fork Poplar River 485305105230701	Poplar River	Lat 48°53'05", long 105°23'07", in NW¼SW¼SW¼ sec.12, T.36 N., R.48 E., Daniels County, 0.9 mi (1.5 km) north of county road bridge, 6.6 mi (10.6 km) north of Scobey.			10-19-77	k 1.69
East Poplar River 485001105261601	Poplar River	Lat 48°50'01", long 105°26'16", in SE¼NE¼ SW¼NE¼ sec.33, T.36 N., R.48 E., Daniels County, 1.5 mi (2.4 km) southwest of State Highway 13 bridge, and 2.9 mi (4.7 km) northwest of Scobey.			10-20-77	k 1.34
Poplar River 484924105273101	Missouri River	Lat 48°49'24", long 105°27'31", in NE¼NW¼NW¼ sec.5, T.35 N., R.48 E., Daniels County, downstream 0.05 mi (0.08 km) from county bridge, 2.7 mi (4.3 km) northwest of Scobey.		1977	10-19-77	k 8.1
Butte Creek 484759105293801	Poplar River	Lat 48°47'59", long 105°29'38", in SW¼SE¼ NW¼SW¼ sec.7, T.35 N., R.48 E., Daniels County, downstream from railroad trestle 0.02 mi (0.32 km), and 3.4 mi (5.5 km) west of Scobey.			10-20-77	k 1.7
Poplar River 484708105270601	Missouri River	Lat 48°47'08", long 105°27'06", in SW¼NW¼SW¼ sec.16, T.35 N., R.48 E., Daniels County, 0.1 mi (0.2 km) downstream from county bridge, 1.0 mi (1.6 km) downstream from Butte Creek, and 1.5 mi (2.4 km) west of Scobey.		1977	10-19-77	k 11
Poplar River 484328105251701	Missouri River	Lat 48°43'28", long 105°25'17", in sec.3, T.34 N., R.48 E., Daniels County, at State Highway 13 bridge, 4.2 mi (6.8 km) south of Scobey.		1954	10-19-77	k 11
Poplar River 06179200	Missouri River	Lat 48°33'05", long 105°21'55", in NW¼SW¼SW¼ sec.4, T.32 N., R.49 E., Roosevelt County, at county road bridge, 3.8 mi (6.1 km) upstream from West Fork, 4.4 mi (7.1 km) northwest of Bredette at site of water- quality station.		1976-77	10-19-77 11- 9-77 12-14-77 1-12-78 2-14-78 3-25-78 4-25-78 5-23-78 6-12-78 7-20-78 8-15-78 9-19-78	17.1 13.2 10 7.70 0 796 81 72.1 39 34 8 64.7
West Fork Poplar River 06179500	Poplar River	Lat 49°00'00", long 106°22'00", in SE¼ sec.5, T.1 N., R.3 W., Third meridian, at West Poplar Canadian Customs Post, 100 ft (30.5 km) north of international boundary, 6 mi (10 km) upstream from Roanwood Coulee, 10 mi (16 km) north of Opheim at site of water-quality station.	139	1931-35,† 1938-51,† 1975-77	10-21-77 11-11-77 12-12-77 1-13-78 2-17-78 3-30-78 4-26-78 5-18-78 6-16-78 7-18-78 9-22-78	d .40 d .30 d .20 0 0 959 3.2 7.8 d .30 3.8 d .30
West Fork Poplar River 06180400	Poplar River	Lat 48°33'01"1", long 105°25'42", in NE¼SW¼ SW¼ sec.1, T.32 N., R.48 E., Roosevelt County, at bridge on State Highway 13, 16 mi (26 km) south of Scobey at site of water-quality station.	1,010	1954, 1976-77	10-19-77 11- 9-77 12-16-77 1-12-78 2-13-78 3-24-78 3-29-78 4-25-78 5-23-78 6-12-78 7-20-78 8-15-78 9-19-78	12.9 16.1 d 10 0 0 473 1,450 53 55 21 7.04 2.4 197

See footnotes at end of table, p. 782

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Big Muddy Creek basin						
Big Muddy Creek 485752104522601	Missouri River	Lat 48°57'52", long 104°52'26", in SW¼ SE¼SW¼ sec.9, T.37 N., R.52 E., Sheridan County, 2 mi (3 km) south of international boundary, 4 mi (6 km) northeast of confluence of Beaver Creek, and 5 mi (8 km) northeast of Daleview.			4-27-78	d 0.10
Big Muddy Creek 485552104562901	Missouri River	Lat 48°55'52", long 104°56'29", in SE¼SE¼ NE¼ sec.23, T.37 N., R.51 E., Sheridan County, 0.5 mi (0.8 km) upstream from confluence with Beaver Creek, and 1.5 mi (2.4 km) north of Daleview.			4-27-78	d .20
Beaver Creek 485536104562601	Big Muddy Creek	Lat 48°55'36", long 104°56'26", in NE¼NW¼ SW¼ sec.29, T.37 N., R.51 E., Sheridan County, at bridge 0.3 mi (0.5 km) upstream from confluence with Big Muddy Creek, 1.2 mi (1.9 km) north of Daleview.			4-27-78	6.97
Big Muddy Creek 06182500	Missouri River	Lat 48°54'40", long 104°56'42", near center of north line of sec.5, T.36 N., R.52 E., Sheridan County, on right bank 0.5 mi (0.8 km) west of Daleview, 0.5 mi (0.8 km) upstream from Whitetail Creek, 6 mi (10 km) north of Redstone, and at mile 149.6 (240.7 km), and at site of former gaging station.	279	1974-72†	4-27-78	7.86
Big Muddy Creek 06183450	Missouri River	Lat 48°40'22", long 104°30'42", in NW¼ SE¼NW¼ sec.27, T.34 N., R.55 E., Sheridan County, 3 mi (5 km) southwest of Antelope, and 7 mi (11 km) south of Plentywood.	1,171		4-26-78	32.7
Yellowstone River basin						
Blue Creek 454339108315501	Yellowstone River	Lat 45°43'39", long 108°31'55", in SE¼ SE¼SE¼ sec.20, T.1 S., R.26 E., Yellowstone County, at bridge on secondary Highway 416, 0.5 mi (0.8 km) south of Yellowstone River.		1969	5-19-78	e 3,460
West Buckeye 06216300	Yellowstone	Lat 45°39'03", long 108°23'53", in NE¼ County, 2,000 ft (610 m) upstream from bridge on county road, 17 mi (27 km) southeast of Billings.	2.64	1955-73j	5-19-78	f 240
Pryor Creek basin						
Pryor Creek 06216500	Yellowstone River	Lat 45°42'54", long 108°18'47", in NW¼SE¼ sec.30, T.1 S., R.28 E., Yellowstone County, at bridge on Interstate Highway 90, and U.S. Highway 87, 11 mi (18 km) southeast of Billings.	440	1911-24† 1938-53† 1955-73j	5-19-78	e14,900
Pryor Creek 455314108180901	Yellowstone River	Lat 45°53'14", long 108°18'09", in SW¼ NE¼SE¼ sec.25, T.2 N., R.27 E., Yellow- stone County, at bridge on I-94, 0.6 mi (1.0 km) south of Huntley.			5-19-78	e18,200
Pryor Creek 06217000	Yellowstone River	Lat 45°53'14", long 108°18'39", in SW¼ sec.25, T.2 N., R.27 E., at highway bridge 0.5 mi (0.8 km) southwest of railroad station at Huntley, and 0.5 mi (0.8 km) upstream from mouth.	606	1904-16† 1964	5-19-78	g 9,000
Yellowstone River basin						
Yellowstone River 06217500	Missouri River	Lat 46°54'15", long 108°19'01", in NW¼ SW¼ sec.24, T.2 N., R.27 E., Yellow- stone County, at bridge on State Highway 312, 0.1 mi (0.2 km) downstream from Twelve Mile Creek, 0.7 mi (1.1 km) northwest of Huntley at site of water-quality station.	12,840	1907-16† 1945, 1977	10-19-77	4,410

See footnotes at end of table, p. 782

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Yellowstone River basin--continued						
Huntley Project Drain No. 7 455936108102201	Diverts from Yellowstone River	Lat 45°59'36", long 108°10'22", in NW¼NW¼SW¼ sec. 19, T.3 N., R.29 E., Yellowstone County, at downstream side of bridge on farm road, 0.25 mi (0.40 km) upstream from mouth, 2.2 mi (3.5 km) northwest of Worden at site of water-quality station.		1976-77	10-28-77	1.17
					11-29-77	1.15
					12-28-77	.77
					1-25-78	.63
					3- 1-78	.83
					3- 8-78	.58
					4-26-78	1.14
					6- 1-78	1.62
					6-14-78	1.21
					7- 7-78	7.58
					8-10-78	7.04
					9-14-78	9.04
Lost Boy Creek 465920107571801	Fly Creek	Lat 46°59'20", long 107°57'18", in SE¼SE¼ SW¼ sec.23, T.3 N., R.30 E., Yellowstone County, at county bridge at west edge of Pompeys Pillar, 0.3 mi (0.15 km) upstream from mouth.		1974-77	10-13-76	2.08
					11-10-76	1.37
					12- 8-76	1.13
					1-10-77	1.67
					2- 3-77	1.35
					2-16-77	1.28
					3- 7-77	1.13
					4- 5-77	.88
					5- 3-77	2.78
					6- 9-77	6.14
					7- 7-77	8.35
					8- 3-77	3.04
					9- 7-77	28
					10- 5-77	2.12
					11-14-77	1.65
					12- 7-77	1.19
					1-10-78	1.12
					3- 9-78	1.18
					3-24-78	d .80
					4-10-78	.95
					5- 9-78	27.6
					5-12-78	14
					6- 8-78	1.15
Soap Creek 06287500	Bighorn River	Lat 45°19'38", long 107°46'10", in NE¼ sec.10, T.6 S., R.32 E., Big Horn County, on left bank 6 mi (10 km) upstream from mouth and 9.5 mi (15.3 km) southwest of St. Xavier at site of former gaging station.	98.3	1911-13†	5-19-78	g 7,810
				1939-53†		
				1963		
				1965-67		
				1967-72†		
Rottengrass Creek 06288000	Bighorn River	Lat 45°24'44", long 107°40'57", in NE¼ sec.7, T.5 S., R.33 E., Big Horn County, on right bank 25 ft (8 m) downstream from county bridge, 3.8 mi (6.1 km) southeast of St. Xavier, and 11 mi (18 km) upstream from mouth at site of former gaging station.	147	1911-22†	5-19-78	g 9,740
				1965-67		
				1967-72†		
Pass Creek 06290000	Little Bighorn River	Lat 45°03'14", long 107°21'18", in SE¼NE¼ sec.13, T.9 N., R.35 E., on right bank 100 ft (30 m) upstream from highway bridge, 1 mi (2 km) downstream from Twin Creek, 5 mi (8 km) south of Wyola, and 6 mi (10 km) upstream from mouth at site of former gaging station.	111	1935-56†	5-19-78	e 5,310
Lodgegrass Creek 06291500	Little Bighorn River	Lat 45°07'30", long 107°36'00", in W½NW sec.19, T.8 S., R.34 E., Big Horn County, on left bank 0.5 mi (0.8 km) upstream from Willow Creek diversion canal, 1.5 mi (2.4 km) downstream from Spring Creek, and 10 mi (16 km) west of Wyola, at site of former gaging station.	80.7	1939-75†	5-19-78	g 992
Tulloch Creek 454709107180501	Bighorn River	Lat 45°47'09", long 107°18'05", in SE¼ SE¼ sec.36, T.1 N., R.35 E., Bighorn County, at bridge 15 mi (24 km) north- east of Hardin, and 26 mi (42 km) south of Bighorn.		1977	8-25-78	k 0.30

See footnotes at end of table, p. 782

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Yellowstone River basin--continued						
Tullock Creek 06294690	Bighorn River	Lat 46°05'08", long 107°24'20", in NE¼ NE¼NE¼ sec.19, T.4 N., R.35 E., Treasure County, on right bank at old diversion dam, 0.3 mi (0.5 km) upstream from Thunder Creek, 5.6 mi (9.0 km) south of Bighorn, 8 mi (13 km) upstream from mouth and at continuous surface-water site.	446	i	8-25-78	0.10
Sarpy Creek 454947107064401	Yellowstone River	Lat 45°49'47", long 107°06'44", in SW¼SW¼ sec.15, T.1 N., R.37 E., Bighorn County, about 20 ft (6 m) upstream from county bridge, 0.2 mi (0.3 km) upstream from Spring Creek, and 28 mi (45 km) north- east of Hardin.			8-25-78	0
East Fork Sarpy Creek 454900106594401	Sarpy Creek	Lat 45°49'00", long 106°59'44", in NW¼ SW¼ sec.22, T.1 N., R.38 E., Bighorn County, at county bridge 2.2 mi (3.5 km) northwest of Sarpy School, and 19 mi (31 km) west of Colstrip.			8-25-78	k 0.15
Sarpy Creek 455704107083001	Yellowstone River	Lat 45°57'04", long 107°08'30", in SW¼ NE¼, sec.5., T.2 N., R.37 E., Treasure County, at farm bridge crossing 0.1 mi (0.2 km) downstream from Iron Spring Coulee, and 20 mi (32 km) southeast of Bighorn.			8-25-78	h,k <.01
Sarpy Creek 460234107070401	Yellowstone River	Lat 46°02'34", long 107°07'04", in NE¼ NE¼ sec.4, T.3 N, R.37 E., Treasure County, at county bridge, 0.5 mi (0.8 km) upstream from Beaver Creek, and 18 mi (29 km) southeast of Bighorn.			8-25-78	h,k .12
Sarpy Creek 06294940	Yellowstone River	Lat 46°14'12", long 107°08'03", in SE¼ SE¼ sec.30, T.6 N., R.37 E., Treasure County, on left bank 100 ft (30 m) upstream from bridge on FAS Route 415, 0.8 mi (1.3 km) upstream from Hysham Canal, and 5.5 mi (8.8 km) southeast of Hysham at site of continuous record station.	453	i	8-25-78	h .17
East Fork Armells Creek 455233106373501	Armells Creek	Lat 45°52'33", long 106°37'35", in SW¼ SW¼ sec.34, T.2 N., R.41 E., Rosebud County, at State Highway 39 bridge, 0.5 mi (0.8 km) south of Colstrip.			8-25-78	h,k .01
East Fork Armells Creek 06294980	Armells Creek	Lat 45°58'42", long 106°38'38", in SE¼ SW¼SW¼ sec.28, T.3 N., R.41 E., Rose- bud County, on private road bridge 0.9 mi (1.4 km) downstream from Corral Creek, 6.7 mi (10.8 km) north of Colstrip at site of water-quality station.	97.3	1975-77	10- 5-77 12- 5-77 2-14-78 3- 7-78 3-22-78 4-12-78 5- 9-78 6- 6-78 7-11-78 8- 9-78 9- 5-78	.79 .86 .75 1.87 4 2.25 8.90 2.51 .28 <.50 0
West Fork Armells Creek 455922106502901	Armells Creek	Lat 45°59'22", long 106°50'29", in NW¼ NE¼ sec.26, T.3 N., R.39 E., Rosebud County, 0.1 mi (0.2 km) downstream from Trail Creek, and 13 mi (21 km) northwest of Colstrip.			8-25-78	k 0.06
Armells Creek 460607106454201	Yellowstone River	Lat 46°06'07", long 106°45'42", in SE¼ NW¼ sec.16, T.4 N., R.40 E., Rosebud County, at county bridge 0.7 mi (1.1 km) downstream from confluence of East and West Forks Armells Creek, and 15 mi (24 km) south of Forsyth.			8-25-78	h,k .12

See footnotes at end of table, p.782

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Yellowstone River basin--continued						
Armells Creek 06294995	Yellowstone River	Lat 46°14'59", long 106°48'22", in SE¼ NW¼NE¼ sec.26, T.6 N., R.39 E., Rose- bud County, on right bank 300 ft (90 m) upstream from bridge on Highway I-94, 2 mi (3 km) upstream from mouth, and 6 mi (10 km) southwest of Forsyth at site of continuous-record station.	370	i	8-25-78	h 0.04
Rosebud Creek 451302106583201	Yellowstone River	Lat 45°13'02", long 106°58'32", in NE¼SE¼ sec. 20, T.7 S., R.39 E., Big Horn County, at farm road crossing on Kobold Ranch 0.1 mi (0.2 km) south of county road, and about 15 mi (24 km) south of Busby.			10-31-77 8-24-78	k 3.5 1.34
Rosebud Creek 451445106580201	Yellowstone River	Lat 45°14'45", long 106°58'02", in NE¼SW¼ sec.9, T.7 S., R.39 E., Big Horn County, at private road crossing, 0.1 mi (0.2 km) west of county road, about 7 mi (11 km) south of Kirby.			10-31-77	k 2.3
Rosebud Creek 06295110	Yellowstone River	Lat 45°19'59", long 106°59'10", in SW¼ SE¼NW¼ sec.8, T.6 S., R.39 E., Big Horn County, at private bridge at Kirby, 50 ft (15 m) downstream from confluence of Cache Creek at site of water-quality station.	116		10- 4-77 12- 5-77 2-13-78 3- 7-78 3-22-78 3-27-78 4-12-78 5- 9-78 6- 6-78 8-24-78 9- 6-78	4.8 8.85 7.87 8.78 d 20 42.8 30.5 231 92.2 10.9 10.4
Rosebud Creek 454044106415601	Yellowstone River	Lat 45°40'44", long 106°41'56", in NE¼ SW¼ sec.8, T.2 S., R.41 E., Rosebud County, at private road crossing 0.6 mi (1.0 km) west of Jintown, 4 mi (6 km) north of Lame Deer.			10-31-77 8-24-78	k 18 46.5
Rosebud Creek 454437106383801	Yellowstone River	Lat 45°44'37", long 106°38'38", in NW¼ NW¼ sec.23, T.1 S., R.41 E., Rosebud County, near farm road crossing, about 0.2 mi (0.3 km) downstream of Richard Coulee, and 13 mi (21 km) south of Colstrip.			10-31-77	k 19
Rosebud Creek 06295250	Yellowstone River	Lat 45°46'03", long 106°34'10", in SE¼ SW¼NE¼ sec.8, T.1 S., R.42 E., Rosebud County, on left bank 10 ft (3 m) down- stream from bridge on FAS Route 315, 1.5 mi (2.4 km) downstream from Lee Coulee, and 8.4 mi (13.5 km) southeast of Colstrip at site of continuous-record station.	799	i	8-24-78	47.1
Miller Coulee 454713106320601	Rosebud Creek	Lat 45°47'13", long 106°32'06", in NE¼NW¼ sec.3, T.1 S., R.42 E., Rosebud County, at county road crossing, just upstream from confluence with Rosebud Creek, about 2.5 mi (4.0 km) east of FAS 315, about 12 mi (19 km) south of Colstrip.			10-31-77	0
Hay Coulee 454808106300301	Rosebud Creek	Lat 45°48'08", long 106°30'03", in NW¼NW¼ sec.34, T.1 N., R.42 E., Rosebud County, 0.2 mi (0.3 km) above mouth, about 4.5 mi (7.2 km) east of FAS 315, 39 mi (63 km) south of Rosebud.			10-31-77	0

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DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Yellowstone River basin--continued						
Rosebud Creek 454806106292901	Yellowstone River	Lat 45°48'06:, long 106°29'29", in NW¼NE¼ sec.34, T.1 N., R.42 E., Rosebud County, near private bridge crossing, 0.2 mi (0.3 km) south of county road, 0.4 mi (0.6 km) below Hay Coulee, about 39 mi (63 km) south of Rosebud.			11- 1-77	k 16.5
Rosebud Creek 454945106252201	Yellowstone River	Lat 45°49'45", long 106°25'22", in NE¼NE¼ sec.19, T.1 N., R.43 E., Rosebud County, at county road bridge, 0.6 mi (1.0 km) downstream from Greenleaf Creek, 34.5 mi (55.5 km) south of Rosebud.			11- 1-77 8-24-78	k 15.9 46.5
Rosebud Creek 06295400	Yellowstone River	Lat 45°53'33", long 106°24'03", in NE¼ SE¼SE¼ sec.29, T.2 N., R.43 E., Rosebud County, on private road bridge, 0.3 mi (0.5 km) upstream from Pony Creek, 11.6 mi (18.7 km) northeast of Colstrip at site of water-quality station.	1,153	1975-77	11- 1-77	k 14.9
Pony Creek 455342106241501	Rosebud Creek	Lat 45°53'42", long 106°24'15", in NE¼SE¼ sec.29, T.2 N., R.43 E., Rosebud County, just upstream at mouth, 0.9 mi (1.5 km) west of county road, 29.5 mi (47.5 km) south of Rosebud.			11- 1-77	0
Rosebud Creek 455527106231501	Yellowstone River	Lat 45°55'27", long 106°23'15", in NW¼SE¼ sec.16, T.2 N., R.43 E., Rosebud County, at farm road bridge crossing, about 0.2 mi (0.3 km) west of county road, 0.4 mi (0.6 km) upstream from West Snider Creek, 27 mi (43 km) south of Rosebud.			11- 1-77	k 14.6
Snider Creek 06295420	Rosebud Creek	Lat 45°55'39", long 106°23'02", in S¼NE¼ sec.16, T.2 N., R.43 E., Rosebud County at county road crossing, 0.3 mi (0.5 km) upstream from mouth, and 7.8 mi (12.6 km) northwest of Brandenburg at site of water- quality station.			10- 7-77 12- 6-77 1-11-78 2-14-78 3- 8-78 3-16-78 3-19-78 3-20-78 4-13-78 5-10-78 6- 7-78 7-12-78	0 0 0 0 0 0 10.2 51.8 0 0 0 0
Spring Creek 455747106235401	Rosebud Creek	Lat 45°57'47", long 106°23'54", in NW¼NW¼ sec.4, T.2 N., R.43 E., Rosebud County just upstream from mouth, 0.6 mi (1.0 km) west of county road, 24.5 mi (39.4 km) south of Rosebud.			11- 1-77	0
Rosebud Creek 455810106233301	Yellowstone River	Lat 45°58'10", long 106°23'33", in NE¼SW¼ sec.33, T.3 N., R.43 E., Rosebud County, 0.2 mi (0.3 km) west of county road, 0.5 mi (0.8 km) downstream of Spring Creek, 24 mi (39 km) south of Rosebud.			11- 1-77	k 14.8
Rosebud Creek 460122106241901	Yellowstone River	Lat 46°01'22", long 106°24'19", in SW¼SE¼ sec.8, T.3 N., R.43 E., Rosebud County, at farm road crossing, 0.4 mi (0.6 km) west of county road, 0.5 mi (0.8 km) upstream from Goodman Creek, 20.5 mi (33.0 km) south of Rosebud.			11- 1-77 8-24-78	k 14.9 44.2

See footnotes at end of table, p. 782

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Yellowstone River basin--continued						
Rosebud Creek 460409106255301	Yellowstone River	Lat 46°04'09", long 106°25'53", in NE¼SW¼ sec.30, T.4 N., R.43 E., Rosebud County at farm road bridge crossing, 0.4 mi (0.6 km) west of county road, 1.8 mi (2.9 km) downstream from Mitchell Coulee, 17 mi (27 km) south of Rosebud.			11- 1-77 k	14.3
Rosebud Creek 460557106264601	Yellowstone River	Lat 46°05'57", long 106°26'46", in NW¼SE¼ sec.13, T.4 N., R.42 E., Rosebud County, at farm road bridge crossing, 0.1 mi (0.2 km) upstream from Cottonwood Creek, 0.2 mi (0.3 km) west of county road, 12 mi (19 km) south of Rosebud.			11- 1-77 k 8-24-78	13.7 44.1
Vance Creek 460837106275201	Rosebud Creek	Lat 46°08'37", long 106°27'52", in NW¼SW¼ sec.34, T.5 N., R.42 E., Rosebud County, just upstream from mouth, near county road bridge, 8.7 mi (14.0 km) south of Highway I-94, 10 mi (16 km) south of Rosebud.			11- 1-77 d,k	<.01
Rosebud Creek 460914106282201	Yellowstone River	Lat 46°09'14", long 106°28'22", in SW¼SE¼ sec.28, T.5 N., R.42 E., Rosebud County, at farm road bridge crossing, 0.2 mi (0.3 km) west of county road, 0.8 mi (1.3 km) below Vance Creek, about 8 mi (13 km) south of Rosebud.			11- 1-77 k	14.3
Rosebud Creek 461237106293601	Yellowstone River	Lat 46°12'37", long 106°29'36", in SW¼SE¼ sec.5, T.5 N., R.42 E., Rosebud County, at farm road bridge crossing, 0.3 mi (0.5 km) east of county road, 1 mi (2 km) downstream from previous published crest-stage gage number 06296000, about 4 mi (6 km) south of Rosebud.			11- 2-77 k	13
Rosebud Creek 06296003	Yellowstone River	Lat 46°15'53", long 106°28'30", in SW¼ NW¼NE¼ sec.21, T.6 N., R.42 E., Rosebud County, on left bank 0.4 mi (0.6 km) upstream from bridge on Highway I-94, 0.8 mi (1.3 km) upstream from mouth, and 1.6 mi (2.6 km) southwest of Rosebud at site of continuous-record station.	1,302	i	11- 2-77 8-24-78	14.4 34.9
Missouri River basin						
Yellowstone River 06296120	Missouri River	Lat 46°23'51", long 105°53'36", in SE¼ SW¼ sec.31, T.8 N., R.47 E., Custer County, at Ft. Keogh Bridge, 2.4 mi (3.9 km) upstream from gage, 1.6 mi (2.6 km) upstream from mouth of Tongue River, and 2 mi (3 km) west of Miles City at site of water- quality station.	42,847	1977	5-21-78	79,000
Tongue River basin						
Decker Mine effluent 450237106501201	Pond Creek	Lat 45°02'12", long 106°50'12", in NE¼NW¼ SW¼ sec.16, T.9 S., R.40 E., Big Horn at Parshall flume, 2.5 mi (6.5 km) northeast of Decker.		1975-77	12-20-77 d 2-22-78 7-19-78	.01 0 0

See footnotes at end of table, p. 782

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Tongue River basin--continued						
Coal Creek 450236106464101	Tongue River	Lat 45°02'36", long 106°46'41", in SE¼ NE¼SW¼ sec.13, T.9 S., R.40 E., Big Horn County, at county bridge 4.7 mi (7.6 km) northeast of Decker.		1976-77	10-18-77 12-20-77 2-23-78 3-21-78	0 0 0 .36
Pearson Creek 450429106502601	Tongue River	Lat 45°04'29", long 106°50'26", in SW¼ NW¼SE¼ sec.33, T.8 S., R.40 E., Big Horn County, at county road, 4.5 mi (7.2 km) northeast of Decker.		1975-77	10-18-77 12-20-77 1-11-78 2-22-78 3-21-78	0 0 0 0 3.83
Spring Creek 06306900	Tongue River	Lat 45°05'09", long 106°50'12", in SE¼ sec.33, T.8 S., R.40 E., Big Horn County, at bridge on county road, 1 mi (2 km) upstream from mouth, 5 mi (8 km) north of Decker.	34.7	1958	10-18-77 12-20-77 1-11-78 2-22-78 5-11-78 9-27-78	0 0 0 0 1.01 0
Tongue River 450802106460501	Yellowstone River	Lat 45°08'02", long 106°46'05", in SE¼ SE¼NE¼ sec.13, T.8 S., R.40 E., Big Horn County, on apron of Tongue River Dam, 9 mi (15 km) northeast of Decker at mile 198.0 (318.6 km).		1976	11- 2-77	k 158
Tongue River 06307500	Yellowstone River	Lat 45°08'29", long 106°46'15", in SE¼SE¼ sec.12, T.8 S., R.40 E., Big Horn County, on left bank 0.5 mi (0.8 km) downstream from Tongue River Dam, 4 mi (6 km) upstream from Post Creek, 8 mi (13 km) north- east of Decker, 16 mi (26 km) south- east of Kirby, and at mile 162.3 (261.1 km) at site of continuous- record station.	1,770	i	11- 2-77 9- 7-78	154 365
Tongue River 451052106434601	Yellowstone River	Lat 45°10'52", long 106°43'46", in SE¼ SE¼ sec.32, T.7 S., R.41 E., Rosebud County, just west of road, about 4.5 mi (7.2 km) upstream of Fourmile Creek, 6.7 mi (10.8 km) downstream of Tongue River Reservoir, and 12 mi (19 km) northeast of Decker.			11- 2-77	k 160
Tongue River 451259106413601	Yellowstone River	Lat 45°12'59", long 106°41'36", in NE¼ SW¼NE¼ sec.22, T.7 S., R.41 E., Rosebud County, 1 mi (2 km) downstream from Fourmile Creek, at Petre Ranch, 17 mi (27 km) northeast of Decker, at mile 184.5 (296.9 km).		1976	9- 7-78	361
Prairie Dog Creek 06307525	Tongue River	Lat 45°20'08", long 106°46'25", in SE¼ NW¼NE¼ sec.12, T.6 S., R.40 E., Big Horn County, on left bank Prairie Dog Creek, about 4.1 mi (6.6 km) upstream from Jack Creek confluence, about 9 mi (14 km) above mouth to Tongue River, which is 23 road mi (37 km) from Birney. Station is 13 air mi (21 km) west of Birney.	6.57		4-24-78 5-15-78 5-24-78 5-25-78 6 -6-78 8- 3-78 8-15-78 8-24-78 9-13-78 9-14-78	.96 1.7 5.3 4.8 3.1 d 1.5 .47 d 1.0 .73 d .80
Prairie Dog Creek 06307528	Tongue River	Lat 45°17'28", long 106°40'56", in SE¼ NW¼NW¼ sec.26, T.6 S., R.41 E., Rose- bud County, on right bank, about 3.3 mi (5.3 km) above confluence with Tongue River, and 9 mi (15 km) west of Birney.	19.6		10-19-77 12-21-77 1-11-78 1-31-78 2-23-78 3-20-78 4-19-78 5-15-78 5-18-78 5-24-78 5-25-78 7-27-78 8- 3-78 8-15-78 8-16-78 8-29-78 9-12-78 9-13-78 9-14-78	0 0 0 0 0 0 0 0 15.3 4.1 3.4 1.5 d .80 .53 d .80 d .60 d 1.5 .53 d .50

See footnotes at end of table, p. 782

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Tongue River basin--continued						
Tongue River 451607106372801	Yellowstone River	Lat 45°16'07", long 106°37'28", in SE¼ NE¼SE¼ sec.31, T.6 S., R.42 E., Rose- bud County, at mouth of Prairie Dog Creek, 7 mi (11 km) southwest of Birney, and at mile 176.1 (283.3 km).		1976	11- 3-77 11- 3-77 9- 7-78	k 160 162 358
Tongue River 451727106334401	Yellowstone River	Lat 45°17'27", long 106°33'44", in NE¼ NE¼ sec.27, T.6 S., R.42 E., Rosebud County, 0.7 mi (1.1 km) upstream of Quarter Circle V Ranch, 0.8 mi (1.3 km) below Battle Butte Creek, and 3.5 mi (5.6 km) upstream of Birney.			11- 3-77	k 159
Hanging Woman Creek 450007106252901	Tongue River	Lat 45°00'07", long 106°25'29", in S½ sec.2, T.10 S., R.43 E., Big Horn County, near county road, 19 mi (31 km) east of Decker, 21 mi (34 km) southwest of Otter.			9- 6-78	h,k .04
West Prong Hanging Woman Creek 450004106253001	Tongue River	Lat 45°00'04", long 106°25'30", in NW¼ NE¼ sec.2, T.10 S., R.43 E., Big Horn County, at confluence with Hanging Woman Creek, 0.1 mi (0.2 km) south of Forks Ranch, 19 mi (31 km) east of Decker, and 21 mi (34 km) southwest of Otter.			9- 6-78	0
East Trail Creek Flume No. 1 450408106215401	Trail Creek	Lat 45°04'08", long 106°21'54", in NE¼ SE¼NE¼ sec. 7, T.9 S., R.44 E., Big Horn County, 6 mi (10 km) southwest of Quietus, 34 mi (56 km) southwest of Otter, 37 mi (60 km) east of Decker.		1976-77	5-16-78	.13
East Trail Creek Flume No. 2 450415106231201	Trail Creek	Lat 45°04'15", long 106°23'12", in NW¼NW¼ NE¼ sec.7, T.9 S., R.44 E., Big Horn County, 6 mi (10 km) southwest of Quietus, 34 mi (56 km) southwest of Otter, 37 mi (60 km) east of Decker.		1977	5-16-78	.19
East Trail Creek Flume No. 4 450409106243501	Trail Creek	Lat 45°04'09", long 106°24'35", in NW¼SE¼ SE¼ sec.12, T.9 S., R.43 E., Big Horn County, 6 mi (10 km) southwest of Quietus, 35 mi (56 km) southwest of Otter, 37 mi (60 km) east of Decker.		1976-77	10-12-77 5-16-78 5-26-78	0 .10 .54
Trail Creek 450447106265801	Hanging Woman Creek	Lat 45°04'47", long 106°26'58", in SE¼NE¼SW¼ sec.3, T.9 S., R.43 E., Big Horn County, just upstream from confluence with hanging Woman Creek, 35 mi (56 km) southwest of Otter.			3-24-78	10.1
Hanging Woman Creek 06307570	Tongue River	Lat 45°08'02", long 106°29'00", in SW¼SE¼SE¼ sec.17, T.8 S., R.43 E., Big Horn County, on county road bridge, 0.6 mi (1.0 km) down- stream from Horse Creek, 0.8 mi (1.3 km) upstream from Circle Bar Draw, 13.2 mi (21.2 km) southeast of Birney at site of water-quality station.		1977	10-20-77 12-20-77 2-23-78 3-27-78 4-19-78 5-10-78 6-21-78 7-20-78 9-27-78	.06 .34 .16 93.8 1.21 30.3 2.42 .98 .35
Hanging Woman Creek 451912106310501	Tongue River	Lat 45°19'12", long 106°31'05", in NW¼NW¼ sec.18, T.6 S., R.43 E., Rosebud County, at mouth of Hanging Woman Creek, 0.25 mi (0.40 km) south of Birney Day School, near county bridge crossing, at Birney.			11- 3-77 9- 6-78	k .27 1.02
Tongue River 452240106294001	Yellowstone River	Lat 45°22'40", long 106°29'40", in NE¼NW¼ sec.25, T.5 S., R.42 E., Rosebud County just above Cook Creek, 3 mi (5 km) south- east of Birney Day School, and 4.5 mi (7.2 km) north of Birney.			11- 3-77 9- 7-78	k 163 367

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DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Tongue River basin--continued						
Tongue River 452708106242801	Yellowstone River	Lat 45°27'08", long 106°24'28", in NE¼NW¼ sec. 34, T.4 S., R.43 E., Rosebud County 0.4 mi (0.6 km) upstream from Pawnee Creek, 8 mi (13 km) north of Birney.			11- 3-77 11- 3-77 9- 7-78	k 176 k 178 363
Tongue River 453301106181301	Yellowstone River	Lat 45°33'01", long 106°18'13", in NW¼NE¼ sec.28, T.3 S., R.44 E., Rosebud County, 300 ft (91 m) downstream of Logging Creek, 3.4 mi (5.5 km) southwest of Ashland.			11- 3-77	k 183
Tongue River 453535106171101	Yellowstone River	Lat 45°35'35", long 106°17'11", in SE¼NE¼ sec.10, T.3 S., R.44 E., Rosebud County at U.S. Highway 212 bridge crossing, 1 mi (2 km) west of Ashland.			11- 3-77 11- 3-77 9- 7-78	k 190 k 185 362
Otter Creek 450437106055201	Tongue River	Lat 45°04'37", long 106°05'52", in NW¼SW¼ sec.4, T.9 S., R.46 E., Powder River County, just downstream from Long Creek, about 9 mi (15 km) south of Otter.			10-26-77	0
Otter Creek 06307665	Tongue River	Lat 45°08'15", long 106°07'22", in NE¼NE¼ SE¼ sec.18, T.8 S., R.46 E., Powder River County, 0.2 mi (0.3 km) downstream from Pasture Creek, 5.5 mi (8.8 km) upstream from Bradshaw Creek, and 6.2 mi (10.0 km) southeast of Decker at site of water- quality station.	40.9		10-17-77 10-26-77 12- 6-77 3-19-78 4-17-78 5-11-78 6-19-78 7-17-78 9- 6-78 9-21-78	 h h .02 .01 .02 .02 .16 .78 1.55 .37 .14 .29
Otter Creek 451134106085901	Tongue River	Lat 45°11'34", long 106°08'59", in NE¼NW¼ sec.31, T.7 S., R.46 E., Powder River County, 2 mi (3 km) upstream from Bear Creek, 2.7 mi (4.3 km) east of Otter.			10-26-77	0
Bear Creek 451313106101001	Otter Creek	Lat 45°13'13", long 106°10'10", in NE¼NW¼ sec.24, T.7 S., R.45 E., Powder River County, at county bridge crossing, 0.3 mi (0.5 km) upstream from confluence with Otter Creek, 1.7 mi (2.7 km) northeast of Otter.			10-26-77	h,k .02
Otter Creek 451330106100201	Tongue River	Lat 45°13'30", long 106°10'02", in SW¼SE¼ sec.13, T.7 S., R.45 E., Powder River County, near county bridge crossing, 0.35 mi (0.56 km) north of Bear Creek, 2 mi (3 km) northeast of Otter.			10-26-77 9- 6-78	k .18 .48
Taylor Creek 451659106084701	Otter Creek	Lat 45°16'59", long 106°08'47", in NW¼SE¼ sec.30, T.6 S., R.46 E., Powder River County, private road crossing near old Fort Howes, 0.5 mi (0.8 km) downstream from Cow Creek, about 1.3 mi (2.1 km) south of Fort Howes Ranger Station, 6.5 mi (10.5 km) north of Otter Creek.			10-26-77	k .22
Otter Creek 51732106085001	Tongue River	Lat 45°17'32", long 106°08'50", in NE¼NW¼ sec.30, T.6 S., R.46 E., Powder River County, at bridge 0.5 mi (0.8 km) down- stream from Cow Creek, 6 mi (10 km) north of Otter.		1977	10-26-77 10-26-77 9-06-78	k .79 k .72 2.37

See footnotes at end of table, p. 782

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Measurements Discharge (cfs)
Tongue River basin--continued						
Otter Creek 452106106085301	Tongue River	Lat 45°21'06", long 106°08'53", in SE¼SW¼ sec.35, T.5 S., R.45 E., Powder River County, 0.1 mi (0.2 km) downstream from Gate Creek, 11 mi (18 km) north of Otter, 15 mi (24 km) west of Sonnette.			10-26-77	k 0.92
Fifteenmile Creek 452311106081701	Otter Creek	Lat 45°23'11", long 106°08'17", in NW¼SE¼ sec.23, T.5 S., R.45 E., Powder River County, at mouth about 0.3 mi (0.5 km) south of forest service road, 0.6 mi (1.0 km) east of Otter Creek Road, 13 mi (21 km) northeast of Otter.			10-26-77 10-26-77	k .08 h,k .10
Otter Creek 06307717	Tongue River	Lat 45°23'29", long 106°08'37", in N¼ sec.23, T.5 S., R.45 E., Powder River County, on county road bridge, 1.0 mi (1.6 km) upstream from Fifteenmile Creek and 13.1 mi (21.1 km) northeast of Otter at site of water-quality station.			10-18-77 12-20-77 2-27-78 3-20-78 4-17-78 5-11-78 6-19-78 7-17-78 9-21-78	.05 2.16 2.21 75.6 1.03 15.6 17.2 5.42 3.16
Otter Creek 452558106085101	Tongue River	Lat 45°25'58", long 106°08'51", in SE¼NW¼ sec.2, T.5 S., R.45 E., Powder River County, 0.2 mi (0.3 km) upstream from Tenmile Creek, 0.6 mi (1.0 km) east of Otter Creek road, at farm road crossing, about 10 mi (16 mi) south of U.S. Highway 212, 12 mi (19 km) south of Ashland.			10-27-77 10-27-77 9-6-78	k .15 k .14 1.77
Tenmile Creek 452611106082801	Otter Creek	Lat 45°26'11", long 106°08'28", in NW¼NE¼ sec.2, T.5 S., R.45 E., Powder River County, 0.4 mi (0.6 km) above mouth, at farm road crossing 0.2 mi (0.3 km) north of Denson Ranch, 0.9 mi (1.4 km) east of Otter Creek road, 12 mi (19 km) south of Ashland.			10-26-77	0
Otter Creek 452854106101601	Tongue River	Lat 45°28'54", long 106°10'16", in NW¼NW¼ sec.22, T.4 S., R.45 E., Powder River County, about 0.1 mi (0.2 km) east of Otter Creek road, near Badgetts Ranch, 0.5 mi (0.8 km) below Newell Creek, 11 mi (18 km) south of Ashland.			10-27-77	0
Otter Creek 453017106102801	Tongue River	Lat 45°30'17", long 106°10'28", in SE¼NE¼ sec.9, T.4 S., R.45 E., Powder River County, near farm road crossing, 0.4 mi (0.6 km) east of Otter Creek road, 0.6 mi (1.0 km) upstream from Threemile Creek, 8 mi (13 km) south of Ashland.			10-27-77	0
Otter Creek 453117106110501	Tongue River	Lat 45°31'17", long 106°11'05", in NE¼NW¼ sec.4, T.4 S., R.45 E., Powder River County, at county road bridge crossing, 0.5 mi (0.5 km) south of Willow Crossing, 0.8 mi (1.3 km) downstream of Threemile Creek, 7 mi (11 km) south of Ashland.			10-27-77 9-6-78	h,k .06 2.07
Home Creek 06307735	Otter Creek	Lat 45°32'35", long 106°11'39", in SE¼NE¼SE¼ sec.29, T.3 S., R.45 E., Powder River County, about 150 ft (46 m) west of Otter Creek road culvert, 1.0 mi (1.6 km) upstream from mouth, about 2 mi (3 km) south of Highway 212, 5.1 mi (8.2 km) southeast of Ashland at site of water- quality station.	58.7	1976-77	10-18-77 10-27-77 12-20-77 9-6-78 9-21-78	h .05 h .06 h .13 h .03 h .06
Otter Creek 453246106124101	Tongue River	Lat 45°32'46", long 106°12'41", in NW¼SW¼ sec.29, T.3 S., R.45 E., Powder River County, at private road crossing, 0.4 mi (0.6 km) downstream from Home Creek, 5 mi (7 km) south of Ashland.			10-27-77 10-27-77 9-6-78	k .52 k .55 1.50

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DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Measurements Discharge (cfs)
Tongue River basin--continued						
East Fork Otter Creek 453338106123701	Otter Creek	Lat 45°33'38", long 106°12'37", in SW¼NW¼ sec.20, T.3 S., R.45 E., Powder River County, at private road crossing, 0.2 mi (0.3 km) upstream from confluence with Otter Creek, 3 mi (5 km) south of Ashland.			10-27-77	h,k 0.05
Otter Creek 453323106125801	Tongue River	Lat 45°33'23", long 106°12'58", in SE¼SE¼ sec.19, T.3 S., R.45 E., Powder River County, at private road crossing, 0.2 mi (0.3 km) downstream of East Fork Otter Creek, 3 mi (5 km) south of Ashland.			10-27-77 9- 6-78	k 1.24 1.69
Otter Creek 06307740	Tongue River	Lat 45°35'18", long 106°15'17", in NE¼NE¼SE¼ sec.11, T.3 S., R.44 E., Rosebud County, on left bank 200 ft (61 m) downstream from bridge on U.S. Highway 212, 2.5 mi (4.0 km) upstream from mouth, and 0.3 mi (0.5 km) southeast of Ashland at site of continuous- record station.	707	i	10-28-77 9- 6-78	.75 1.82
Otter Creek 453601106161001	Tongue River	Lat 45°36'01", long 106°16'10", in SW¼SW¼ sec.2, T.3 S., R.44 E., Rosebud County, near county road crossing, 0.2 mi (0.3 km) above confluence with Tongue River, 0.2 mi (0.3 km) west of Ashland.			10-28-77	h,k .04
Tongue River 454103106171401	Yellowstone River	Lat 45°41'03", long 106°17'14", in NE¼NW¼ sec.10, T.2 S., R.44 E., Rosebud County, 0.2 mi (0.3 km) north of Northern Cheyenne Indian Reservation boundary, 0.9 mi (1.4 km) west of county road, 7.6 mi (12.2 km) north of Ashland.			11- 4-77	k 187
Tongue River 454307106173501	Yellowstone River	Lat 45°43'07", long 106°17'35", in SE¼NW¼SW¼ sec.27, T.1 S., R.44 E., Rosebud County, 0.3 mi (0.5 km) upstream from Lay Creek, 10 mi (16 km) north of Ashland, at mile 103.8 (167.0 km).		1976	9- 7-78	395
Tongue River 455023106131201	Yellowstone River	Lat 45°50'23", long 106°13'12", in NE¼ sec. 14, T.1 N., R.44 E., Rosebud County, at Brandenberg Bridge, 42 mi (68 km) southwest of Miles City.		1941	11- 4-77 9- 7-78	k 189 384
Tongue River 06307830	Yellowstone River	Lat 45°52'18", long 106°11'17", in NE¼SW¼NW¼ sec.6, T.1 N., R.45 E., Custer County, on left bank 3.1 mi (5.0 km) downstream from Goodale Creek 6.5 mi (10.5 km) downstream from Brandenberg Bridge, and 21 mi (34 km) north of Ashland at site of continuous- record station.	4,062	i	9- 7-78	359
Liscom Creek 455303106083601	Tongue River	Lat 45°53'03", long 106°08'36", in SE¼NW¼ sec.33, T.2 N., R.45 E., Custer County, at county road crossing on Liscom Creek road, 1.6 mi (2.6 km) upstream of discontinued water-quality sampling site 06307840, 22 mi (35 km) northeast of Ashland.			11- 4-77	0
S-H ditch 455531106083901	Tongue River	Lat 45°55'31", long 106°08'39", in NW¼SW¼ sec.16, T.2 N., R.45 E., Custer County, just below diversion gate, 4.5 mi (7.2 km) south of Moon Creek Road, 25 mi (40 km) north of Ashland, and 36 mi (58 km) south of Miles City.			11- 4-77	1.88
Tongue River 455528106083501	Yellowstone River	Lat 45°55'28", long 106°08'35", in SE¼NW¼SW¼ sec.16, T.2 N., R.45 E., Custer County, 0.3 mi (0.5 km) downstream from S-H diversion dam, 6 mi (10 km) northeast of Brandenberg, at mile 73.7 (118.6 km).		1976	11- 4-77	k 197
Tongue River 455844106031901	Yellowstone River	Lat 45°58'44", long 106°03'19", in SW¼SW¼SE¼ sec.30, T.3 N., R.46 E., Custer County, at Moon Creek Road bridge, 11.4 mi (18.3 km) northeast of Brandenberg at mile 64.5 (103.8 km).		1976	11-04-77 9-07-78	225 345

See footnotes at end of table, p.782

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Measurements Discharge (cfs)
Tongue River basin--continued						
Foster Creek 06307890	Tongue River	Lat 46°01'53", long 105°57'07", in NE¼SE¼NW¼ sec.12, T.3 N., R.46 E., Custer County, 0.6 mi (1.0 km) upstream from mouth and 18.5 mi (29.8 km) northwest of Volborg at site of water-quality station.	116	1974-77	11- 4-77	0
Tongue River 460244105560201	Yellowstone River	Lat 46°02'44", long 105°56'02", in NE¼SE¼NW¼ sec.6, T.3 N., R.47 E., Custer County 2 mi (3 km) downstream from Foster Creek, 18.6 mi (29.9 km) northwest of Volborg, at mile 53.2 (85.6 km).		1976	11- 4-77	k 227
Tongue River 460802105483301	Yellowstone River	Lat 46°08'02", long 105°48'33", in SW¼SE¼NW¼ sec.6, T.4 N., R.48 E., Custer County, 1 mi (2 km) downstream from Ash Creek, 15.6 mi (25.1 km) northwest of Volborg, at mile 36.3 (58.4 km).		1976-77	9- 7-78	355
Tongue River 461237105454701	Yellowstone River	Lat 46°12'37", long 105°45'47", in SW¼SE¼ sec.6, T.5 N., R.48 E., Custer County, 0.1 mi (0.2 km) below Dry Creek, at pumping station, 0.6 mi (1.0 km) west of county road, 14 mi (23 km) south of Miles City.			11- 4-77	k 234
Pumpkin Creek 452423105503001	Tongue River	Lat 45°24'23", long 105°50'30", in SW¼SE¼ sec.7, T.5 S., R.48 E., Powder River County, 0.3 mi (0.5 km) downstream of Dry Creek, 0.6 mi (1.0 km) south of Sonnette.			9- 6-78	k .27
Pumpkin Creek 06308080	Tongue River	Lat 45°32'20", long 105°49'03", in NE¼SE¼ SE¼ sec.29, T.3 S., R.48 E., Powder River County, at culverts on State Highway 212, 5.9 mi (9.5 km) upstream from Winter Gulch, 9.1 mi (14.6 km) north of Sonnette at site of former water-quality site.	70.7	1976-77	9- 6-78	0
Pumpkin Creek 06308160	Tongue River	Lat 45°42'40", long 105°43'50", in NW¼ sec.31, T.1 S., R.49 E., Powder River County, at bridge on county road, 0.9 mi (1.4 km) northeast of Loesch, 9 mi (15 km) upstream from Little Pumpkin Creek at site of former water-quality station.	102	1976-77	10-12-77 12- 7-77 3-19-78 4-14-78 5-15-78 5-20-78 6-20-78 7-18-78 8- 2-78 9- 6-78 9-19-78	0 0 3.97 2.92 .04 146 .33 .03 .02 d .01 .02
Little Pumpkin Creek 06308170	Pumpkin Creek	Lat 45°46'50", long 105°43'40", in N¼ sec.6, T.1 S., R.49 E., Powder River County, on county bridge, 0.9 mi (1.4 km) upstream from mouth, 5.0 mi (8.0 km) southwest of Volborg at site of former water-quality station.	101	1976-77	9- 6-78	0
Pumpkin Creek 454739105430801	Tongue River	Lat 45°47'39", long 105°43'08", in NW¼SE¼ sec.35, T.1 N., R.48 E., Custer County, at bridge, 0.5 mi (0.8 km) north of Little Pumpkin Creek, 3.9 mi (6.3 km) southwest of Volborg.			9- 6-78	0
Pumpkin Creek 460317105334201	Tongue River	Lat 46°03'17", long 105°33'42", in NW¼SW¼ sec.31, T.4 N., R.50 E., Custer County, 0.4 mi (0.6 km) upstream of Deer Creek, 29 mi (47 km) southeast of Miles City.			9- 6-78	0
Pumpkin Creek 06308400	Tongue River	Lat 46°13'42", long 105°41'24", in SE¼NW¼ SW¼ sec.35, T.6 N., R.48 E., Custer County, on right bank 30 ft (9 m) upstream from bridge on U.S. Highway 312, 7.5 mi (12.1 km) upstream from mouth, and 16 mi (26 km) southeast of Miles City at site of continuous-record station.	697	1949; 1952 i	9- 6-78	h .03

See footnotes at end of table, p. 782

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Tongue River basin--continued						
Tongue River 461538105455201	Yellowstone River	Lat 46°15'38", long 105°45'52", in SE¼NW¼SE¼ sec.19, T.6 N., R.48 E., Custer County, at Woodard Ranch, 0.7 mi (1.1 km) down- stream from Pumpkin Creek, 1.1 mi (1.8 km) downstream from Tongue-Yellowstone diversion dam, 12 mi (19 km) south of Miles City, at mile 21.4 (34.4 km).		1976	11- 4-77 9- 7-78	221 k 212
Tongue River 462413105512801	Yellowstone River	Lat 56°24'13", long 105°51'28", in NW¼SW¼ sec.33, T.8 N., R.47 E., Custer County, near U.S. Highway 12 bridge, at Riverside Park in Miles City.			11- 5-77 9- 7-78	k 233 260
Yellowstone River basin						
Muster Creek 06309079	Yellowstone River	Lat 46°37'05", long 105°45'08", in NW¼SW¼SE¼ sec.13, T.10 N., R.47 E., Custer County, on right bank, at bridge on Caprock Road, 5.8 mi (9.3 km) northwest of Kinsey at site of water-quality station.	28.5		9- 8-77 2- 1-78 3-16-78 3-24-78 4-11-78 4-12-78 4-25-78 5- 9-78 5-20-78 6- 6-78 6- 9-78 7-19-78 7-20-78	0 0 9.55 6.30 0 0 0 .15 .50 0 0 .54 .02
Custer Creek 06309145	Yellowstone River	Lat 46°42'03", long 105°29'14", in NE¼NW¼NW¼ sec.19, T.11 N., R.50 E., Prairie County, on right bank, at prairie trail ford and just upstream from railroad bridge, 12.0 mi (19.3 km) northeast of Kinsey, about 0.8 river mile (1.3 km) above mouth.	151		9- 8-77 2- 1-78 3-23-78 4-25-78 5- 9-78 6- 6-78 7-19-78	d 72 0 111 1.17 3.69 7.35 .15
Powder River 06324500	Yellowstone River	Lat 45°04'10", long 105°52'00", in NW¼ sec.8, T.9 S., R.48 E., Powder River County, on left bank 500 ft (152 m) downstream from discontinued post office at Moorhead, 6.2 mi (10.0 km) upstream from Buffalo Creek, and at mile 184.8 (297.0 km) at site of continuous-record station.	8,088	1974 i	8-21-78	211
Powder River 451931105341901	Yellowstone River	Lat 45°19'31", long 105°34'19", in NE¼SE¼ sec.10, T.6 S., R.50 E., Powder River County, about 0.1 mi (0.2 km) east of county road, 1.4 mi (2.3 km) upstream of Cache Creek, 10 mi (16 km) southwest of Broadus.			8-31-78	k 238
Powder River 452248105270401	Yellowstone River	Lat 45°22'48", long 105°27'04", is SW¼SE¼ sec.20, T.5 S., R.51 E., Powder River County, 0.1 mi (0.2 km) upstream of Third Creek, 0.1 mi (0.2 km) west of county road, 5 mi (3 km) south of Broadus.			9- 1-78	k 223
Powder River 06324710	Yellowstone River	Lat 45°25'37", long 105°24'05", in NW¼SE¼ sec.3, T.5 S., R.51 E., Powder River County, on right bank 150 ft (46 km) upstream from bridge on U.S. Highway 212, 0.4 mi (0.6 km) downstream from Doyle Creek, 1 mi (2 km) south of Broadus and 7 mi (11 km) upstream from Little Powder River at site of continuous- record station.	8,748	i	9- 1-78	236
Little Powder River 06325000	Powder River	Lat 45°06'17", long 105°19'49", in SW¼SE¼ sec.27, T.8 S., R.52 E., Powder River County, at highway bridge 0.5 mi (0.8 km) downstream from Ranch Creek, and 0.8 mi (1.3 km) northeast of Biddle.	1,541	1938-43	8-30-78 8-30-78	k 6.55 k 6.75

See footnotes at end of table, p. 782

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Yellowstone River basin--continued						
Little Powder River 451147105184501	Powder River	Lat 45°11'47", long 105°18'45", in SW¼NE¼ sec.26, T.7 S., R.52 E., Powder River County, at county bridge, 0.2 mi (0.3 km) downstream of Bell Creek, 0.9 mi (1.4 km) east of State Highway 59, and 7 mi (11 km) north of Biddle.			8-30-78	k 6.29
Little Powder River 452225105180501	Powder River	Lat 45°22'25", long 105°18'05", in SE¼NE¼ sec.28, T.5 S., R.52 E., Powder River County, at U.S. Highway 212 Bridge crossing, 0.2 mi (0.3 km) upstream of East Fork Little Powder River, and 6 mi (10 km) southeast of Broadus.			8-30-78	k 10.4
Little Powder River 452739105193901	Powder River	Lat 45°27'39", long 105°19'39", in SW¼NE¼ sec.29, T.4 S., R.52 E., Powder River County, at county bridge, 0.4 mi (0.6 km) upstream from confluence with Powder River, 4 mi (6 km) northeast of Broadus.			8-30-78	k 14.9
Powder River 453758105150701	Yellowstone River	Lat 45°37'38", long 105°15'07", in NE¼SW¼ sec.25, T.2 S., R.52 E., Powder River County, just below irrigation diversion canal, 11 mi (18 km) southwest of Powder- ville.			9- 1-78	k 274
Powder River 454508105051501	Yellowstone River	Lat 45°45'08", long 105°05'15", in SW¼SE¼ NW¼ sec.17, T.1 S., R.54 E., Powder River County, at county bridge 1 mi (2 km) east of Powderville.		1977	9- 1-78	k 257
Powder River 454911105023501	Yellowstone River	Lat 45°49'11", long 105°02'35", in SE¼NW¼ sec.9, T.1 N., R.54 E., Custer County, 0.7 mi (1.1 km) east of county road, 8 mi (13 km) northeast of Powderville, 23 mi (37 km) west of Ekalaka.			9- 1-78	k 253
Powder River 460808105093201	Yellowstone River	Lat 46°08'08", long 105°09'32", in NE¼NW¼ sec.5, T.4 N., R.53 E., Custer County, on Balsam Ranch, 0.3 mi (0.5 km) east of county road, 0.6 mi (1.0 km) upstream of Cut Coulee, 9 mi (14 km) southeast of Mizpah.			9- 1-78	k 269
Powder River 06326000	Yellowstone River	Lat 46°14'43", long 105°15'52", in NW¼SE¼ sec.30, T.6 N., R.52 E., Custer County, at county bridge about 1.5 mi (2.4 km) upstream from Mizpah Creek, 0.3 mi (0.5 km) east of Mizpah at site of former gaging station.	12,132	1928-33†	9- 1-78	k 297
Mizpah Creek 06326050	Powder River	Lat 45°32'30", long 105°31'40", in SW¼ sec.26, T.3 S., R.50 E., Powder River County, at bridge on U.S. Highway 212, at Olive, about 1.0 mi (1.6 km) downstream from YT Creek at site of water-quality station.	129	1976-77	12- 7-77 3-19-78 4-12-78 5- 2-78 5-21-78 6- 7-78 7-12-78 8- 2-78 8-31-78 9-12-78	0 0 1.0 .70 0 1.62 .45 .36 .12 .38
Mizpah Creek 454609105241701	Powder River	Lat 45°46'09", long 105°24'17", in NW¼NW¼ sec.11, T.1 S., R.51 E., Powder River County, at county bridge, just above confluence with Cross Creek, 14 mi (23 km) northeast of Coalwood, 15 mi (24 km) north- west of Powderville.			8-31-78	h,k .04
Mizpah Creek 06326200	Powder River	Lat 45°56'00", long 105°23'40", in SW¼ sec.9, T.2 N., R.51 E., Custer County, on bridge on county road, about 2 mi (3 km) down- stream from Spring Creek, 15.1 mi (24.3 km) northeast of Volborg at site of water- quality station.	510	1976-77	8-31-78	h,k .09

See footnotes at end of table, p. 782

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Yellowstone River basin--continued						
Mizpah Creek 06326300	Powder River	Lat 46°15'39", long 105°17'34", in NW¼NE¼SW¼ sec.24, T.6 N., R.51 E., Custer County, on left bank 10 ft (3 m) upstream from county bridge, 1.0 mi (1.6 km) upstream from mouth, and 1.6 mi (2.6 km) northwest of Mizpah at site of continuous-record station.	797	i	8-21-78 9- 1-78	h h 0.05 .05
Powder River 461656105164201	Yellowstone River	Lat 46°16'56", long 105°16'42", in NE¼NE¼ sec.13, T.6 N., R.51 E., Custer County, at county road, 0.9 mi (1.4 km) downstream of Mizpah Creek, 1.6 mi (2.6 km) north of Mizpah, 28 mi (45 km) east of Miles City.			9- 1-78	k 280
Powder River 06326500	Yellowstone River	Lat 46°26'56", long 105°18'44", in NW¼SW¼ sec.14, T.8 N., R.51 E., Custer County, on left bank 1.5 mi (2.4 km) downstream from bridge on U.S. Highway 12 at present site of Locat (5 mi, 8 km, west of former site of Locate), 1.5 mi (2.4 km) upstream from Locate Creek, and 25 mi (40 km) east of Miles City at site of continuous-record station.	13,194	1938-77†	9- 1-78	302
Powder River 464415105254501	Yellowstone River	Lat 46°44'15", long 105°25'45", in NE¼NE¼SE¼ sec.4, T.11 N., R.50 E., Custer County, at railroad bridge just upstream from confluence with Yellowstone River, 6 mi (10 km) southwest of Terry.		1977	9- 1-78	k 320
Cherry Creek 06326555	Yellowstone River	Lat 46°51'00", long 105°19'27", on sec. line 25/30 T.13 N., on Rangeline R.50 E/R.51 E., Prairie County, at county road bridge, 0.4 mi (6.4 km) northwest of Terry.	358		10- 9-77 11- 6-77 12- 3-77 1- 6-78 2- 7-78 3-15-78 3-22-78 4- 6-78 5- 4-78 6- 6-78 7-19-78 9- 6-78	.92 .18 .18 .04 0 3.5 823 18 4.7 4.19 .45 0
Clear Creek 06326953	Yellowstone River	Lat 47°00'05", long 104°56'31", in SW¼SW¼NW¼ sec.6, T.14 N., R.54 E., Dawson County, on left bank, at county road crossing, 6.5 mi (10.5 km) northwest of Hoyt at site of water-quality station.			9- 7-77 1-31-78 3-25-78 4-13-78 5-18-78 5-25-78 6- 8-78 7- 6-78 7-19-78	0 .03 45.3 8.57 6.36 4.86 10.3 30.3 8.71
Upper Sevenmile Creek	Yellowstone River	Lat 47°08'17", long 104°56'40", in NW¼NE¼NE¼ sec.24, T.16 N., R.53 E., Dawson County, at bridge on gravel road 0.6 mi (1.0 km) south of State Highway 200, 11.5 mi (18.5 km) west-northwest of Glendive at site of water-quality station.	137		1- 3-78 1-31-78 3-21-78 3-21-78 4-13-78 5-18-78 6- 7-78 7- 6-78 7-19-78 8- 4-78 9- 8-78	0 0 347 345 2.6 .97 11.5 61.8 6.15 1.53 h .04
Deer Creek 06328000	Yellowstone River	Lat 47°09'44", long 104°42'08", in SW¼NE¼NW¼ sec.12, T.16 N., R.55 E., Dawson County, on right bank, at State Highway 16 bridge, 4.0 mi (6.4 km) north of Glendive and 3.8 mi (6.7 km) northeast of Highway I-94 at site of water-quality station.	198	1921-22†	9- 7-77 1-31-78 3-21-78 3-30-78 4-13-78 5-25-78 6- 8-78 6-26-78 7- 6-78 7-18-78	d <.01 0 604 51.7 1.57 3.11 11.1 712 205 14.8
Cottonwood Creek 06329000	Yellowstone River	Lat 47°14'50", long 104°18'15", in E¼ sec.14, T.17 N., R.58 E., Wibaux County, at road crossing 16.2 mi (26.1 km), and 26 mi (42 km) north of Wibaux at site of water-quality station.	85.3		2-14-78 3-21-78 4- 6-78 5-22-78 6- 5-78 7-13-78 8- 9-78	0 258 8.0 .50 3.21 1.04 d .10

See footnotes at end of table, p.782

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Kootenai River basin						
Murray Creek 485608115083001	Lake Koocanusa	Lat 48°57'08", long 115°08'39", in NW¼SE¼ SW¼ sec.20, T.37 N., R.27 W., Lincoln County, at Lake Koocanusa flow line, about 1.0 mi (1.6 km) west of intersection of Carpenter and Sophie Lake roads, 3.6 mi (5.8 km) northwest of Rexford.		1966-77	10-27-77 12-13-77 2-23-78 4-20-78 7- 6-78 9-14-78	10 9.49 9.05 8.77 14.1 15.2
Paramenter Creek 482357115342801	Kootenai River	Lat 48°23'57", long 115°34'28", in SE¼SE¼SW¼ sec.33, T.31 N., R.31 W., Lincoln County, at bridge on U.S. Highway 2, 0.8 mi (1.3 km) upstream from mouth, in Libby.	17.7	1972, 1974	2-16-78 3-24-78 4-25-78 5-16-78 6-21-78 7-31-78 8-21-78 9-19-78	0 25.2 12.1 114 40 .79 2.23 1.95
Pipe Creek 482540115354001	Kootenai River	Lat 48°25'40", long 115°35'40", in SW¼ SE¼SW¼ sec.20, T.31 N., R.31 W., Lincoln County, at county bridge, 0.8 mi (1.3 km) upstream from mouth, 3.1 mi (5.0 km) northwest of Libby.	105	1971, 1974	2-15-78 3-23-78 4-25-78 5-16-78 6-21-78 7-31-78 8-21-78 9-19-78	17.2 72.7 157 471 58 21.9 21.9 14.6
Bobtail Creek 482540115360801	Kootenai River	Lat 48°25'40", long 115°36'08", in NE¼ NE¼NE¼ sec.30, T.31 N., R.31 W., Lincoln County, at county road bridge, 0.3 mi (0.5 km) upstream from mouth, 3.5 mi (5.6 km) northwest of Libby.		1911, 1972	2-15-78 3-23-78 4-25-78 5-16-78 6-21-78 7-31-78 8-21-78 9-19-78	5.27 31 16.4 36.2 6.09 4.10 4.10 3.41
Cedar Creek 482550115374101	Kootenai River	Lat 48°25'50", long 115°37'41", in NW¼ SE¼SE¼ sec.24, T.31 N., R.32 W., Lincoln County, at bridge on U.S. Highway 2, 0.1 mi (0.2 km) upstream from mouth, 5 mi (8 km) northwest of Libby.	12.8	1911, 1931, 1972, 1974	2-16-78 3-24-78 4-25-78 5-16-78 6-21-78 7-31-78 8-21-78 9-19-78	4.69 33.3 17.3 107 27.1 9.35 8.66 8.05
Quartz Creek 482621115380801	Kootenai River	Lat 48°26'21", long 115°38'08", in SW¼ NE¼NW¼ sec.24, T.31 N., R.32 W., Lincoln County, at county road bridge, 0.1 mi (0.2 km) upstream from mouth, and 5 mi (8 km) northwest of Libby.	35.4	1971, 1974	2-15-78 3-23-78 4-25-78 5-16-78 6-21-78 7-31-78 8-21-78 9-19-78	19.3 89.6 68.8 324 48 28.7 23.1 18.4
Ross Creek 12303400	Kootenai River	Lat 48°12'25", long 115°52'09", in SE¼ NE¼ sec.8, T.28 N., R.33 W., Lincoln County, Kootenai National Forest, at downstream side of road bridge, 0.8 mi (1.3 km) upstream from Bull Lake, 17.5 mi (28.2 km) south of Troy at site of water- quality station.	23.8	1970-71 1976-77	5-18-78 6-22-78	357 213
Stanley Creek 12303430	Lake Creek	Lat 48°17'18", long 115°51'53", in SE¼ NW¼SE¼ sec.7, T.29 N., R.33 W., Lincoln County, at bridge 0.7 mi (1.1 km) upstream from mouth, and 12.1 mi (19.5 km) south of Troy, at site of water-quality station.	12.8	1976-77	5-19-78	105

See footnotes at end of table, p. 782

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1978

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Kootenai River basin--continued						
Lake Creek 12303490	Kootenai River	Lat 48°22'54", long 115°51'31", in N½ on section line between sec.7 and 8, T.30 N., R.33 W., Lincoln County, at bridge on Chase Cutoff road, 0.1 mi (0.2 km) downstream from Iron Creek, and 5.7 mi (9.2 km) southeast of Troy at site of water-quality station.		1912, 1976-77	11-29-77 2-22-78 5-18-78	242 156 1,310
Pend Oreille River basin						
McDonald Creek 12358000	Middle Fork Flathead	Lat 48°31'34", long 113°59'45", in NE¼ SW¼NW¼ sec.23, T.32 N., R.19 W., Flathead County, Glacier National Park, at bridge on Glacier Route 7, at Apgar at about site of former gaging station.	175	1912-14† 1947 1970-76	6-21-78	2,200
Flathead River 472329114210801	Clark Fork River	Lat 47°23'29", long 114°21'08", in NE¼ NE¼SE¼ sec.23, T.19 N., R.22 W., on county line between counties Lake and Sanders, 0.6 mi (1.0 km) downstream from Ferry Basin, 4.4 mi (7.1 km) northwest of Moiese, at mile 34.6 (55.7 km).			4-13-78	8,740
Mission Creek 472211114145801	Flathead River	Lat 47°22'11", long 114°14'58", in NW¼ NE¼NE¼ sec.34, T.19 N., R.21 W., Lake County, at bridge at Moiese National Bison Range headquarters, 0.7 mi (1.1 km) east of Moiese, 4.5 mi (7.2 km) upstream from mouth.		1975-77	12- 1-77 2- 6-78 3-29-78 6- 1-78 6-12-78 6-26-78 7-31-78 9- 1-78	106 116 126 155 526 1,290 154 173
Flathead River 471931114274901	Clark Fork River	Lat 47°19'31", long 114°27'49", in SE¼NW¼ NE¼ sec.13, T.18 N., R.23 W., Sanders County, at McDonald Siding, 0.6 mi (1.0 km) upstream from Magpie Creek, 7.3 mi (11.7 km) west of Dixon, at mile 18.2 (29.3 km).			4-13-78	10,400
Flathead River 472125114362401	Clark Fork River	Lat 47°21'25", long 114°36'24", in SE¼SE¼ SE¼ sec.35, T.19 N., R.24 W., Sanders County, 2.0 mi (3.2 km) upstream from Seepay Creek, 1.8 mi (2.9 km) downstream from county highway 382 bridge, 1.2 mi (1.9 km) southwest of Perma, at mile 9.4 (15.1 km) at site of former water-quality station.		1971-73	4-13-78	10,200

- † Operated as a continuous-record gaging station.
- a Contracted opening measurement.
- b Culvert computation plus flow over road.
- c Bridge contraction plus flow over road.
- d Estimate.
- e Slope-area determination.
- f Culvert computation
- g Bridge contraction determination.
- h Parshall flume measurement.
- i Current surface-water station. Measured to determine basin low-flow characteristics.
- j Operated previously as a crest-stage gage.
- k Base flow.

Samples are collected at sites other than gaging stations and partial-record stations to give better areal coverage in a river basin. Such sites are referred to as miscellaneous sites.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MILK RIVER BASIN

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCTI- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RAIIJ	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
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06170000 - MCEACHERN CREEK AT INTERNATIONAL BOUNDARY (LAT 48 59 30 LONG 106 55 40)

DATE	TIME	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TJVS PER DAY)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	BORON, DIS- SOLVED (UG/L AS B)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
MAR , 1978													
29...	1600	1030	102	--	19	0	2.0	12	1.2	4.9	26	21	
APR													
07...	1200	137	191	4.0	44	0	4.5	21	1.4	4.6	57	43	
MAY													
15...	1515	1.0	811	22.0	180	0	18	110	3.5	6.9	240	210	

06170000 - MCEACHERN CREEK AT INTERNATIONAL BOUNDARY (LAT 48 59 30 LONG 106 55 40)

DATE	TIME	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
MAR , 1978												
29...	1.7	.0	4.2	64	.09	178	60	1	0	100	1	0
APR												
07...	1.7	.1	6.4	120	.16	44.4	30	4	0	70	3	0
MAY												
15...	3.4	.2	6.2	519	.71	1.40	0	2	0	100	36	0

06170000 - MCEACHERN CREEK AT INTERNATIONAL BOUNDARY (LAT 48 59 30 LONG 106 55 40)

DATE	TIME	5	230	5	10	30	.0	2	9	7	2.0	40
MAR , 1978												
29...		5	230	5	10	30	.0	2	9	7	2.0	40
APR												
07...		5	190	3	20	20	.4	1	0	1	3.0	30
MAY												
15...		4	20	6	80	10	.0	1	1	0	1.0	20

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MUSSELSHELL RIVER BASIN

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	WEATHER (WMO CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
461913108290801 - HALF BREED CREEK SITE #1 (LAT 46 19 13 LONG 108 29 08.01)										
JUN , 1978										
29...	0920	.13	3	1480	8.2	22.5	21.0	1	6.4	82
SEP										
26...	0930	.15	1	1490	8.2	17.0	15.0	1	8.8	98
462109108291001 - HALF BREED CREEK SITE #2 (LAT 46 21 09 LONG 108 29 10.01)										
JUN , 1978										
29...	1040	.77	3	1330	8.0	22.0	17.0	1	6.1	72
SEP										
26...	1045	.45	1	1320	8.1	17.0	11.5	0	7.7	80
462227108310201 - HALF BREED CREEK SITE #3 (LAT 46 22 27 LONG 108 31 02.01)										
JUN , 1978										
29...	1200	.92	1	1680	8.2	26.5	19.0	3	6.8	84
SEP										
26...	1230	.93	0	1700	8.3	16.0	14.5	1	9.9	109
462445108331301 - HALF BREED CREEK SITE #5 (LAT 46 24 45 LONG 108 33 13.01)										
JUN , 1978										
29...	1500	1.2	1	1720	8.6	31.0	27.0	3	9.8	138
SEP										
26...	1430	.88	0	1680	8.7	18.5	17.0	1	12.5	144
462536108341901 - HALF BREED CREEK SITE #6 (LAT 46 25 36 LONG 108 34 19.01)										
JUN , 1978										
29...	1610	1.3	1	2020	8.5	31.5	25.0	7	9.4	125
SEP										
26...	1530	1.2	0	1930	8.5	18.5	18.0	1	11.4	134

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MUSSELSHELL RIVER BASIN--Continued

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DATE	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)
461913108290801 - HALF BREED CREEK SITE #1 (LAT 46 19 13 LONG 108 29 08.01)									
JUN , 1978									
29...	310	3.6	490	28	.1	5.6	1010	1.37	.35
SEP									
26...	350	4.3	500	21	.2	12	1060	1.44	.43
462109108291001 - HALF BREED CREEK SITE #2 (LAT 46 21 09 LONG 108 29 10.01)									
JUN , 1978									
29...	390	7.5	370	23	.2	17	1010	1.37	2.10
SEP									
26...	340	5.3	420	15	.2	15	947	1.29	1.15
462227108310201 - HALF BREED CREEK SITE #3 (LAT 46 22 27 LONG 108 31 02.01)									
JUN , 1978									
29...	490	6.1	480	22	.2	13	1110	1.51	2.76
SEP									
26...	510	5.0	520	16	.2	11	1240	1.69	3.11
462445108331301 - HALF BREED CREEK SITE #5 (LAT 46 24 45 LONG 106 33 13.01)									
JUN , 1978									
29...	580	2.8	510	23	.2	8.6	1280	1.74	4.15
SEP									
26...	440	1.7	510	14	.2	5.7	1160	1.58	2.76
462536108341901 - HALF BREED CREEK SITE #6 (LAT 46 25 36 LONG 108 34 19.01)									
JUN , 1978									
29...	520	3.2	640	27	.2	6.0	1460	1.99	5.12
SEP									
26...	530	3.2	630	17	.2	5.6	1410	1.92	4.57

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MUSSELSHELL RIVER BASIN--Continued

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO ₃)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO ₃)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO ₃)	CAR- BONATE (MG/L AS CO ₃)
461913108290801 - HALF BREED CREEK SITE #1 (LAT 46 19 13 LONG 108 29 08.01)										
JUN , 1978										
29...	1.7	640	320	73	110	110	1.9	8.6	380	0
SEP										
26...	1.4	660	310	83	110	110	1.9	9.1	430	0
462109108291001 - HALF BREED CREEK SITE #2 (LAT 46 21 09 LONG 108 29 10.01)										
JUN , 1978										
29...	1.3	620	230	82	100	180	3.2	8.0	470	0
SEP										
26...	1.0	570	220	86	86	110	2.0	7.7	420	0
462227108310201 - HALF BREED CREEK SITE #3 (LAT 46 22 27 LONG 108 31 02.01)										
JUN , 1978										
29...	1.3	580	93	94	85	110	2.0	6.9	600	0
SEP										
26...	.9	660	150	82	110	190	3.2	8.0	620	0
462445108331301 - HALF BREED CREEK SITE #5 (LAT 46 24 45 LONG 108 33 13.01)										
JUN , 1978										
29...	1.9	610	29	79	100	200	3.5	8.9	670	18
SEP										
26...	1.1	530	84	76	82	200	3.8	8.6	540	0
462536108341901 - HALF BREED CREEK SITE #6 (LAT 46 25 36 LONG 108 34 19.01)										
JUN , 1978										
29...	1.7	690	180	96	110	260	4.3	11	630	0
SEP										
26...	1.4	620	94	83	100	250	4.4	9.8	620	10

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

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WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

MUSSELSHELL RIVER BASIN--Continued

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
461913108290801 - HALF BREED CREEK SITE #1 (LAT 46 19 13 LONG 108 29 08.01)									
JUN , 1978									
29...	.71	.01	.31	1.0	.04	100	20	8.3	.3
SEP									
26...	3.2	.02	.42	3.6	.00	130	20	--	--
462109108291001 - HALF BREED CREEK SITE #2 (LAT 46 21 09 LONG 108 29 10.01)									
JUN , 1978									
29...	2.7	.01	.95	3.7	.02	80	70	4.0	--
SEP									
26...	1.1	.01	.39	1.5	.01	130	40	4.5	.2
462227108310201 - HALF BREED CREEK SITE #3 (LAT 46 22 27 LONG 108 31 02.01)									
JUN , 1978									
29...	.33	.00	.61	.94	.05	140	70	13	.5
SEP									
26...	.46	.01	.49	.96	.01	150	60	5.9	--
462445108331301 - HALF BREED CREEK SITE #5 (LAT 46 24 45 LONG 108 33 13.01)									
JUN , 1978									
29...	.06	.01	.79	.86	.04	160	50	12	.3
SEP									
26...	.08	.01	.53	.62	.02	150	40	7.0	.1
462536108341901 - HALF BREED CREEK SITE #6 (LAT 46 25 36 LONG 108 34 19.01)									
JUN , 1978									
29...	.09	.01	.65	.75	.04	160	40	10	.4
SEP									
26...	.10	.00	.48	.58	.03	130	20	6.2	.2

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
YELLOWSTONE RIVER BASIN

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
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455233106373501 - EAST ARMELLS CREEK AT STATE HIGHWAY 39 BRIDGE (LAT 45 52 33 LONG 106 37 35.01)

AUG , 1978											
25...	0900	99001	.01	3250	7.8	19.5	14.0	1700	1300	190	300

460607106454201 - ARMELLS CREEK BELOW CONFLUENCE (LAT 46 06 07 LONG 106 45 42.01)

AUG , 1978											
25...	0715	99001	.12	6400	8.2	12.0	17.0	1100	540	120	200

DATE	TIME	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUD- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
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455233106373501 - EAST ARMELLS CREEK AT STATE HIGHWAY 39 BRIDGE (LAT 45 52 33 LONG 106 37 35.01)

AUG , 1978											
25...	200	2.1	3.5	450	0	370	11	1700	25	.2	17

460607106454201 - ARMELLS CREEK BELOW CONFLUENCE (LAT 46 06 07 LONG 106 45 42.01)

AUG , 1978											
25...	1300	17	14	680	0	560	6.9	3200	35	.4	4.8

DATE	TIME	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TUNS PER AC-FT)	SOLIDS, DIS- SOLVED (TUNS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
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455233106373501 - EAST ARMELLS CREEK AT STATE HIGHWAY 39 BRIDGE (LAT 45 52 33 LONG 106 37 35.01)

AUG , 1978											
25...	2660	4.09	.08	.21	.04	.63	.88	.04	720	90	

460607106454201 - ARMELLS CREEK BELOW CONFLUENCE (LAT 46 06 07 LONG 106 45 42.01)

AUG , 1978										
25...	5210	7.17	1.71	.00	.01	.48	.49	.03	710	20

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
YELLOWSTONE RIVER BASIN

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DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACU3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACU3)	CALCIUM DIS- SOLVED (MG/L AS CA)
451302106583201 - ROSEBUD CREEK NEAR KOBOLD RANCH (LAT 45 13 02 LONG 106 58 32.01)												
OCT , 1977												
31...	1415	99001	3.5	1100	8.2	3.5	6.0	11.9	103	540	97	72
454044106415601 - ROSEBUD CREEK WEST OF JIMTOWN, MT (LAT 45 40 44 LONG 106 41 56.01)												
NOV , 1977												
01...	1040	99001	18	1170	8.4	9.0	5.0	10.2	90	590	160	78
AUG , 1978												
24...	0945	99001	47	1130	8.5	--	17.0	--	--	560	180	69
454806106292901 - ROSEBUD CREEK BELOW HAY COULEE (LAT 45 48 06 LONG 106 29 29.01)												
NOV , 1977												
01...	1215	99001	17	1250	8.6	11.5	6.0	11.4	96	590	170	73
06295400 - ROSEBUD CREEK ABOVE PONY CREEK, NR COLSTRIP, MT. (LAT 45 53 33 LONG 106 24 03)												
NOV , 1977												
01...	1325	99001	15	1360	8.5	14.0	7.5	8.6	78	600	180	76
455810106233301 - ROSEBUD CREEK BELOW SPRING CREEK (LAT 45 58 10 LONG 106 23 33.01)												
NOV , 1977												
01...	1440	99001	15	1340	8.0	13.0	7.5	11.8	107	640	230	75
460557106264601 - ROSEBUD CREEK ABOVE COTTUNWOOD CREEK (LAT 46 05 57 LONG 106 26 46.01)												
NOV , 1977												
02...	1525	99001	14	1380	8.5	12.5	7.5	8.5	77	600	190	76
AUG , 1978												
24...	1140	99001	44	1380	8.4	23.0	19.5	--	--	630	250	72
460914106282201 - ROSEBUD CREEK BELOW VANCE CREEK (LAT 46 09 14 LONG 106 28 22.01)												
NOV , 1977												
02...	1425	99001	14	1340	8.6	15.0	7.5	8.2	75	600	190	74

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
YELLOWSTONE RIVER BASIN

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
451302106583201 - ROSEBUD CREEK NEAR KOBOLD RANCH (LAT 45 13 02 LONG 106 58 32.01)												
OCT , 1977 31...	88	24	.4	6.9	540	0	450	5.5	200	4.1	.6	14
454044106415601 - ROSEBUD CREEK WEST OF JIMTOWN, MT (LAT 45 40 44 LONG 106 41 56.01)												
NOV , 1977 01...	96	70	1.3	10	440	43	430	3.4	270	4.9	.7	17
AUG , 1978 24...	93	58	1.1	10	410	24	360	2.3	300	4.8	.6	14
454806106292901 - ROSEBUD CREEK BELOW HAY COULEE (LAT 45 48 06 LONG 106 29 29.01)												
NOV , 1977 01...	100	81	1.4	11	410	51	430	2.1	320	5.2	.7	16
06295400 - ROSEBUD CREEK ABOVE PONY CREEK, NR CULSTRIP, MT. (LAT 45 53 33 LONG 106 24 03)												
NOV , 1977 01...	100	90	1.6	11	460	26	420	2.6	360	5.9	.7	16
455810106233301 - ROSEBUD CREEK BELOW SPRING CREEK (LAT 45 58 10 LONG 106 23 33.01)												
NOV , 1977 01...	110	38	.7	11	500	0	410	8.0	360	5.7	.7	15
460557106264601 - ROSEBUD CREEK ABOVE COTTONWOOD CREEK (LAT 46 05 57 LONG 106 26 46.01)												
NOV , 1977 02...	100	110	2.0	12	440	30	410	2.5	390	6.2	.7	14
AUG , 1978 24...	110	93	1.6	11	450	6	380	2.9	440	6.1	.6	14
460914106282201 - ROSEBUD CREEK BELOW VANCE CREEK (LAT 46 09 14 LONG 106 28 22.01)												
NOV , 1977 02...	100	94	1.7	11	450	24	410	2.0	360	7.2	.7	14

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
YELLOWSTONE RIVER BASIN

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DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TJNS PER AC-FT)	SOLIDS, DIS- SOLVED (TJNS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BODIV, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
451302106583201 - ROSEBUD CREEK NEAR KOBOLD RANCH (LAT 45 13 02 LONG 106 58 32.01)												
OCT , 1977 31...	676	.96	6.6	.01	.00	.38	.39	.05	90	30	6.4	.7
454044106415601 - ROSEBUD CREEK WEST OF JIMTOWN, MT (LAT 45 40 44 LONG 106 41 56.01)												
NOV , 1977 01...	807	1.07	38.4	.01	.07	.17	.25	.04	160	20	5.5	.8
AUG , 1978 24...	776	1.06	99.2	.00	.01	.48	.49	.04	170	20	--	--
454806106292901 - ROSEBUD CREEK BELOW HAY COULEE (LAT 45 48 06 LONG 106 29 29.01)												
NOV , 1977 01...	860	1.17	38.4	.00	.01	.24	.25	.04	190	20	5.4	1.1
06295400 - ROSEBUD CREEK ABOVE PONY CREEK, NR COLSTRIP, MT. (LAT 45 53 33 LONG 106 24 03)												
NOV , 1977 01...	912	1.23	36.8	.01	.04	.24	.29	.03	200	20	5.8	.9
455810106233301 - ROSEBUD CREEK BELOW SPRING CREEK (LAT 45 58 10 LONG 106 23 33.01)												
NOV , 1977 01...	862	1.26	37.6	.00	.00	.30	.30	.04	210	20	5.9	1.0
460557106264601 - ROSEBUD CREEK ABOVE COTTONWOOD CREEK (LAT 46 05 57 LONG 106 26 46.01)												
NOV , 1977 02...	956	1.28	35.6	.01	.01	.47	.49	.07	210	30	5.9	--
AUG , 1978 24...	975	1.34	117	.01	.04	1.4	1.4	.10	210	20	--	--
460914106282201 - ROSEBUD CREEK BELOW VANCE CREEK (LAT 46 09 14 LONG 106 28 22.01)												
NOV , 1977 02...	907	1.28	36.2	.01	.01	.38	.40	.05	210	30	5.7	1.4

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
YELLOWSTONE RIVER BASIN

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW- INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)
451607106372801 - TONGUE RIVER AT PRAIRIE DOG CREEK (LAT 45 16 07 LONG 106 37 28.01)												
NOV , 1977												
03...	1000	--	160	833	--	--	7.0	--	--	370	--	65
03...	1100	99001	162	810	7.6	9.0	9.0	12.0	113	350	140	60
452240106294001 - TONGUE RIVER ABOVE COOK CREEK (LAT 45 22 40 LONG 106 29 40.01)												
NOV , 1977												
03...	0830	99001	163	810	8.2	2.0	4.5	3.8	33	380	160	67
452708106242801 - TONGUE RIVER ABOVE PAWNEE CREEK (LAT 45 27 08 LONG 106 24 28.01)												
NOV , 1977												
03...	1145	99001	178	840	8.5	11.0	5.0	8.6	--	380	140	64
SEP , 1978												
07...	1030	99001	363	680	8.4	27.5	18.0	--	--	310	120	63
453301106181301 - TONGUE RIVER BELOW LOGGING CREEK (LAT 45 33 01 LONG 106 18 13.01)												
NOV , 1977												
03...	1400	99001	183	840	8.7	11.0	6.0	3.6	32	380	120	65
454103106171401 - TONGUE RIVER NEAR RESERVATION BOUNDARY (LAT 45 41 03 LONG 106 17 14.01)												
NOV , 1977												
04...	0745	99001	187	890	8.4	-5	3.0	11.0	90	380	150	65
455023106131201 - TONGUE RIVER AT BRANDENBERG BRIDGE (LAT 45 50 23 LONG 106 13 12.01)												
NOV , 1977												
04...	0800	99001	189	910	7.7	.0	4.0	12.0	99	380	140	68
SEP , 1978												
07...	1220	99001	384	795	8.4	31.0	23.0	--	--	330	110	68
455844106031901 - TONGUE RIVER AT MOUN CREEK BRIDGE (LAT 45 58 44 LONG 106 03 19.01)												
NOV , 1977												
04...	1030	99001	225	890	8.4	9.5	4.0	7.9	71	390	150	68
SEP , 1978												
07...	0835	99001	345	835	8.4	18.0	21.5	--	--	350	120	70
460244105560201 - TONGUE RIVER BELOW FOSTER CREEK (LAT 46 02 44 LONG 105 56 02.01)												
NOV , 1977												
04...	1030	99001	227	940	7.2	6.0	4.5	12.4	103	390	140	66
461237105454701 - TONGUE RIVER BELOW DRY CREEK (LAT 46 12 37 LONG 105 45 47.01)												
NOV , 1977												
04...	1315	99001	234	910	8.5	13.5	7.0	8.6	77	390	140	67
461538105455201 - TONGUE RIVER BELOW PUMPKIN CREEK (LAT 46 15 38 LONG 105 45 52.01)												
NOV , 1977												
04...	1330	99001	221	970	7.9	13.5	6.5	12.4	--	390	140	69
462413105512801 - TONGUE RIVER IN MILES CITY, MT (LAT 46 24 13 LONG 105 51 28.01)												
NOV , 1977												
05...	0930	99001	233	940	8.6	4.0	3.0	7.2	64	390	100	67
SEP , 1978												
07...	1200	99001	260	905	8.4	26.5	25.0	--	--	340	95	68

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
YELLOWSTONE RIVER BASIN

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DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODDIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
451607106372801 - TONGUE RIVER AT PRAIRIE DJG CREEK (LAT 45 16 07 LONG 106 37 28.01)												
NOV , 1977												
03...	50	39	.9	4.5	--	--	--	--	210	3.4	.3	3.0
03...	49	39	.9	4.4	260	0	210	10	210	3.5	.3	3.0
452240106294001 - TONGUE RIVER ABOVE COOK CREEK (LAT 45 22 40 LONG 106 29 40.01)												
NOV , 1977												
03...	51	42	.9	4.5	270	0	220	2.7	220	3.5	.3	4.5
452708106242801 - TONGUE RIVER ABOVE PAWNEE CREEK (LAT 45 27 08 LONG 106 24 28.01)												
NOV , 1977												
03...	53	45	1.0	4.6	240	28	240	1.3	230	3.7	.3	4.9
SEP , 1978												
07...	38	40	1.0	4.4	230	2	190	1.5	190	3.0	.3	6.5
453301106181301 - TONGUE RIVER BELOW LOGGING CREEK (LAT 45 33 01 LONG 106 18 13.01)												
NOV , 1977												
03...	52	45	1.0	4.5	280	14	250	1.0	230	3.6	.3	5.0
454103106171401 - TONGUE RIVER NEAR RESERVATION BOUNDARY (LAT 45 41 03 LONG 106 17 14.01)												
NOV , 1977												
04...	54	47	1.0	4.7	260	12	230	1.8	230	3.6	.3	5.2
455023106131201 - TONGUE RIVER AT BRANDENBERG BRIDGE (LAT 45 50 23 LONG 106 13 12.01)												
NOV , 1977												
04...	52	50	1.1	4.9	290	0	240	9.3	240	4.0	.3	5.6
SEP , 1978												
07...	40	49	1.2	4.8	260	4	220	1.7	210	3.6	.3	7.3
455844106031901 - TONGUE RIVER AT MOON CREEK BRIDGE (LAT 45 58 44 LONG 106 03 19.01)												
NOV , 1977												
04...	53	54	1.2	4.9	270	12	240	1.9	240	4.2	.4	6.2
SEP , 1978												
07...	43	56	1.3	5.0	270	5	230	1.8	220	3.6	.3	8.0
460244105560201 - TONGUE RIVER BELOW FOSTER CREEK (LAT 46 02 44 LONG 105 56 02.01)												
NOV , 1977												
04...	55	57	1.3	5.0	300	0	240	30	250	4.3	.3	6.0
461237105454701 - TONGUE RIVER BELOW DRY CREEK (LAT 46 12 37 LONG 105 45 47.01)												
NOV , 1977												
04...	54	60	1.3	5.0	280	12	250	1.5	250	4.5	.3	6.2
461538105455201 - TONGUE RIVER BELOW PUMPKIN CREEK (LAT 46 15 38 LONG 105 45 52.01)												
NOV , 1977												
04...	53	53	1.2	5.1	300	--	250	6.0	250	4.3	.4	6.2
462413105512801 - TONGUE RIVER IN MILES CITY, MT (LAT 46 24 13 LONG 105 51 28.01)												
NOV , 1977												
05...	54	76	1.7	4.9	300	26	290	1.4	260	4.7	.3	6.6
SEP , 1978												
07...	42	73	1.7	5.5	270	14	240	1.9	240	4.5	.3	8.6

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
YELLOWSTONE RIVER BASIN

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS-SOLVED (UG/L AS B)	IRON, DIS-SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)
451607106372801 - TONGUE RIVER AT PRAIRIE DOG CREEK (LAT 45 16 07 LONG 106 37 28.01)												
NOV , 1977												
03...	--	.69	219	.01	.00	.21	.22	.02	110	100	--	--
03...	497	.70	225	.01	.02	.33	.36	.01	110	30	4.9	.6
452240106294001 - TONGUE RIVER ABOVE COOK CREEK (LAT 45 22 40 LONG 106 29 40.01)												
NOV , 1977												
03...	526	.73	240	.01	.01	.49	.51	.01	110	40	4.2	.6
452708106242801 - TONGUE RIVER ABOVE PAWNEE CREEK (LAT 45 27 08 LONG 106 24 28.01)												
NOV , 1977												
03...	552	.75	263	.00	.01	.36	.37	.01	110	30	4.2	.4
SEP , 1978												
07...	461	.65	467	.00	.03	.61	.64	.04	80	20	--	--
453301106181301 - TONGUE RIVER BELOW LOGGING CREEK (LAT 45 33 01 LONG 106 18 13.01)												
NOV , 1977												
03...	558	.75	271	.01	.01	.19	.21	.02	110	20	4.1	.6
454103106171401 - TONGUE RIVER NEAR RESERVATION BOUNDARY (LAT 45 41 03 LONG 106 17 14.01)												
NOV , 1977												
04...	550	.76	281	.00	.01	.24	.25	.01	120	20	4.2	--
455023106131201 - TONGUE RIVER AT BRANDENBERG BRIDGE (LAT 45 50 23 LONG 106 13 12.01)												
NOV , 1977												
04...	568	.77	289	.00	.01	.31	.32	.01	130	20	3.7	.4
SEP , 1978												
07...	515	.73	557	.00	.01	.93	.94	.03	100	20	--	--
455844106031901 - TONGUE RIVER AT MOON CREEK BRIDGE (LAT 45 58 44 LONG 106 03 19.01)												
NOV , 1977												
04...	576	.81	362	.00	.01	.36	.37	.00	130	30	4.1	.8
SEP , 1978												
07...	544	.76	522	.00	.01	.42	.43	.01	100	30	--	--
460244105560201 - TONGUE RIVER BELOW FOSTER CREEK (LAT 46 02 44 LONG 105 56 02.01)												
NOV , 1977												
04...	592	.80	362	.00	.01	.29	.30	.01	130	20	3.6	.3
461237105454701 - TONGUE RIVER BELOW DRY CREEK (LAT 46 12 37 LONG 105 45 47.01)												
NOV , 1977												
04...	597	.84	390	.01	.01	.17	.19	.01	100	20	4.0	.6
461538105455201 - TONGUE RIVER BELOW PUMPKIN CREEK (LAT 46 15 38 LONG 105 45 52.01)												
NOV , 1977												
04...	589	.83	362	.01	.01	.33	.35	.00	130	20	3.7	--
462413105512801 - TONGUE RIVER IN MILES CITY, MI (LAT 46 24 13 LONG 105 51 28.01)												
NOV , 1977												
05...	647	.86	396	.02	.01	.34	.37	.02	140	30	3.7	--
SEP , 1978												
07...	589	.82	424	.04	.02	.71	.77	.02	120	220	--	--

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

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WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

YELLOWSTONE RIVER BASIN

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHUS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED CENT SATUR- ATION	HARD- NESS (MG/L AS CACU3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACU3)	CALCIUM DIS- SOLVED (MG/L AS CA)
451732106085001 - OTTER CREEK BELOW COW CREEK (LAT 45 17 32 LONG 106 08 50.01)												
OCT , 1977												
26...	1145	--	.72	2620	--	--	8.0	--	--	970	--	110
26...	1215	99001	.79	2900	8.2	18.5	9.0	11.6	113	1000	480	110
SEP , 1978												
06...	1100	99001	2.4	2900	8.1	22.5	18.0	--	--	1100	620	120
452106106085301 - OTTER CREEK BELOW GATE CREEK (LAT 45 21 06 LONG 106 08 53.01)												
OCT , 1977												
26...	1500	99001	.92	2260	8.2	15.5	9.5	10.4	102	710	210	19
452558106085101 - OTTER CREEK ABOVE TENMILE CREEK (LAT 45 25 58 LONG 106 08 51.01)												
OCT , 1977												
27...	0945	99001	.15	4400	8.1	9.0	8.0	6.2	57	1400	830	83
SEP , 1978												
06...	0845	99001	1.8	3080	8.3	21.5	20.5	--	--	1100	620	92
453246106124101 - OTTER CREEK BELOW HOME CREEK (LAT 45 32 46 LONG 106 12 41.01)												
OCT , 1977												
27...	1145	--	.52	3890	--	--	9.0	--	--	1100	--	97
27...	1230	99001	.55	4200	8.3	13.5	10.0	12.0	119	1200	520	96
SEP , 1978												
06...	0700	99001	1.5	3500	8.4	17.0	20.0	--	--	1000	510	75
453323106125801 - OTTER CREEK BELOW EAST FORK (LAT 45 33 23 LONG 106 12 58.01)												
OCT , 1977												
27...	1415	99001	1.2	3200	8.3	21.0	10.5	8.8	87	760	160	73
453601106161001 - OTTER CREEK ABOVE CONFLUENCE (LAT 45 36 01 LONG 106 16 10.01)												
OCT , 1977												
28...	1230	99001	.04	2600	8.3	19.5	11.0	9.6	96	820	250	82

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

YELLOWSTONE RIVER BASIN

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
451732106085001 - OTTER CREEK BELOW COW CREEK (LAT 45 17 32 LONG 106 08 50.01)												
OCT , 1977												
26...	170	290	4.0	17	--	--	--	--	1100	9.9	.8	15
26...	180	300	4.1	16	630	0	520	6.4	1100	10	.8	16
SEP , 1978												
06...	200	330	4.3	20	590	0	480	7.5	1300	12	.6	12
452106106085301 - OTTER CREEK BELOW GATE CREEK (LAT 45 21 06 LONG 106 08 53.01)												
OCT , 1977												
26...	160	250	4.1	17	610	0	500	6.2	840	9.8	.8	15
452558106085101 - OTTER CREEK ABOVE TENMILE CREEK (LAT 45 25 58 LONG 106 08 51.01)												
OCT , 1977												
27...	290	630	7.3	26	700	0	570	8.9	2100	24	.6	4.1
SEP , 1978												
06...	200	380	5.1	22	580	0	480	4.7	1400	15	.6	1.9
453246106124101 - OTTER CREEK BELOW HOME CREEK (LAT 45 32 46 LONG 106 12 41.01)												
OCT , 1977												
27...	220	560	7.2	27	--	--	--	--	1700	15	1.2	6.8
27...	230	570	7.2	26	830	0	680	6.7	1600	14	1.2	7.1
SEP , 1978												
06...	200	430	5.9	28	560	20	500	3.8	1500	17	.7	1.7
453323106125801 - OTTER CREEK BELOW EAST FORK (LAT 45 33 23 LONG 106 12 58.01)												
OCT , 1977												
27...	140	370	5.8	20	730	0	600	5.9	980	15	.9	12
453601106161001 - OTTER CREEK ABOVE CONFLUENCE (LAT 45 36 01 LONG 106 16 10.01)												
OCT , 1977												
28...	150	390	5.9	20	690	0	570	5.5	1100	10	1.0	13

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

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WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

YELLOWSTONE RIVER BASIN

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO ₂ +NO ₃ TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)
451732106085001 - OTTER CREEK BELOW COW CREEK (LAT 45 17 32 LONG 106 08 50.01)												
OCT , 1977												
26...	--	2.75	3.9	.01	.00	.29	.30	.01	330	100	--	--
26...	2040	2.72	4.2	.02	.01	.19	.22	.01	330	280	6.5	.6
SEP , 1978												
06...	2290	3.25	15.5	.02	.03	.54	.59	.04	360	40	--	--
452106106085301 - OTTER CREEK BELOW GATE CREEK (LAT 45 21 06 LONG 106 08 53.01)												
OCT , 1977												
26...	1610	2.24	3.8	.25	.14	.42	.81	.05	300	30	7.2	.9
452558106085101 - OTTER CREEK ABOVE TENMILE CREEK (LAT 45 25 58 LONG 106 08 51.01)												
OCT , 1977												
27...	3500	4.81	1.4	.06	.07	.71	.84	.03	660	50	9.8	.9
SEP , 1978												
06...	2400	3.50	12.5	.01	.01	.69	.71	.05	420	40	--	--
453246106124101 - OTTER CREEK BELOW HUME CREEK (LAT 45 32 46 LONG 106 12 41.01)												
OCT , 1977												
27...	--	4.16	4.3	.01	.01	.64	.66	.05	680	70	--	--
27...	2950	4.15	4.5	.04	.00	.71	.75	.07	680	30	12	.7
SEP , 1978												
06...	2550	3.66	10.9	.01	.00	.73	.74	.04	530	30	--	--
453323106125801 - OTTER CREEK BELOW EAST FORK (LAT 45 33 23 LONG 106 12 58.01)												
OCT , 1977												
27...	1970	2.68	6.38	.02	.03	.32	.37	.06	220	30	2.6	1.3
453601106161001 - OTTER CREEK ABOVE CONFLUENCE (LAT 45 36 01 LONG 106 16 10.01)												
OCT , 1977												
28...	2110	2.91	.23	.47	.03	.56	1.1	.04	470	30	7.8	1.7

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
YELLOWSTONE RIVER BASIN

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
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452423105503001 - PUMPKIN CREEK BELOW DRY CREEK (LAT 45 24 23 LONG 105 50 30.01)

SEP , 1978											
06...	0840	99001	.27	1870	8.0	21.0	17.0	850	420	160	110

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
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452423105503001 - PUMPKIN CREEK BELOW DRY CREEK (LAT 45 24 23 LONG 105 50 30.01)

SEP , 1978											
06...	120	1.8	9.9	520	0	420	8.3	710	6.0	.7	20

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
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452423105503001 - PUMPKIN CREEK BELOW DRY CREEK (LAT 45 24 23 LONG 105 50 30.01)

SEP , 1978										
06...	1390	2.07	1.1	.01	.01	.61	.63	.11	260	200

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

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WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

YELLOWSTONE RIVER BASIN

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
06325000 - LITTLE POWDER RIVER AT BIDDLE, MT. (LAT 45 06 00 LONG 105 19 00)											
AUG , 1978 30...	1405	99001	6.8	3750	8.2	25.0	20.5	1000	630	180	140
452739105193901 - LITTLE POWDER RIVER ABOVE CONFLUENCE (LAT 45 27 39 LONG 105 19 39.01)											
AUG , 1978 30...	1615	99001	15	3110	8.3	32.0	22.0	700	360	130	90
454508105051501 - POWDER RIVER AT POWDERVILLE, MT (LAT 45 45 08 LONG 105 05 15.01)											
SEP , 1978 01...	1030	99001	257	2450	8.2	24.5	19.5	690	470	150	76
06326000 - POWDER RIVER NEAR MIZPAH, MT. (LAT 46 15 00 LONG 105 16 00)											
SEP , 1978 01...	1400	99001	297	2350	8.3	30.0	25.0	630	400	140	68
06326520 - POWDER RIVER AT MOUTH NEAR TERRY MT (LAT 46 44 15 LONG 105 25 43)											
SEP , 1978 01...	1330	99001	320	2200	8.4	30.0	25.0	580	370	130	62

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
YELLOWSTONE RIVER BASIN

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCU3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACU3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SU4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)
06325000 - LITTLE POWDER RIVER AT BIDDLE, MT. (LAT 45 06 00 LONG 105 19 00)											
AUG , 1978 30...	560	7.6	25	450	0	370	4.5	1900	26	.6	12
452739105193901 - LITTLE POWDER RIVER ABOVE CONFLUENCE (LAT 45 27 39 LONG 105 19 39.01)											
AUG , 1978 30...	450	7.4	17	420	0	350	3.4	1300	9.3	.4	12
454508105051501 - POWDER RIVER AT POWDERVILLE, MT (LAT 45 45 08 LONG 105 05 15.01)											
SEP , 1978 01...	290	4.8	8.5	270	0	220	2.7	920	130	.4	7.9
06326000 - POWDER RIVER NEAR WIZPAH, MT. (LAT 46 15 00 LONG 105 16 00)											
SEP , 1978 01...	280	4.9	8.4	280	0	230	2.2	860	120	.4	8.8
06326520 - POWDER RIVER AT MOUTH NEAR TERRY MT (LAT 46 44 15 LONG 105 25 43)											
SEP , 1978 01...	280	5.1	8.8	250	6	220	1.7	820	100	.4	8.8

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
YELLOWSTONE RIVER BASIN

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DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
06325000 - LITTLE POWDER RIVER AT BIDDLE, MT. (LAT 45 06 00 LONG 105 19 00)										
AUG , 1978 30...	3070	4.47	60	.02	.01	.62	.65	.02	250	20
452739105193901 - LITTLE POWDER RIVER ABOVE CONFLUENCE (LAT 45 27 39 LONG 105 19 39.01)										
AUG , 1978 30...	2220	3.28	98	.02	.01	.60	.63	.03	200	30
454508105051501 - POWDER RIVER AT POWDERVILLE, MT (LAT 45 45 08 LONG 105 05 15.01)										
SEP , 1978 01...	1720	2.53	1290	.01	.01	.87	.89	.14	280	20
06326000 - POWDER RIVER NEAR MIZPAH, MT. (LAT 46 15 00 LONG 105 16 00)										
SEP , 1978 01...	1620	2.35	1390	.02	.01	.82	.85	.12	250	20
06326520 - POWDER RIVER AT MOUTH NEAR TERRY MT (LAT 46 44 15 LONG 105 25 43)										
SEP , 1978 01...	1540	2.18	1380	.01	.00	1.2	1.2	.20	250	50

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES
WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
YELLOWSTONE RIVER BASIN

DATE	TIME	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
06326200 - MIZPAH CREEK NEAR VOLBORG, MT. (LAT 45 56 00 LONG 105 23 40)											
AUG , 1978											
31...	0845	99001	.09	2850	8.1	21.0	17.5	630	150	120	80

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
06326200 - MIZPAH CREEK NEAR VOLBORG, MT. (LAT 45 56 00 LONG 105 23 40)											
AUG , 1978											
31...	440	7.6	10	580	0	470	7.4	1100	9.0	.3	14

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS AC-FT)	SOLIDS, DIS- SOLVED (TONS DAY)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	BORON, DIS- SOLVED (UG/L AS B)	IRON, DIS- SOLVED (UG/L AS FE)
06326200 - MIZPAH CREEK NEAR VOLBORG, MT. (LAT 45 56 00 LONG 105 23 40)										
AUG , 1978										
31...	2060	2.41	.43	.03	.01	.63	.67	.02	370	20

CASCADE COUNTY

472651111221101. Local number, 20N03E32AADD.

LOCATION.--Lat 47°26'51", long 111°22'11", Hydrologic Unit 10030102, at Sun River Bench, Great Falls. Owner: D. Van Hining.

AQUIFER.--Flood Member of Blackleaf Formation.

WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in (0.15 m), depth 88 ft (27 m), cased with plastic pipe, open end.

DATUM.--Land-surface datum is 3,722 ft (1,134 m), from topographic map. Measuring point: Top of casing, 1.0 ft (0.3 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water-level measured, 31.10 ft (9.48 m) below land-surface datum, Dec. 23, 1965; lowest 43.10 ft (13.14 m) below land-surface datum, June 6, 1947.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
May 3	40.34		

CHOTEAU COUNTY

481542110023501. Local number 29N13E21AA2.

LOCATION.--Lat 48°15'42", long 110°02'35", Hydrologic Unit 10050005. Owner: U.S. Geological Survey.

AQUIFER.--Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in (0.06 m), depth 210 ft (64 m), cased to 167 ft (51 m), open end.

DATUM.--Land-surface datum is 2,680 ft (817 m), National Geodetic Vertical Datum of 1929. Measuring point:

Top of casing, 0.40 ft (0.12 m) above land-surface datum.

REMARKS.--Water-level affected by nearby irrigation well pumpage.

PERIOD OF RECORD.--1947 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 15.28 ft (4.66 m) below land-surface datum, Aug. 2, 1972; lowest, 27.03 ft (8.24 m) below land-surface datum, July 28, 1976.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 20	25.65	May 3	20.50
Mar. 29	21.02	June 2	20.00

DEER LODGE COUNTY

460632112493501. Local number, 04N10W10DC2.

LOCATION.--Lat 46°06'32", long 112°49'35", Hydrologic Unit 17010201. Owner: Village of Opportunity.

AQUIFER.--Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Driven fire protection water-table well, diameter 4 in (0.1 m), depth 20.0 ft (6.1 m), steel casing.

DATUM.--Land-surface datum is 4,979 ft (1,518 m), National Geodetic Vertical Datum of 1929. Measuring point: Bottom of 6 in. (0.15 m) outlet pipe, 1.3 ft (0.4 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level 3.50 ft (1.07 m) below land-surface datum, June 7, 1967; lowest 5.22 ft (1.59 m) below land-surface datum, Mar. 13, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 20	4.86	May 10	4.34
Feb. 15	4.77	Aug. 25	3.98

GROUND-WATER LEVELS

DEER LODGE COUNTY

461420112504501. Local number, 06N10W27CC.

LOCATION.--Lat 46°14'20", long 112°50'45", Hydrologic Unit 17010201. Owner: Mount Haggin Land and Livestock Company.

AQUIFER.--Deposits of Tertiary Age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (0.15 m), depth 88.8 ft (27.1 m), steel casing.

DATUM.--Land-surface datum is 5,006 ft (1,526 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.50 ft (0.15 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level 30.14 ft (9.19 m) below land-surface datum, Aug. 23, 1978; lowest 66.17 ft (20.17 m) below land-surface datum, June 9, 1969.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 20	51.42	May 10	62.02
Feb. 15	56.83	Aug. 23	30.14

DEER LODGE COUNTY

461515112441201. Local number, 06N09W21CD1.

LOCATION.--Lat 46°15'15", long 112°44'12", Hydrologic Unit 17010201. Owner: W. Beck.

AQUIFER.--Deposits of Tertiary Age.

WELL CHARACTERISTICS.--Drilled domestic and stock artesian well, diameter 6 in (0.15 m), depth 150 ft (46 m), steel casing.

DATUM.--Land-surface datum is 4,786 ft (1,459 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of well cap, 0.50 ft (0.15 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level 88.97 ft (27.12 m) below land-surface datum, Aug. 20, 1968; lowest 93.24 ft (28.42 m) below land-surface datum, Mar. 29, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 20	92.22	May 10	91.90
Feb. 15	92.13	Aug. 23	92.26

FLATHEAD COUNTY

480544114104501. Local number, 27N20W17CC.

LOCATION.--Lat 48°05'44", long 114°10'45", Hydrologic Unit 17010208. Owner: U.S. Geological Survey.

AQUIFER.--Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (3.8 cm), depth 9.6 ft (2.9 m), cased with steel pipe.

DATUM.--Land-surface datum is 2,896 ft (883 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of pipe, 1.5 ft. (0.5 m) above land-surface datum.

PERIOD OF RECORD.--October 1963 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.82 ft (0.55 m) below land-surface datum, Mar. 1, 1965; lowest 5.32 ft (1.62 m) below land-surface datum, Sept. 22, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 20	4.17	May 31	2.92
Mar. 11	4.68	Sept. 18	3.93

FLATHEAD COUNTY

481458114111701. Local number, 29N20W29BD.
 LOCATION.--Lat 48°14'58", long 114°11'17", Hydrologic Unit 17010208. Owner: John Byrne.
 AQUIFER.--Glacial deposits of Quaternary Age.
 WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 5 in (0.13 m), depth 151 ft (46 m), steel casing.
 DATUM.--Land-surface datum is 2,983 ft (909 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.5 ft (0.8 m) above land-surface datum.
 PERIOD OF RECORD.--September 1963 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 19.88 ft (6.06 m) below land-surface datum, Aug. 18, 1969; lowest 39.24 ft (11.96 m) below land-surface datum, June 11, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 20	24.04	May 31	21.51

FLATHEAD COUNTY

481519114182501. Local number, 29N21W20CCC.
 LOCATION.--Lat 48°15'19", long 114°18'25", Hydrologic Unit 17010210. Owner: Lutheran Cemetary Association.
 AQUIFER.--Glacial deposits of Quaternary Age.
 WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 6 in (0.15 m), depth 278 ft (85 m), steel casing.
 DATUM.--Land-surface datum is 3,027 ft (923 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 5.0 ft (1.5 m) below land-surface datum.
 REMARKS.--Used in irrigation season only.
 PERIOD OF RECORD.--October 1963 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level, 100.00 ft (30.448 m) below land-surface datum, July 1, 1964; lowest 108.13 ft (32.96 m) below land-surface datum, Sept. 22, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 20	106.79	May 31	105.81
Feb. 16	106.45	Sept. 18	105.66

FLATHEAD COUNTY

481653114114901. Local number, 29N20W18AA1.
 LOCATION.--Lat 48°16'53", long 114°11'49", Hydrologic Unit 17010208. Owner: William Anderson.
 AQUIFER.--Eolian deposits of Quaternary Age.
 WELL CHARACTERISTICS.--Dug unused water-table well, diameter 56 in (1.4 m), depth 20.0 ft (6.1 m), concrete casing.
 DATUM.--Land-surface datum is 3,050 ft (930 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of 3/4 in. (1.9 cm) pipe, 0.7 ft (0.2 m) below land-surface datum.
 PERIOD OF RECORD.--October 1963 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level 14.73 ft (4.49 m) below land-surface datum, June 11, 1970; lowest 19.36 ft (5.90 m) below land-surface datum, Feb. 15, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 20	19.29	May 31	17.93
Feb. 15	19.36	Sept. 18	17.57

GROUND-WATER LEVELS

GALLATIN COUNTY

45393711110301. Local number 02S04E13CC.

LOCATION.--Lat 45°39'37", long 111°11'03", Hydrologic Unit 10020008. Owner: Unknown.

AQUIFER.--Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Dug observation water-table well, diameter 12 in (0.30 m), depth 11 ft (3.35 m), cased with tile.

DATUM.--Land-surface datum is 4,738 ft (1,444 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.5 ft (0.15 m) above land-surface datum.

PERIOD OF RECORD.--June 1947 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 2.54 ft (0.77 m) below land-surface datum, June 27, 1952; lowest 10.40 ft (3.17 m) below land-surface datum, Feb. 20, 1971.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 5	4.98	Feb. 28	9.00
Nov. 16	7.11	July 12	4.49
Dec. 20	7.55	Aug. 9	4.90
Jan. 25	8.03	Sept. 7	5.68

GLACIER COUNTY

483345113004501. Local number, 32N11W03AD.

LOCATION.--Lat 48°33'45", long 113°00'45", Hydrologic Unit 10030202. Owner: U.S. Geological Survey.

AQUIFER.--Glacial drift of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 1½ in (3 cm), depth 12 ft (3.66 m), cased with pipe.

DATUM.--Land-surface datum is 4,416 ft (1,346 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of pipe, 3.30 ft (1.01 m) above land-surface datum.

PERIOD OF RECORD.--January 1968 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 4.81 ft (1.47 m) below land-surface datum, Mar 3, 1972; lowest 7.82 ft (2.38 m) below land-surface datum, Aug. 2, and Aug. 28, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 6	7.10	May 1	5.20
Nov. 16	7.26	May 31	5.90
Dec. 29	7.03	July 6	5.79
Jan. 31	7.26	Aug. 8	7.07
Mar. 1	5.73	Sept. 5	7.12

HILL COUNTY

483138109481001. Local number, 32N15E17DDD.

LOCATION.--Lat 48°31'31", long 109°48'08", Hydrologic Unit 10050004. Owner: U.S. Geological Survey.

AQUIFER.--Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in (0.8 cm), depth 180 ft (55 m), cased with pipe to 152 ft (46 m).

DATUM.--Land-surface datum is 2,580 ft (786 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of coupling, 0.2 ft (0.08 m) above land-surface datum.

PERIOD OF RECORD.--May 1947 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 38.70 ft (11.80 m) below land-surface datum, June 2, 1978; lowest 52.56 ft (16.02 m) below land-surface datum, June 18, 1947.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 20	40.45	May 3	38.89
Mar. 29	39.62	June 2	38.70

PHILLIPS COUNTY

482732107201201. Local number, 31N34E08CA.

LOCATION.--Lat 48°27'32", long 107°20'12", Hydrologic Unit 10050014. Owner: W.D. Miller.

AQUIFER.--Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 5 in (13 cm), depth 15 ft (5 m), cased with pipe.

DATUM.--Land-surface datum is 2,175 ft (663 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.70 ft (0.52 m) above land-surface datum.

REMARKS.--Originally drilled to a depth of 50 ft (15 m) with gravel from 45 to 50 ft (14 to 15 m).

PERIOD OF RECORD.--June 1947 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 0.40 ft (0.12 m) below land-surface datum, July 18, 1963; lowest 6.90 ft (2.10 m) below land-surface datum, Mar. 11, 1953.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 18	4.93	Apr. 10	5.47
Dec. 13	5.14	July 17	5.02
Jan. 18	5.34	Aug. 18	4.89
Feb. 21	5.52		

POWELL COUNTY

461847112464001. Local number, 07N09W31CD.

LOCATION.--Lat 46°18'47", long 112°46'40", Hydrologic Unit 17010201. Owner: L. Johnson.

AQUIFER.--Deposits of Tertiary Age.

WELL CHARACTERISTICS.--Dug unused water-table well, diameter 36 in (0.91 m), depth 50 ft (15 m), cribbed with rock.

DATUM.--Land-surface datum is 4,729 ft (1,441 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of wood cover, at land-surface datum.

PERIOD OF RECORD.--September 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 32.25 ft (9.83 m) below land-surface datum, Aug. 26, 1975; lowest 52.12 ft (15.89 m) below land-surface datum, May 26, 1976.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 20	46.41	Aug. 23	39.86
Feb. 15	46.5		

POWELL COUNTY

463540112320301. Local number, 10N07W30BB.

LOCATION.--Lat 46°35'40", long 112°32'03", Hydrologic Unit 17010201. Owner: Powell County School District.

AQUIFER.--Sands and gravels of Tertiary Age.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in (0.15 m), depth 69.6 ft (21.2 m), steel casing.

DATUM.--Land-surface datum is 4,825 ft (1,471 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.5 ft (0.15 m) above land-surface datum.

PERIOD OF RECORD.--June 1961 to March 1963, September 1967 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 28.90 ft (8.81 m) below land-surface datum, June 20, 1975; lowest 34.37 ft (10.48 m) below land-surface datum, Aug. 20, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 20	32.99	May 10	31.50
Feb. 15	33.34	Aug. 23	31.41

POWELL COUNTY

463530112360003. Local number, 10N08W28AA3.

LOCATION.--Lat 46°35'30", long 112°36'03", Hydrologic Unit 17010201. Owner: H.C. Young.

AQUIFER.--Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in (0.15 m), depth 23.4 ft (7.13 m), steel casing.

DATUM.--Land-surface datum is 4,709 ft (1,435 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.7 ft (0.2 m) above land-surface datum.

PERIOD OF RECORD.--April 1962 to December 1963, March 1967 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 3.06 ft (0.93 m) below land-surface datum June 9, 1969; lowest 10.26 ft (3.13 m) below land-surface datum, March 9, 1967.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Nov. 20	5.72	Aug. 23	5.65
May 10	4.81		

PRAIRIE COUNTY

464457104390001. Local number, 12N56E34DA.

LOCATION.--Lat 46°44'57", long 104°39'00", Hydrologic Unit 10100004. Owner: Shell Oil Company.

AQUIFER.--Basal Hell Creek-Fox Hills Sandstone.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in (0.1 m), depth 1,467 ft (447 m), cased with pipe.

DATUM.--Land-surface datum is 2,707 ft (825 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of casing 3.1 ft (0.9 m) above land-surface datum.

REMARKS.--Water level affected by industrial pumpage.

PERIOD OF RECORD.--December 1962 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 224.89 ft (68.55 m) below land-surface datum, Dec. 13, 1962; lowest 382.45 ft (116.57 m) below land-surface datum, May 26, 1971.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 6	322.55	Apr. 14	329.11
Oct. 29	328.39	July 18	329.60

PRAIRIE COUNTY

464624104380601. Local number, 12N56E23DC.

LOCATION.--Lat 46°46'24", long 104°38'06", Hydrologic Unit 10100004. Owner: Shell Oil Company.

AQUIFER.--Basal Hell Creek-Fox Hills Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 4 in (0.1 m), depth 1,185 ft (361 m), cased with pipe.

DATUM.--Land-surface datum is 2,701 ft (823 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of casing 1.5 ft (0.5 m) above land-surface datum.

REMARKS.--Water level affected by industrial pumpage.

PERIOD OF RECORD.--October 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 219.50 ft (66.90 m) below land-surface datum, Oct. 5, 1962; lowest 493.84 ft (150.52 m) below land-surface datum, Mar. 3, 1971.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 6	323.63	Apr. 14	311.49
Oct. 29	316.60	July 18	312.78
Dec. 22	306.30		

RAVALLI COUNTY

461518114090801. Local number, 06N20W19CC1.

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

AQUIFER.--Flood plain Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 6 in (0.15 m), depth 40 ft (12 m), cased with pipe.

DATUM.--Land-surface datum is 3,557 ft (1,084 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder shelf 3.0 ft (0.9 m) above land-surface datum.

REMARKS.--Water-stage recorder installed September 1970.

PERIOD OF RECORD.--September 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 3.06 ft (0.93 m) below land-surface datum, June 25, 1971; lowest, 17.86 ft (5.44 m) below land-surface datum, Apr. 26, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 20	9.74	Apr. 24	17.12
Nov. 17	12.28	May 24	13.78
Dec. 20	13.81	June 26	6.51
Jan. 20	14.85	July 20	6.28
Feb. 22	15.88	Aug. 23	6.19
Mar. 23	16.60	Sept. 21	7.01

RAVALLI COUNTY

463750114033001. Local number, 10N20W13BA.

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

AQUIFER.--Alluvium of Quaternary Age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 6 in (0.15 m), depth 50.5 ft (15.4 m), cased with pipe.

DATUM.--Land-surface datum is 3,200 ft (975 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.5 ft (0.15 m) above land-surface datum.

PERIOD OF RECORD.--May 1959 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water-level 2.48 ft (0.76 m) below land-surface datum, June 15, 1959; lowest, 7.55 ft (2.30 m) below land-surface datum, April 15, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Dec. 20	6.08	May 10	5.79
Feb. 15	6.88	Aug. 23	6.25

RAVALLI COUNTY

463130114064402. Local number 09N20W21ADB02.

LOCATION.--Lat 46°31'30", long 114°06'44", Hydrologic Unit 17010205. Owner: D. Shea.

AQUIFER.--Alluvium underlying river terraces.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 4 in (0.1 m), depth 40 ft (13 m), cased with pipe. This well replaces 463140114064001 (09N20W21AD1).

DATUM.--Land-surface datum is 3,308 ft (1,008 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.5 ft (0.15 m) above land-surface datum.

PERIOD OF RECORD.--September 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 16.87 ft (0.52 m) below land-surface datum, June 26, 1978; lowest, 34.01 ft (8.53 m) below land-surface datum, Mar. 28, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 20	20.10	Apr. 24	29.09
Nov. 17	24.44	May 24	25.52
Dec. 20	25.30	June 26	16.87
Jan. 20	27.48	July 20	19.08
Feb. 22	29.05	Aug. 23	19.95
Mar. 23	29.26	Sept. 21	19.97

GROUND-WATER LEVELS

SANDERS COUNTY

474251114385201. Local number, 23N24W34ADA.

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

AQUIFER.--Glacial lake deposits of Quaternary age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 18 in (0.46 m), depth 377 ft (115 m), perforated with 480 perforations.

DATUM.--Land-surface datum is 2,878.6 ft (877.4 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.0 ft (0.3 m) above land-surface datum.

REMARKS.--Water-stage recorder installed January 1971. Submersible pump installed for stock purposes.

PERIOD OF RECORD.--March 1943 to June 1943, October 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 105.75 ft (32.23 m) below land-surface datum, July 20, 1978; lowest, 116.40 ft (35.48 m) below land-surface datum, Aug. 30, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MIDNIGHT VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
1	113.37	----	110.30	109.66	----	108.03	----	----	----	106.56	106.41	106.45
5	112.84	----	110.30	109.32	----	107.83	----	----	----	106.65	106.80	106.20
10	112.53	111.10	110.10	109.32	----	107.62	----	----	----	106.40	107.14	105.83
15	112.12	110.85	109.88	109.15	----	107.54	----	----	----	106.05	107.74	105.44
20	111.82	110.75	109.99	-----	108.33	107.16	----	----	----	105.75	107.77	105.18
25	111.59	110.50	109.83	-----	108.17	106.79	----	----	107.01	106.25	107.31	104.97
30	-----	110.49	109.65	-----	-----	-----	----	----	106.55	106.33	106.60	-----

TOOLE COUNTY

485311111540901. Local number, 36N02W08CC.

LOCATION.--Lat 48°53'11", long 111°54'09", Hydrologic Unit 10030203. Owner: C. Luckenbill.

AQUIFER.--Gravel of Pleistocene Age.

WELL CHARACTERISTICS.--Driven observation water-table well in backfilled dug well, diameter 1½ in (0.03 m), depth 15.3 ft (4.7 m), cased with pipe.

DATUM.--Land-surface datum is 3,330 ft (1,015 m), National Geodetic Vertical Datum of 1929. Measuring point: Top of pipe at land-surface datum.

PERIOD OF RECORD.--July 1947 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 1.22 ft (0.37 m) below land-surface datum, May 16, 1967; lowest, 10.89 ft (3.32 m) below land-surface datum, Dec. 19, 1961.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL
Oct. 24	9.30	May 23	2.47

TABLE 6

(Table listing the changes of parameter code names)

LIST OF REVISED QUALITY-OF-WATER PARAMETER CODES

PARM. CODE	NEW TERMINOLOGY--FIRST LINE OLD TERMINOLOGY--SECOND LINE
00623	NITROGEN, AMMONIA PLUS ORGANIC, DISSOLVED (MG/L AS N)
00623	NITROGEN, KJELDAHL, DISSOLVED (MG/L AS N)
00624	NITROGEN, AMMONIA PLUS ORGANIC, SUSPENDED TOTAL (MG/L AS N)
00624	NITROGEN, KJELDAHL, SUSPENDED (MG/L AS N)
00625	NITROGEN, AMMONIA PLUS ORGANIC, TOTAL (MG/L AS N)
00625	NITROGEN, KJELDAHL, TOTAL (MG/L AS N)
00626	NITROGEN, AMMONIA PLUS ORGANIC, TOTAL IN BOTTOM MATERIAL, DRY WT (MG/KG AS N)
00626	NITROGEN, KJELDAHL, TOTAL IN BOTTOM MATERIAL, DRY WT (MG/KG AS N)
00683	CARBON, ORGANIC, SUSPENDED TOTAL (MG/L AS C)
00683	CARBON, ORGANIC, SUSPENDED (MG/L AS C)
00688	CARBON, INORGANIC, SUSPENDED TOTAL (MG/L AS C)
00688	CARBON, INORGANIC, SUSPENDED (MG/L AS C)
00689	CARBON, ORGANIC, SUSPENDED TOTAL (MG/L AS C)
00689	CARBON, ORGANIC, SUSPENDED (MG/L AS C)
00694	CARBON, INORGANIC PLUS ORGANIC, SUSPENDED TOTAL (MG/L AS C)
00694	CARBON, INORGANIC PLUS ORGANIC, SUSPENDED (MG/L AS C)
00916	CALCIUM, TOTAL RECOVERABLE (MG/L AS CA)
00916	CALCIUM, TOTAL (MG/L AS CA)
00926	MAGNESIUM, SUSPENDED RECOVERABLE (MG/L AS MG)
00926	MAGNESIUM, SUSPENDED (MG/L AS MG)
00927	MAGNESIUM, TOTAL RECOVERABLE (MG/L AS MG)
00927	MAGNESIUM, TOTAL (MG/L AS MG)
01001	ARSENIC, SUSPENDED TOTAL (UG/L AS AS)
01001	ARSENIC, SUSPENDED (UG/L AS AS)
01006	BARIUM, SUSPENDED RECOVERABLE (UG/L AS BA)
01006	BARIUM, SUSPENDED (UG/L AS BA)
01007	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)
01007	BARIUM, TOTAL (UG/L AS BA)
01008	BARIUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS BA)
01008	BARIUM, TOTAL IN BOTTOM MATERIAL (UG/G AS BA)
01011	BERYLLIUM, SUSPENDED RECOVERABLE (UG/L AS BE)
01011	BERYLLIUM, SUSPENDED (UG/L AS BE)
01012	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE)
01012	BERYLLIUM, TOTAL (UG/L AS BE)
01013	BERYLLIUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS BE)
01013	BERYLLIUM, TOTAL IN BOTTOM MATERIAL (UG/G AS BE)
01016	BISMUTH, SUSPENDED TOTAL (UG/L AS BI)
01016	BISMUTH, SUSPENDED (UG/L AS BI)
01021	BORON, SUSPENDED RECOVERABLE (UG/L AS B)
01021	BORON, SUSPENDED (UG/L AS B)
01022	BORON, TOTAL RECOVERABLE (UG/L AS B)
01022	BORON, TOTAL (UG/L AS B)
01023	BORON, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS B)
01023	BORON, TOTAL IN BOTTOM MATERIAL (UG/G AS B)
01026	CADMIUM, SUSPENDED RECOVERABLE (UG/L AS CD)
01026	CADMIUM, SUSPENDED (UG/L AS CD)
01027	CADMIUM, TOTAL RECOVERABLE (UG/L AS CD)
01027	CADMIUM, TOTAL (UG/L AS CD)
01028	CADMIUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS CD)
01028	CADMIUM, TOTAL IN BOTTOM MATERIAL (UG/G AS CD)
01029	CHROMIUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS CR)
01029	CHROMIUM, TOTAL IN BOTTOM MATERIAL (UG/G AS CR)
01031	CHROMIUM, SUSPENDED RECOVERABLE (UG/L AS CR)
01031	CHROMIUM, SUSPENDED (UG/L AS CR)
01034	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)
01034	CHROMIUM, TOTAL (UG/L AS CR)
01036	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)
01036	COBALT, SUSPENDED (UG/L AS CO)

PARM. CODE	NEW TERMINOLOGY--FIRST LINE OLD TERMINOLOGY--SECOND LINE
01037	COBALT, TOTAL RECOVERABLE (UG/L AS CO)
01037	COBALT, TOTAL (UG/L AS CO)
01038	COBALT, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS CO)
01038	COBALT, TOTAL IN BOTTOM MATERIAL (UG/G AS CO)
01041	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU)
01041	COPPER, SUSPENDED (UG/L AS CU)
01042	COPPER, TOTAL RECOVERABLE (UG/L AS CU)
01042	COPPER, TOTAL (UG/L AS CU)
01043	COPPER, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS CU)
01043	COPPER, TOTAL IN BOTTOM MATERIAL (UG/G AS CU)
01044	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)
01044	IRON, SUSPENDED (UG/L AS FE)
01045	IRON, TOTAL RECOVERABLE, (UG/L AS FE)
01045	IRON, TOTAL (UG/L AS FE)
01050	LEAD, SUSPENDED RECOVERABLE (UG/L AS PB)
01050	LEAD, SUSPENDED (UG/L AS PB)
01051	LEAD, TOTAL RECOVERABLE (UG/L AS PB)
01051	LEAD, TOTAL (UG/L AS PB)
01052	LEAD, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS PB)
01052	LEAD, TOTAL IN BOTTOM MATERIAL (UG/G AS PB)
01053	MANGANESE, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS MN)
01053	MANGANESE, TOTAL IN BOTTOM MATERIAL (UG/G AS MN)
01054	MANGANESE, SUSPENDED RECOVERABLE (UG/L AS MN)
01054	MANGANESE, SUSPENDED (UG/L AS MN)
01055	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)
01055	MANGANESE, TOTAL (UG/L AS MN)
01061	MOLYBDENUM, SUSPENDED RECOVERABLE (UG/L AS MO)
01061	MOLYBDENUM, SUSPENDED (UG/L AS MO)
01062	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO)
01062	MOLYBDENUM, TOTAL (UG/L AS MO)
01063	MOLYBDENUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS MO)
01063	MOLYBDENUM, TOTAL IN BOTTOM MATERIAL (UG/G AS MO)
01066	NICKEL, SUSPENDED RECOVERABLE (UG/L AS NI)
01066	NICKEL, SUSPENDED (UG/L AS NI)
01067	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)
01067	NICKEL, TOTAL (UG/L AS NI)
01068	NICKEL, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS NI)
01068	NICKEL, TOTAL IN BOTTOM MATERIAL (UG/G AS NI)
01076	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG)
01076	SILVER, SUSPENDED (UG/L AS AG)
01077	SILVER, TOTAL RECOVERABLE (UG/L AS AG)
01077	SILVER, TOTAL (UG/L AS AG)
01078	SILVER, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS AG)
01078	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G AS AG)
01081	STRONTIUM, SUSPENDED RECOVERABLE (UG/L AS SR)
01081	STRONTIUM, SUSPENDED (UG/L AS SR)
01082	STRONTIUM, TOTAL RECOVERABLE (UG/L AS SR)
01082	STRONTIUM, TOTAL (UG/L AS SR)
01083	STRONTIUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS SR)
01083	STRONTIUM, TOTAL IN BOTTOM MATERIAL (UG/G AS SR)
01086	VANADIUM, SUSPENDED TOTAL (UG/L AS V)
01086	VANADIUM, SUSPENDED (UG/L AS V)
01091	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN)
01091	ZINC, SUSPENDED (UG/L AS ZN)
01092	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
01092	ZINC, TOTAL (UG/L AS ZN)

LIST OF REVISED QUALITY-OF-WATER PARAMETER CODES--Continued

PARM. CODE	NEW TERMINOLOGY--FIRST LINE OLD TERMINOLOGY--SECOND LINE
01093	ZINC, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS ZN)
01093	ZINC, TOTAL IN BOTTOM MATERIAL (UG/G AS ZN)
01096	ANTIMONY, SUSPENDED TOTAL (UG/L AS SB)
01096	ANTIMONY, SUSPENDED (UG/L AS SB)
01101	TIN, SUSPENDED RECOVERABLE (UG/L AS SN)
01101	TIN, SUSPENDED (UG/L AS SN)
01102	TIN, TOTAL RECOVERABLE (UG/L AS SN)
01102	TIN, TOTAL (UG/L AS SN)
01105	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)
01105	ALUMINUM, TOTAL (UG/L AS AL)
01107	ALUMINUM, SUSPENDED RECOVERABLE (UG/L AS AL)
01107	ALUMINUM, SUSPENDED (UG/L AS AL)
01108	ALUMINUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS AL)
01108	ALUMINUM, TOTAL IN BOTTOM MATERIAL (UG/G AS AL)
01116	CESIUM, SUSPENDED TOTAL (UG/L AS CS)
01116	CESIUM, SUSPENDED (UG/L AS CS)
01121	GALLIUM, SUSPENDED TOTAL (UG/L AS GA)
01121	GALLIUM, SUSPENDED (UG/L AS GA)
01126	GERMANIUM, SUSPENDED TOTAL (UG/L AS GE)
01126	GERMANIUM, SUSPENDED (UG/L AS GE)
01131	LITHIUM, SUSPENDED RECOVERABLE (UG/L AS LI)
01131	LITHIUM, SUSPENDED (UG/L AS LI)
01132	LITHIUM, TOTAL RECOVERABLE (UG/L AS LI)
01132	LITHIUM, TOTAL (UG/L AS LI)
01136	RUBIDIUM, SUSPENDED TOTAL (UG/L AS RB)
01136	RUBIDIUM, SUSPENDED (UG/L AS RB)
01146	SELENIUM, SUSPENDED TOTAL (UG/L AS SE)
01146	SELENIUM, SUSPENDED (UG/L AS SE)
01150	TITANIUM, SUSPENDED TOTAL (UG/L AS TI)
01150	TITANIUM, SUSPENDED (UG/L AS TI)
01161	ZIRCONIUM, SUSPENDED TOTAL (UG/L AS ZR)
01161	ZIRCONIUM, SUSPENDED (UG/L AS ZR)
01170	IRON, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS FE)
01170	IRON, TOTAL IN BOTTOM MATERIAL (UG/G AS FE)
01505	ALPHA, SUSPENDED TOTAL (PCI/L)
01505	ALPHA, SUSPENDED (PCI/L)
01506	ALPHA, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
01506	ALPHA, SUSPENDED, COUNTING ERROR (PCI/L)
01516	GROSS ALPHA RADIOACTIVITY, SUSPENDED TOTAL (PCI/L AS U NATURAL)
01516	GROSS ALPHA RADIOACTIVITY, SUSPENDED (PCI/L AS U NATURAL)
01517	GROSS ALPHA RADIOACTIVITY, SUSPENDED TOTAL (PCI/G AS U NATURAL)
01517	GROSS ALPHA RADIOACTIVITY, SUSPENDED (PCI/G AS U NATURAL)
01518	GROSS ALPHA RADIOACTIVITY, SUSPENDED TOTAL (UG/G AS U NATURAL)
01518	GROSS ALPHA RADIOACTIVITY, SUSPENDED (UG/G AS U NATURAL)
03505	BETA, SUSPENDED TOTAL (PCI/L)
03505	BETA, SUSPENDED (PCI/L)
03506	BETA, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
03506	BETA, SUSPENDED, COUNTING ERROR (PCI/L)
03516	GROSS BETA RADIOACTIVITY, SUSPENDED TOTAL (PCI/L AS CS-137)
03516	GROSS BETA RADIOACTIVITY, SUSPENDED (PCI/L AS CS-137)
03517	GROSS BETA RADIOACTIVITY, SUSPENDED TOTAL (PCI/G AS SR/YT-90)
03517	GROSS BETA RADIOACTIVITY, SUSPENDED (PCI/G AS SR/YT-90)

PARM. CODE	NEW TERMINOLOGY--FIRST LINE OLD TERMINOLOGY--SECOND LINE
03518	GROSS BETA RADIOACTIVITY, SUSPENDED TOTAL (PCI/G AS CS-137)
03518	GROSS BETA RADIOACTIVITY, SUSPENDED (PCI/G AS CS-137)
07010	TRITIUM, SUSPENDED TOTAL (PCI/L)
07010	TRITIUM, SUSPENDED (PCI/L)
07011	TRITIUM, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
07011	TRITIUM, SUSPENDED COUNTING ERROR (PCI/L)
07014	TRITIUM SUSPENDED TOTAL, COUNTING ERROR (TRITIUM UNITS)
07014	TRITIUM SUSPENDED, COUNTING ERROR (TRITIUM UNITS)
07016	TRITIUM, SUSPENDED TOTAL (TRITIUM UNITS)
07016	TRITIUM, SUSPENDED (TRITIUM UNITS)
07052	CALCIUM 45, SUSPENDED TOTAL (PCI/L)
07052	CALCIUM 45, SUSPENDED (PCI/L)
07053	CALCIUM 45, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
07053	CALCIUM 45, SUSPENDED, COUNTING ERROR (PCI/L)
07062	IRON 59, SUSPENDED TOTAL (PCI/L)
07062	IRON 59, SUSPENDED (PCI/L)
07063	IRON 59, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
07063	IRON 59, SUSPENDED, COUNTING ERROR (PCI/L)
07082	RHODAMINE WT, SUSPENDED TOTAL (UG/L)
07082	RHODAMINE WT, SUSPENDED (UG/L)
07102	SELENIUM 75, SUSPENDED TOTAL (PCI/L)
07102	SELENIUM 75, SUSPENDED (PCI/L)
07103	SELENIUM 75, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
07103	SELENIUM 75, SUSPENDED, COUNTING ERROR (PCI/L)
07122	SILVER 110, SUSPENDED TOTAL (PCI/L)
07122	SILVER 110, SUSPENDED (PCI/L)
07123	SILVER 110, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
07123	SILVER 110, SUSPENDED, COUNTING ERROR (PCI/L)
07142	SULFUR 35, SUSPENDED TOTAL (PCI/L)
07142	SULFUR 35, SUSPENDED (PCI/L)
07143	SULFUR 35, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
07143	SULFUR 35, SUSPENDED, COUNTING ERROR (PCI/L)
09505	RADIUM 226, SUSPENDED TOTAL (PCI/L)
09505	RADIUM 226, SUSPENDED (PCI/L)
13505	STRONTIUM 90, SUSPENDED TOTAL (PCI/L)
13505	STRONTIUM 90, SUSPENDED (PCI/L)
13506	STRONTIUM 90, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
13506	STRONTIUM 90, SUSPENDED, COUNTING ERROR (PCI/L)
22705	URANIUM, NATURAL, SUSPENDED TOTAL (UG/L AS U NATURAL)
22705	URANIUM, NATURAL, SUSPENDED (UG/L AS U NATURAL)
28404	CESIUM 137, SUSPENDED TOTAL (PCI/L)
28404	CESIUM 137, SUSPENDED (PCI/L)
28405	CESIUM 137, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
28405	CESIUM 137, SUSPENDED, COUNTING ERROR (PCI/L)
28412	CESIUM 134, SUSPENDED TOTAL (PCI/L)
28412	CESIUM 134, SUSPENDED (PCI/L)
28413	CESIUM 134, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
28413	CESIUM 134, SUSPENDED, COUNTING ERROR (PCI/L)
29633	SCANDIUM 46, SUSPENDED TOTAL (PCI/L)
29633	SCANDIUM 46, SUSPENDED (PCI/L)
29634	SCANDIUM 46, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
29634	SCANDIUM 46, SUSPENDED, COUNTING ERROR (PCI/L)
39332	ALDRIN, SUSPENDED TOTAL (UG/L)
39332	ALDRIN, SUSPENDED (UG/L)
39342	LINDANE, SUSPENDED TOTAL (UG/L)
39342	LINDANE, SUSPENDED (UG/L)
39353	CHLORDANE, SUSPENDED TOTAL (UG/L)
39353	CHLORDANE, SUSPENDED (UG/L)

LIST OF REVISED QUALITY-OF-WATER PARAMETER CODES--Continued

PARAM. CODE	NEW TERMINOLOGY--FIRST LINE OLD TERMINOLOGY--SECOND LINE
39362	DDD, SUSPENDED TOTAL (UG/L)
39362	DDD, SUSPENDED (UG/L)
39367	DDE, SUSPENDED TOTAL (UG/L)
39367	DDE, SUSPENDED (UG/L)
39372	DDT, SUSPENDED TOTAL (UG/L)
39372	DDT, SUSPENDED (UG/L)
39382	DIELDRIN, SUSPENDED TOTAL (UG/L)
39382	DIELDRIN, SUSPENDED (UG/L)
39392	ENDRIN, SUSPENDED TOTAL (UG/L)
39392	ENDRIN, SUSPENDED (UG/L)
39402	TOXAPHENE, SUSPENDED TOTAL (UG/L)
39402	TOXAPHENE, SUSPENDED (UG/L)
39412	HEPTACHLOR, SUSPENDED TOTAL (UG/L)
39412	HEPTACHLOR, SUSPENDED (UG/L)
39422	HEPTACHLOR EPOXIDE, SUSPENDED TOTAL (UG/L)
39422	HEPTACHLOR EPOXIDE, SUSPENDED (UG/L)
39432	ISODRIN, SUSPENDED TOTAL (UG/L)
39432	ISODRIN, SUSPENDED (UG/L)
39502	AROCLOR, SUSPENDED TOTAL, 1248 PCB SERIES (UG/L)
39502	AROCHOR, SUSPENDED, 1248 PCB SERIES (UG/L)
39506	AROCLOR, SUSPENDED TOTAL, 1254 PCB SERIES (UG/L)
39506	AROCLOR, SUSPENDED, 1254 PCB SERIES (UG/L)
39510	AROCLOR, SUSPENDED TOTAL, 1260 PCB SERIES (UG/L)
39510	AROCLOR, SUSPENDED, 1260 PCB SERIES (UG/L)
39518	PCB, SUSPENDED TOTAL (UG/L)
39518	PCB, SUSPENDED (UG/L)
39533	MALATHION, SUSPENDED TOTAL (UG/L)
39533	MALATHION, SUSPENDED (UG/L)
39543	PARATHION, SUSPENDED TOTAL (UG/L)
39543	PARATHION, SUSPENDED (UG/L)
39573	DIAZINON, SUSPENDED TOTAL (UG/L)
39573	DIAZINON, SUSPENDED (UG/L)
39603	METHYL PARATHION, SUSPENDED TOTAL (UG/L)
39603	METHYL PARATHION, SUSPENDED (UG/L)
39733	2,4-D, SUSPENDED TOTAL (UG/L)
39733	2,4-D, SUSPENDED (UG/L)
39743	2,4,5-T, SUSPENDED TOTAL (UG/L)
39743	2,4,5-T, SUSPENDED (UG/L)
39757	MIREX, SUSPENDED TOTAL (UG/L)
39757	MIREX, SUSPENDED (UG/L)
39763	SILVEX, SUSPENDED TOTAL (UG/L)
39763	SILVEX, SUSPENDED (UG/L)
70299	SOLIDS, RESIDUE AT 110 DEG. C, SUSPENDED TOTAL (MG/L)
70299	SOLIDS, RESIDUE AT 110 DEG. C, SUSPENDED (MG/L)
71895	MERCURY, SUSPENDED RECOVERABLE (UG/L AS HG)
71895	MERCURY, SUSPENDED (UG/L AS HG)
71900	MERCURY, TOTAL RECOVERABLE (UG/L AS HG)
71900	MERCURY, TOTAL (UG/L AS HG)
71921	MERCURY, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS HG)
71921	MERCURY, TOTAL IN BOTTOM MATERIAL (UG/G AS HG)
80040	GROSS ALPHA RADIOACTIVITY, SUSPENDED TOTAL (UG/L AS U NATURAL)
80040	GROSS ALPHA RADIOACTIVITY, SUSPENDED (UG/L AS U NATURAL)
80060	GROSS BETA RADIOACTIVITY, SUSPENDED TOTAL (PCI/L AS SR/YT-90)
80060	GROSS BETA RADIOACTIVITY, SUSPENDED (PCI/L AS SR/YT-90)

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FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	2.54×10^1	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3	square meters (m ²)
	4.047×10^{-1}	square hectometers (hm ²)
	4.047×10^{-3}	square kilometers (km ²)
square miles (mi ²)	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0	liters (L)
	3.785×10^0	cubic decimeters (dm ³)
	3.785×10^{-3}	cubic meters (m ³)
million gallons	3.785×10^3	cubic meters (m ³)
	3.785×10^{-3}	cubic hectometers (hm ³)
cubic feet (ft ³)	2.832×10^1	cubic decimeters (dm ³)
	2.832×10^{-2}	cubic meters (m ³)
cfs-days	2.447×10^3	cubic meters (m ³)
	2.447×10^{-3}	cubic hectometers (hm ³)
acre-feet (acre-ft)	1.233×10^3	cubic meters (m ³)
	1.233×10^{-3}	cubic hectometers (hm ³)
	1.233×10^{-6}	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1	liters per second (L/s)
	2.832×10^1	cubic decimeters per second (dm ³ /s)
	2.832×10^{-2}	cubic meters per second (m ³ /s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm ³ /s)
	6.309×10^{-5}	cubic meters per second (m ³ /s)
million gallons per day	4.381×10^1	cubic decimeters per second (dm ³ /s)
	4.381×10^{-2}	cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons



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